Environmental Assessment of the Alaskan Continental Shelf

Final Reports of Principal Investigators
Volume 15. Biological Studies

U.S. DEPARTMENT OF COMMERCE
National Oceanic & Atmospheric Administration
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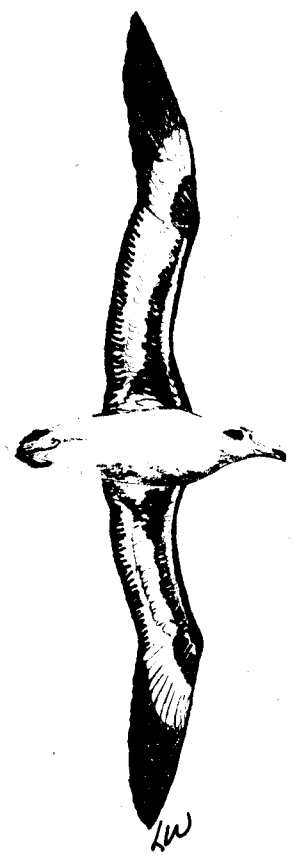
The facts, conclusions and issues appearing in these reports are based on interim results of an Alaskan environmental studies program managed by the Outer Continental Shelf Environmental Assessment Program (OCSEAP) of the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce, and primarily funded by the Bureau of Land Management (BLM), U.S. Department of Interior, through interagency agreement.

Identification, Documentation and Delineation of Coastal Migratory Bird Habitat in Alaska.

BY

Paul D. Arneson
Alaska Department of Fish and Game



FINAL REPORT
BLM/NOAA OCS Contract #03-5-022-69,
Research Unit #3
Studies Conducted October 1975-November 1979

(September 1980)

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I. SUMMARY OF OBJECTIVES, CONCLUSIONS AND IMPLICATIONS WITH RESPECT TO OCS OIL AND GAS DEVELOPMENT

Between October 1975 and August 1978, 33 coastal surveys were conducted for marine birds in seven regions of southcentral Alaska. The two major objectives of this study were to determine seasonal density and distribution, critical habitats, migratory routes and breeding locales in littoral and estuarine habitats for principal bird species and to delineate bird habitat types seaward of the storm-tide line. In Lower Cook Inlet more specific objectives were outlined.

Bird species were combined into 17 species groups for density analyses and each group was rated for vulnerability to oil spills using the index designed by King and Sanger (1979).

Thirty-nine habitat types were used in the final analyses of habitat preferences of birds. Many habitats corresponded to those used by Hayes et al. (1977) in their oil spill susceptibility index.

Northeast Gulf of Alaska

Spring - In Northeast Gulf of Alaska, a May survey further substantiated the importance of Controller Bay-Copper River Delta-Orca Inlet to migrating birds. In this spring survey, shorebirds were the most dense bird group. The protected mudflats used by shorebirds have a high susceptibility to spilled oil. In adjacent areas at Wingham and Martin Islands gulls and alcids reached high densities. In this region, and in all areas during the time of this study, large gulls were observed to use a variety of habitats, and were therefore, less vulnerable to severe impacts from oil spills. Certain bird species migrating past Cape St. Elias on Kayak Island crossed the remaining portion of the Gulf of Alaska and were, therefore, less vulnerable to impacts of oil and gas development in Northeast Gulf of Alaska than birds following the coastline. South of Kayak Island birds densities were highest in Icy Bay.

Summer - Icy Bay was used in summer by non-breeding sea ducks. Onshore facilities placed there would adversely affect that bird subpopulation. Outer sand beaches were used by gulls and terns.

Kodiak

Winter - Wintering birds in the Kodiak Archipelago were most abundant in the Chiniak/Kizhuyak Bay section. Sea ducks and other waterfowl species were the most numerous wintering birds. Birds were concentrated in protected bay/fjord habitats, and contamination from oil and gas development entering Kodiak's bays could affect large flocks of wintering birds.

Lower Cook Inlet

Spring - In Lower Cook Inlet during spring, shorebirds were abundant on mudflats in all bays on the west side of the Inlet and in Kachemak Bay. Sea ducks were numerous from Anchor Point to Ninilchik and in Kamishak Bay. High densities of scaup, a diving duck, were found in many bays adjoining Kamishak Bay. If impacts from oil and gas development contaminated

prey organisms in mud substrates on which many of these shorebirds, sea and diving ducks fed, the effects could be long-lasting. An oil spill during spring could also directly oil several thousand sea and diving ducks.

Gulls were found throughout the Inlet and would, therefore, not be vulnerable to impacts of oil and gas development. However, kittiwakes were concentrated around Tuxedni and southwest Kamishak Bays and would be impacted if oil spills or distrubance occurred in that area.

Summer - Sea ducks were abundant in summer because non-breeding flocks remained in Kachemak and Kamishak Bays and underwent molt there. Flightless waterfowl would succumb to any catastrophic oil spill.

Although gulls were more numerous than other bird groups, they were also more widespread in distribution, selected a wider variety of habitats and could avoid potential threats. Kittiwakes and alcids were most dense near the Chisik Island colony and would be particularly vulnerable to impact at that location.

Fall - In fall, overall bird densities in Lower Cook Inlet dropped markedly from spring and summer population levels. Gulls and sea ducks remained the predominant bird groups but occurred in substantially lower densities than in other seasons. Gulls remained well dispersed, but sea ducks were concentrated in outer and inner Kachemak Bay. Dabbling ducks frequented bay, lagoon and fluviatile waters of Chinitna, Tuxedni and Kachemak Bays. Canada Geese staged on saltmarshes of Tuxedni Bay. McNeil Cove was used by waterfowl and a relatively large number of shorebirds. All these bays contain habitats susceptible to oil spills, and birds most frequently used habitats with the highest susceptibility ratings.

Winter - Birds shifted from the west side of Lower Cook Inlet to the ice-free southeast side in winter. This was true even in relatively mild winters during the study. There were three times the number of birds on the east side as the west. Kachemak Bay (both inner and outer) contained the most birds, and sea ducks predominated. Potential impacts on birds from oil and gas development would be greatest in this area. Spilled oil would contaminate several vulnerable species and their food sources. However, predominant northeast winds in winter may push spilled oil into Shelikof Strait and away from Kachemak Bay.

South-Alaska Peninsula

Fall - On the southern portion of South-Alaska Peninsula in fall, large numbers of geese used susceptible lagoon habitats. Low densities of other species were found.

Winter - In winter, alcids and sea ducks, the two most vulnerable species groups, were the most abundant birds. A few thousand kittiwakes were in the vicinity of colony sites. Mostly exposed (and, therefore, less susceptible to oil spills) habitats were surveyed. The status of bird populations on protected nearshore waters was not determined.

North-Alaska Peninsula

Spring - Estuaries on North-Alaska Peninsula in spring were used by large numbers of geese, gulls and sea ducks. Nelson and Izembek Lagoons supported the most birds. Populations of diving and dabbling ducks and shorebirds were densest in Kvichak Bay where these birds used mudflats of bays and rivers. Any spilled oil entering the estuaries would remain in place a long time, and therefore, oil would impact birds in all seasons for several years. Habitats most used by birds have the highest susceptibility rating to potential impact from oil spills.

Summer - Only offshore waters on the southern end of the Peninsula were surveyed in summer. Densities of 400 to over 1000 shearwaters/km^2 were recorded. Their habits make them relatively vulnerable to oil spilled offshore in summer.

Fall - Bird densities recorded on North-Alaska Peninsula estuaries in fall were the highest observed in all surveys. Geese (mostly Brant, Emperor and Canada) comprised over half the total birds. Sea ducks were second in abundance followed by shorebirds. Izembek Lagoon, Nelson Lagoon, Port Moller and Cinder River contained the highest densities. Birds either used habitats highly susceptible to oil or they were vulnerable due to their propensity for marine waters. Estuaries on North-Alaska Peninsula should be given the greatest degree of protection from impacts of oil and gas development because of the great densities of birds found there and the regional, national and international importance of those birds.

Winter - In winter, bird densities in this region dropped substantially. Nevertheless, sea ducks were common in protected waters, and gulls fed and roosted on exposed sand beaches. Impacts would be less in winter, but spilled oil would likely remain to affect spring and fall migrating bird populations.

North-Bristol Bay

Spring - Spring bird densities in North-Bristol Bay were the lowest of the four regions surveyed in spring. A wide variety of bird groups was found in low to moderate densities. This region, particularly Kvichak Bay, was a part of the migration corridor for shorebirds. Scaup and Black Scoters used inshore waters extensively. Flounder Flats supported high scaup densities on two successive spring surveys. Geese were most abundant in Nanvak Bay, and gull and alcid populations were greatest near Capes Peirce and Newenham colonies. No lease areas are currently being considered near this region and, therefore, the potential for impact is less. Spilled oil from other areas that reached North-Bristol Bay would have changed its consistency and would not likely affect birds greatly.

Aleutian Shelf

Winter - The Aleutian Shelf region was surveyed in winter, and high densities were recorded despite poor survey conditions. Sea ducks were the most abundant group and were found in all sections in almost equal densities. They were found in exposed habitats more than protected.

Emperor Geese and Rock Sandpipers wintered in all sections. Highest densities for six species groups were found on Samalga Island at the western edge of the survey region. A catastrophic oil spill would do the most damage to wintering birds of the region. Most of the Aleutian Shelf habitats are low on the oil spill susceptibility index of Hayes et al. (1977).

II. INTRODUCTION

Alaska's 54,700 km of coastline provides a wide variety of habitats for breeding, migrating and wintering birds. Coastal cliffs, talus slopes, coastal meadows, barrier islands and other physiographic features provide ample nesting habitat. Migrating birds use coastal terrain for migration corridors and frequently stage on such habitats as river deltas and floodplains, lagoons, embayments and intertidal mudflats. The numerous ice-free bays and fjords in the Gulf of Alaska provide wintering habitat for many species of birds. This great habitat diversity supports an equally diverse avifauna. About 134 species of birds common in southcentral Alaska occur on coastal marine environments during at least part of their life cycle.

Because this nearshore and littoral region is so crucial to Alaska's marine birds, it was essential to assess the magnitude of bird use of this area with respect to which geographic areas received most use, and in which habitats within a geographic region bird use was occurring by season. In the past, most bird survey work along the coast had been for waterfowl and in most cases data were not quantitative. Areas of heavy bird use near population centers were obviously documented, but many uninhabited areas had not been looked at, particularly on a seasonal basis. Other surveys only looked at offshore bird use. King and McKnight (1969) specifically tried to determine bird use of nearshore waters by flying a sawtooth pattern out to 19 km in Bristol Bay, but little information was gathered on bird use of littoral and supratidal habitats. This study was designed to quantify bird use along the coast, in nearshore waters, and in supratidal regions.

Objectives of the project and regions studied since the inception of the study have been:

FY 1976-Gulf of Alaska, Bristol Bay; FY 1977-Bristol Bay, Aleutian Shelf.

1. To summarize and evaluate existing literature and unpublished data on the distribution, abundance, behavior and food dependencies of birds associated with littoral and estuarine habitats.

2. To delineate the storm-tide line and characterize vegetative types (bird habitats) seaward of the storm-tide line.

3. To determine seasonal density and distribution, critical habitats, migratory routes and breeding locales for principal bird species in littoral and estuarine habitats.

FY 1978-Lower Cook Inlet

Winter, Kamishak/Outer Kachemak Bays

1. To determine the winter distribution and abundance of marine birds in relation to ice conditions and other environmental parameters.

2. To attempt to determine the cause of various winter bird distribution patterns.

Spring-Kamishak Bay

1. To determine distribution and abundance of waterfowl and shorebirds species.

2. To determine critical habitats for these species groups.

3. To determine periods of peak usage and duration of usage in spring for these species groups.

4. To determine, if possible, food organisms used by these species groups during migration staging.

Summer-Kamishak Bay

1. To determine species composition and abundance of marine birds on colonies.

2. To determine as many aspects as possible of the breeding biology of marine birds on the colonies.

3. To determine, whenever possible, the food habits of nesting marine birds and their young.

4. To determine changes in abundance of breeding populations of marine birds on colonies visited in 1976.

5. To make other incidental observations of habitat use, forage areas, migration areas and abundance of non-colonial marine birds.

Oil and gas development and its various related activities have been recognized as posing the greatest potential threat to marine birds in Alaska. Catastrophic spills could impact large numbers of sea ducks and other seabirds utilizing nearshore areas for foraging. If oil contaminates estuaries or onto mudflats, thousands of waterfowl and shorebirds could be affected. Chronic pollution, although less obvious, may be as devastating to birds as a catastrophic spill. Food organisms will likely be destroyed by small chronic spills, and this, in turn, will have deleterious effects on birds if it continues for long periods of time.

This study helped provide baseline information on seasonal abundance of birds and identify which habitats various species of birds selected during different seasons. Those habitats found most important to birds can, hopefully, be protected in the event of a spill or avoided by onshore development and vessel traffic.

III. CURRENT STATE OF KNOWLEDGE

Most of the information on bird use of coastal habitats in southcentral Alaska has been summarized in previous annual reports of this research unit (Arneson 1976, 1977 and 1978). In general, few bird surveys were conducted which included all species using subtidal, littoral and supratidal habitats. Most surveys had been for popular game ducks and geese, and often these surveys were only qualitative in nature. Other

bird research has been on specific sites covering limited geographic area and dealt with one or few species. Also, little work has been done on a seasonal basis; in particular, winter months have been neglected.

For the Northeast Gulf of Alaska lease area, including Prince William Sound, the best bird information is found in Isleib and Kessel (1973). Their species accounts of each bird included use by season, relative magnitude of this use and habitats used. They emphasized the importance of the Copper River Delta and Orca Inlet where densities of 250,000 shorebirds per square mile were recorded and where as many as 20 million birds staged during spring migration.

Until Outer Continental Shelf Environmental Assessment Program (OCSEAP) bird research began, little was reported about coastal use by birds of the Kodiak Archipelago except in winter. The U.S. Fish and Wildlife Service conducted winter boat surveys in 1973 and 1975 and the Alaska Department of Fish and Game has conducted aerial counts of waterfowl. In 1977 an aerial survey by the U.S. Fish and Wildlife Service duplicated their earlier boat surveys in coverage; however differences in species composition were evident between boat and aircraft surveys (Trapp 1977). The aerial survey recorded more dabbling and diving ducks, Harlequin Ducks, scoters and gulls while boat surveys, which did not get into shallow or estuarine waters, reported more eiders, Oldsquaws and alcids. Densities recorded for the 1973 and 1975 boat surveys were 129 and 147 birds/km^2, respectively, while the 1977 aerial survey had 101 birds/km^2. No intensive coastal surveys have been made in other seasons of the year along most of the Kodiak Archipelago.

Prior to 1976, little coastal bird work had been done in the Lower Cook Inlet lease area except for cursory surveys of the Kachemak Bay region. A study was conducted in 1976 by the Marine and Coastal Habitat Management Section, Alaska Department of Fish and Game (ADFG) in cooperation with this research unit to assess seasonal distribution and abundance of marine birds. Data from that study were summarized in Erikson (1977) and the habitat preference and density information will be presented in this report.

No specific surveys have been conducted along the south side of the Alaska Peninsula for bird habitat preference, and little work has been done on distribution and abundance by season. Effort has been directed at documenting seabird colony locations in summer. Although incidental information has been gathered on general distribution and abundance of other marine birds besides seabirds in summer, few data have been gathered in other seasons. Waterfowl surveys were conducted in winter 1970 and fall 1972 in many of the bays on the south side of the Alaska Peninsula but no records were kept of other bird species.

More surveys have been conducted, for the north side of the Alaska Peninsula so there is more knowledge of bird distribution and abundance. Surveys by ADF&G in the late 1960's and early 1970's documented use of the estuaries by waterfowl. Other investigators have reported use of nearshore and pelagic waters by marine birds (King and McKnight 1969, Bartonek and Gibson 1972). Little habitat is available for nesting seabirds but extensive estuarine saltmarshes and mudflats provide ideal staging habitat for waterfowl and shorebirds.

Habitat on the north side of Bristol Bay is more diversified and thus supports breeding seabirds as well as staging waterfowl and shorebirds. The ice pack during severe winters precludes much bird use of this area in winter. Again, waterfowl surveys in the early 1970's provided most of the knowledge of birds using coastal areas, although many colonies had been documented and pelagic surveys conducted.

Bird use of the final region under consideration, the Aleutian Shelf lease area, has received little quantitative assessment. Murie (1959) summarized most qualitative data for parts of the region and colonies have been documented for some of the islands (Sowls et al. 1978). Otherwise, very little is known of seasonal bird use of coastal areas within this region.

IV. STUDY AREA

Coastal bird surveys under this research unit were conducted in the Gulf of Alaska and Bristol Bay from Cape Fairweather to Cape Newenham (Fig. 1). The study area was further subdivided into seven survey regions: 1-Northeast Gulf of Alaska, 2-Kodiak Archipelago, 3-Lower Cook Inlet, 4-South-Alaska Peninsula, 5-North-Alaska Peninsula, 6-North-Bristol Bay and 7-Aleutian Shelf.

Northeast Gulf of Alaska - This region is bounded on the south by Cape Fairweather and on the north by Cordova (Fig. 2). Much of the area consists of exposed sand or gravel beaches which are the result of downdrift from glacial outwash streams. The coastline is broken by two major glacial fjords, Icy Bay and Yakutat Bay, and by two large river deltas, the Copper and Bering Rivers. Extensive mudflats are found at the mouths of both rivers and also in adjoining Orca Inlet. Frequent seismic activity often changes these habitats quite drastically. An earthquake in 1899 uplifted the head of Yakutat Bay over 14 meters (Ruby 1977). The Good Friday Earthquake of 1964 uplifted the Copper River Delta and surrounding areas nearly 2 meters, causing brackish areas to become freshwater.

Storms, which are frequent and severe in fall and winter, also alter the geomorphology through erosion and deposition.

Kodiak Archipelago - Two major islands, Kodiak and Afognak, and several minor islands make up this mountainous archipelago (Fig. 3). The major islands are nearly bisected by long, narrow fjords and bays. Afognak Island and the extreme northeastern part of Kodiak Island are heavily forested with Sitka spruce (*Picea sitchensis*). The remainder of Kodiak is largely alpine tundra, and dense alder (*Alnus crispa*) thickets with cottonwood (*Populus balsamifera*) groves at heads of bays. Beach rye (*Elymus* sp.) and sedge/grass areas are found in small lagoons and on sandspits, but these habitats are not abundant on Kodiak. Nearly 60 percent of the archipelago has a rocky substrate--exposed or sheltered rocky headlands or eroding wave-cut platforms (Hayes and Ruby 1979). Gravel and mixed sand/gravel are the next most abundant substrates. Sand beaches are scarce and are generally found only on the south end of the island.

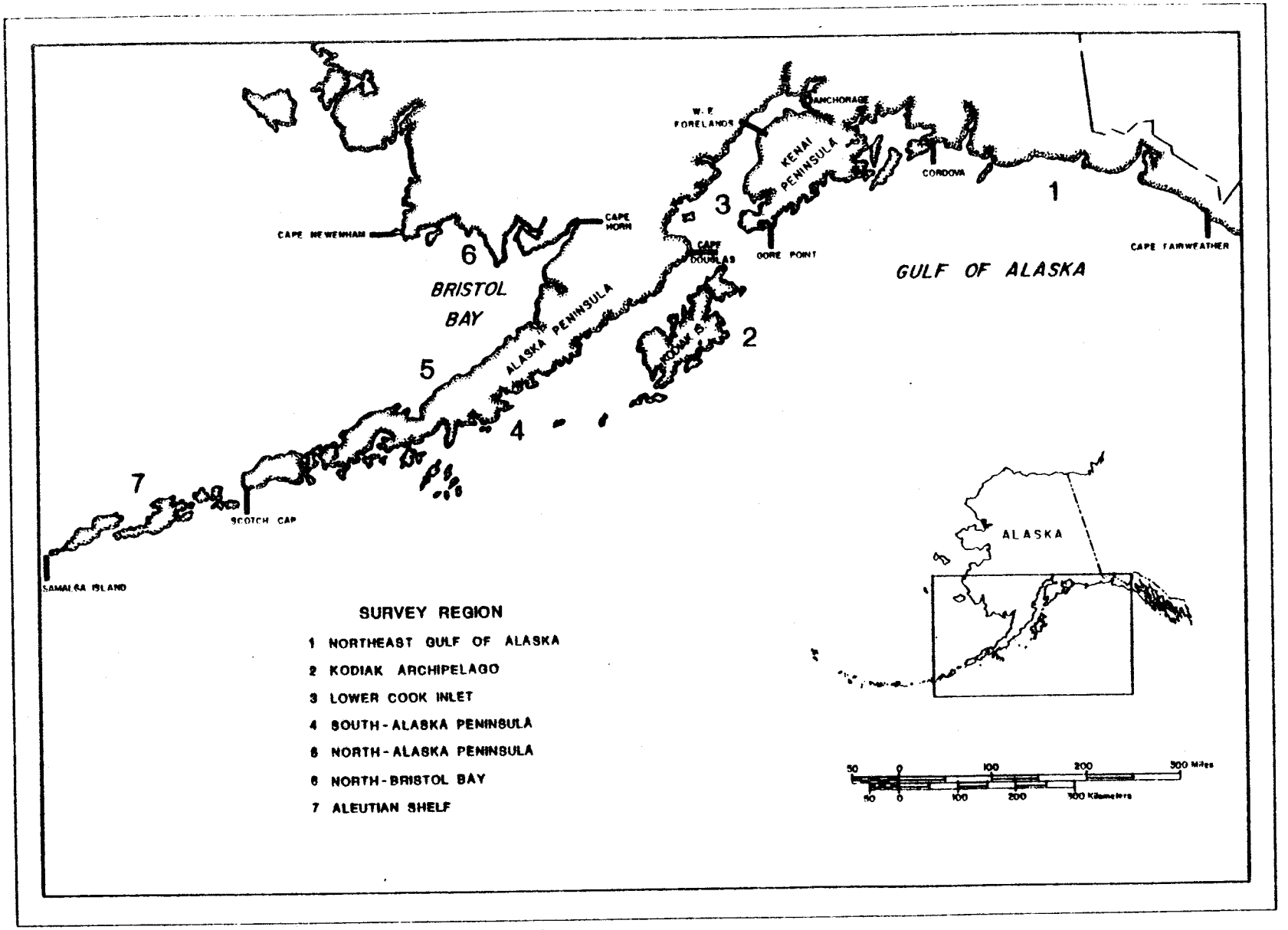

Fig. 1. Study area in southcentral Alaska subdivided into survey regions.

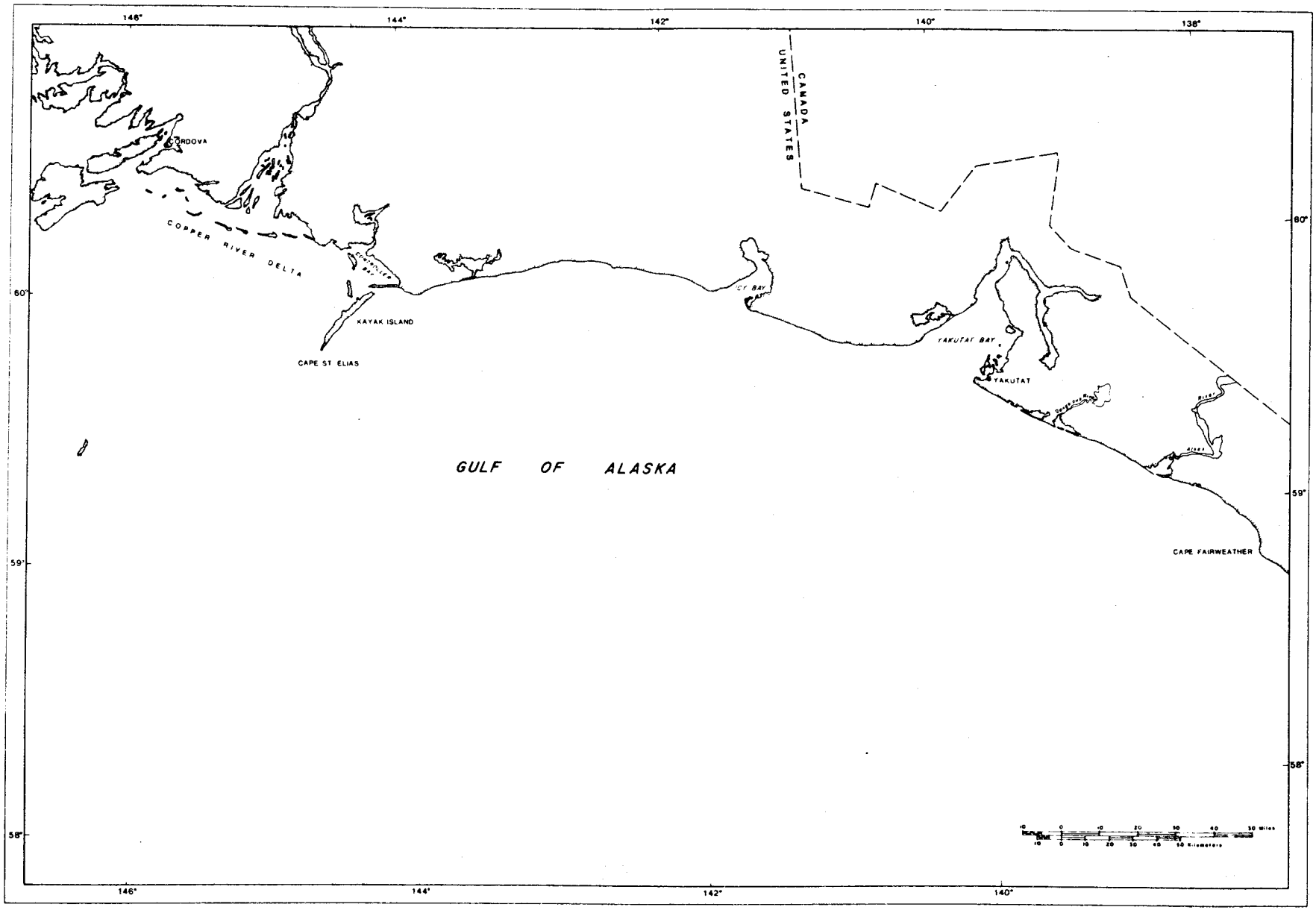

Fig. 2. Survey Region 1: Northeast Gulf of Alaska with place names.

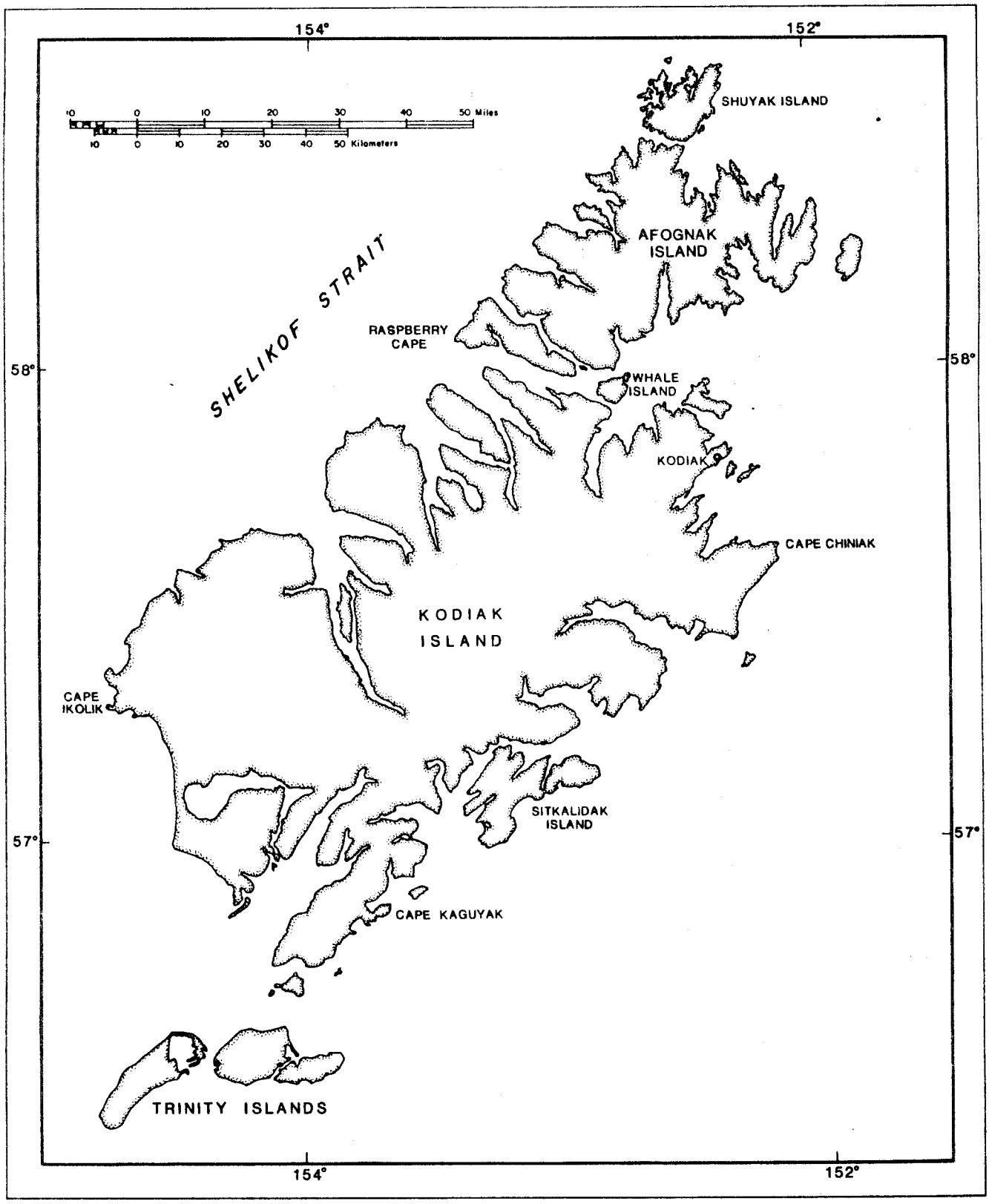

Fig. 3. Survey Region 2: Kodiak archipelago with place names.

Maritime climates prevail on the Kodiak Archipelago. Warm ocean currents moderate winter conditions and, therefore, bays and fjords freeze over only during the most severe cold spells. Winds are strongest from westerly directions in winter and from the east during summer storms (Hayes and Ruby 1979).

Lower Cook Inlet - For this study, Lower Cook Inlet was defined as those portions of the inlet below the Forelands, as far as Cape Douglas on the western side and to Gore Point on the southeast (Fig. 4). It included all of Kachemak Bay exclusive of the Barren Islands. Lower Cook Inlet is physically more diverse than other regions studied. The southeast portion is predominantly sheltered rocky bays and fjords. With its maritime climate, these waters are generally ice-free in winter and provide winter habitat for several marine bird species. From Homer to Kenai, the shoreline is mostly sand beaches with a bluff at the high tide line. Waters are increasingly turbid to the north and in winter ice floes from Upper Cook Inlet are frequently found as far south as Ninilchik. Two large river deltas, Kenai and Kasilof, comprise the most productive bird habitat in this portion of coastline. In contrast to the straight, sandy northeast side, the west side of Lower Cook Inlet is broken up by several bays which are relatively shallow and have extensive intertidal mudflats on their periphery. Winter weather in this area is more severe than on the east side, and bays are frequently ice-choked.

Because of the Aleutian Range on the west and Kenai Mountains on the east, winds are generally funneled up and down the inlet, predominantly southwest in spring and summer, and northeast in fall and winter (Hayes et al. 1977). Bays on the west side frequently have localized, strong westerly winds in summer as air masses from Bristol Bay move through mountain passes.

South-Alaska Peninsula - This area (Fig. 5), like Kodiak and southeast Lower Cook Inlet, has numerous rocky bays and fjords with few large lagoons and proportionately fewer sandy beaches. Maritime weather keeps the area relatively ice-free in winter, but strong winds, heavy precipitation, and fog make it inhospitable for much of the year. Few permanent settlements have been established along the entire coastline. These conditions make it difficult to obtain bird information on a seasonal basis, yet conditions are not too severe to preclude substantial bird usage.

North-Alaska Peninsula - The north side of the Alaska Peninsula (Fig. 5) differs considerably from the south side. Most exposed portions are long sand or sand/gravel beaches with low beach ridges or high bluffs at the high tide line. No trees occur along the coast and the vegetation is largely that of arctic tundra and scrub thickets. Several large lagoons and embayments partitioning the coastline provide a wide variety of important bird habitats. At the mouths of these estuaries there are barrier islands and/or spits, and around their perimeters there are mudflats, sedge marshes and river floodplains. Rocky habitats are present only in Port Moller, at the southern portion of the Peninsula and on Unimak Island. Unimak is included in this region because of its similarities and proximity to the Alaska Peninsula.

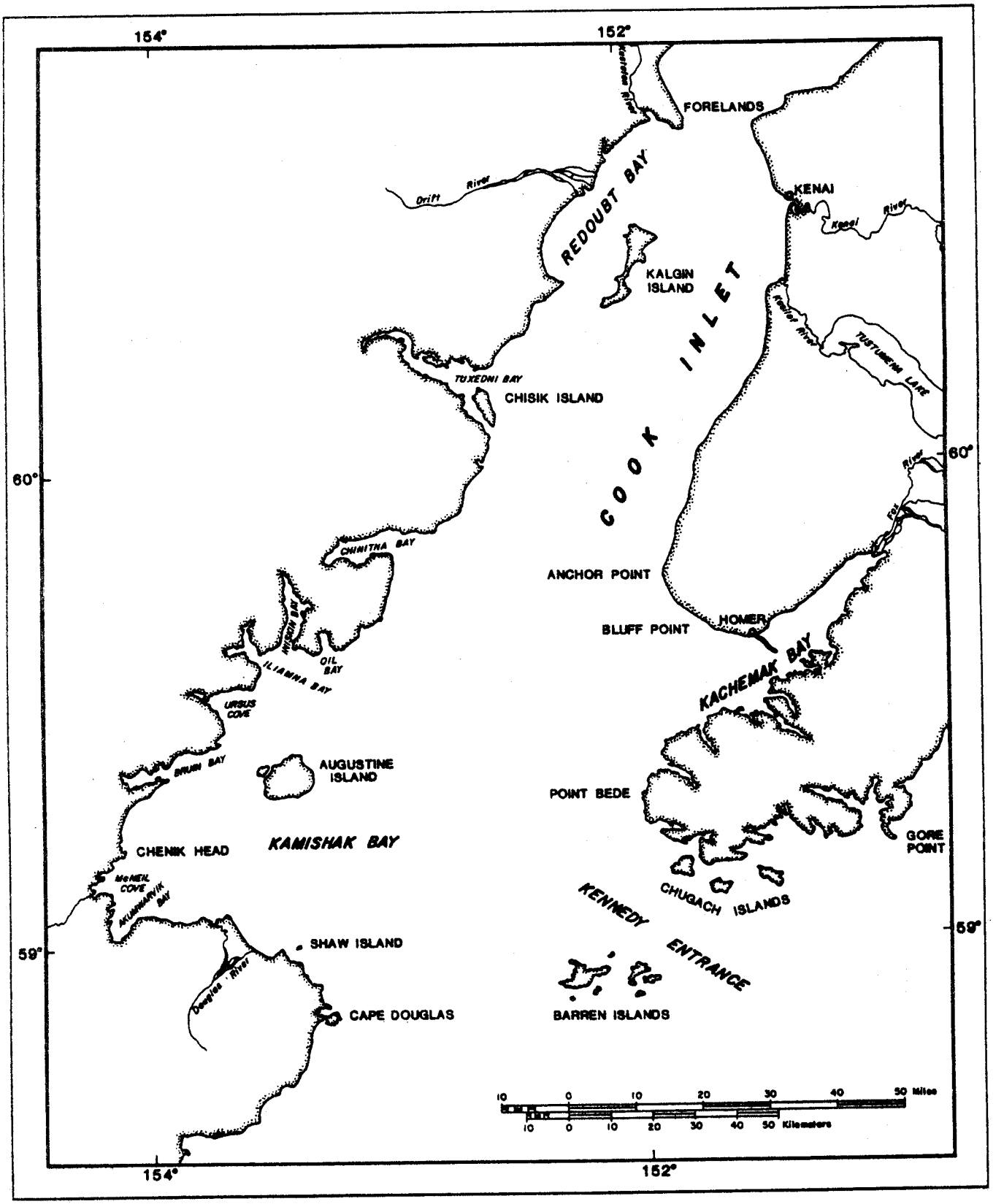

Fig. 4. Survey Region 3: Lower Cook Inlet with place names.

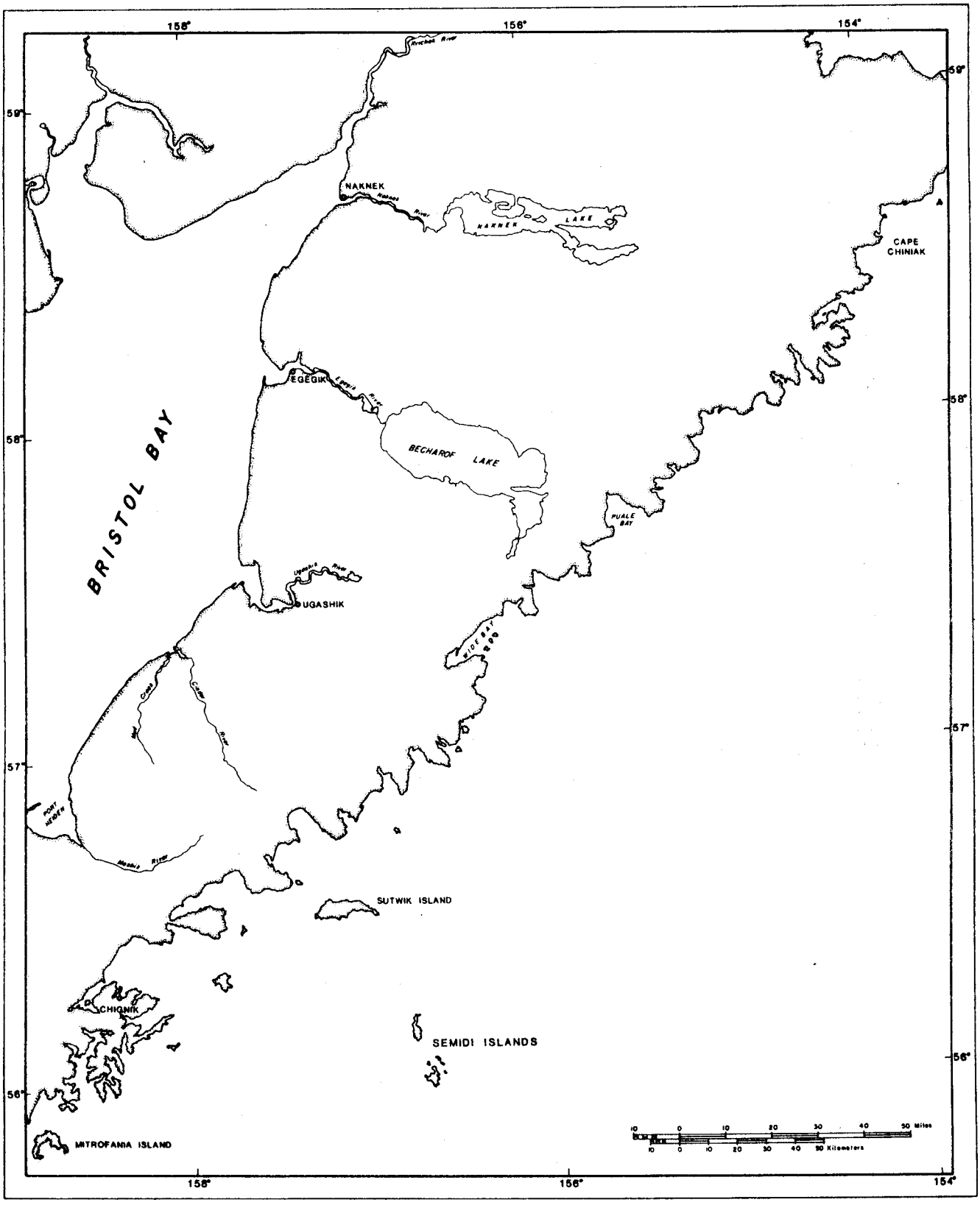

Fig. 5 Survey Regions 4 and 5: South- and North-Alaska Peninsula with place names.

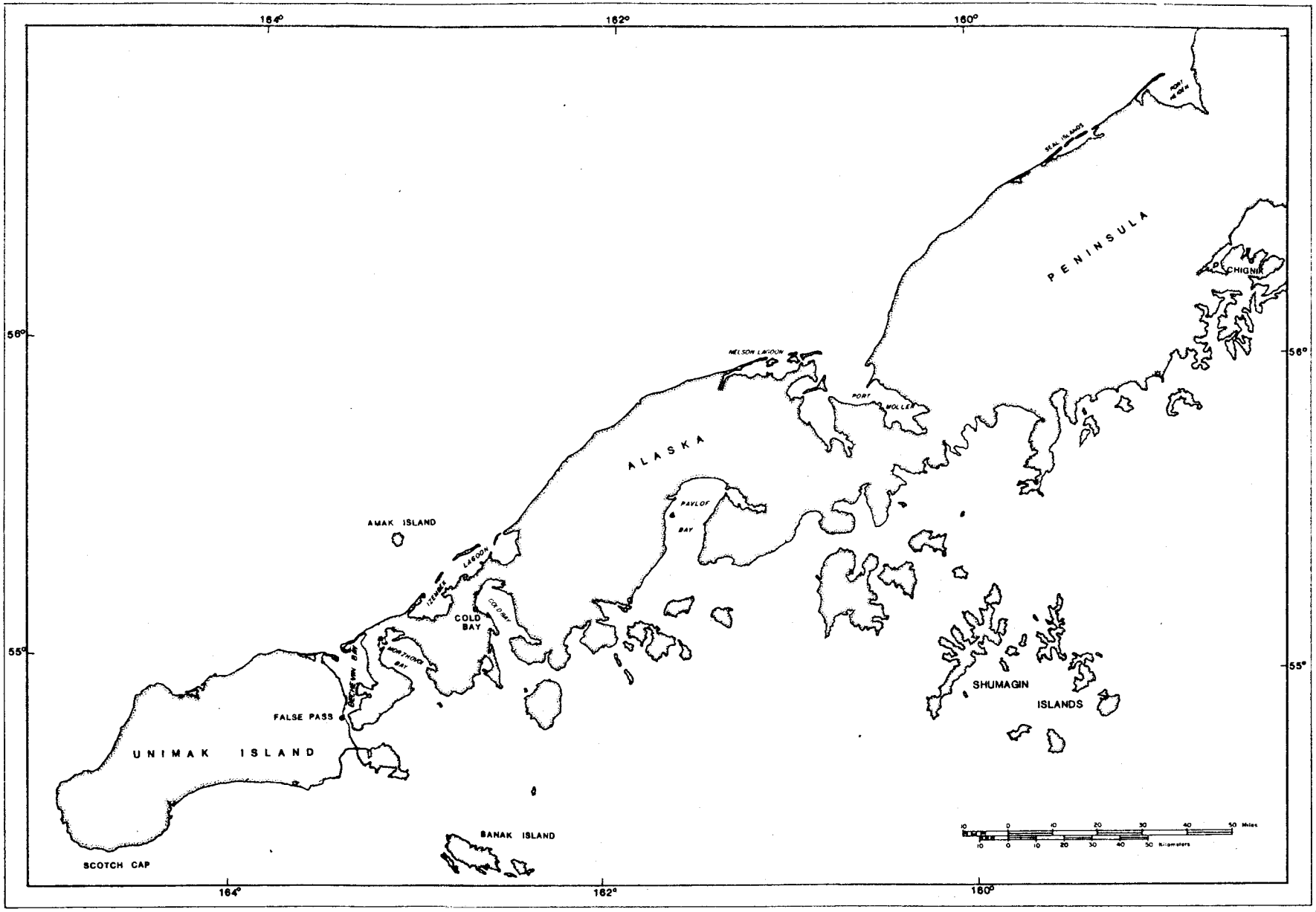

Fig. 5 (cont.). Survey Regions 4 and 5: South- and North-Alaska Peninsula with place names.

During severe winters all estuaries are ice-filled and pack ice covers Bristol Bay to the southern portion of this region. Low pressure systems frequently move up the coast bringing strong southeasterly winds and heavy precipitation.

North-Bristol Bay - This region includes a variety of habitats between the Kvichak River and Cape Newenham (Fig. 6). The eastern portion largely consists of extensive sand beaches with several large river deltas. Rocky cliffs are more common on the western portion with the largest at Capes Peirce and Newenham. A few small lagoons and bays are found in this section of coast, but only limited protected waters are available to birds. Rock cliffs which are common on Hagemeister and the Walrus Islands, provide abundant nesting habitat for seabirds.

Weather is similar to that on the Alaska Peninsula. Frequent storms come into Bristol Bay bringing heavy precipitation and strong southeast winds. The area is normally ice-covered in winter when pack ice moves down from the north.

Aleutian Shelf - Only the portion of the Aleutian Islands from Unimak Pass to Samalga Island was covered in this study (Fig. 7). Much of the coastline in this area is rock, either cliffs or boulder beaches. Gravel beaches are common at heads of the many bays, but sand beaches are rare. Few lagoons or embayments are present, and those that exist are quite small.

Storms are frequent in the Aleutians with high winds and heavy precipitation. Fog often enshrouds the islands. Because of the maritime climate, winter temperatures are moderate and there is little ice build-up in bays.

Strong tidal currents pass between islands and likely cause upwelling of food organisms for birds.

V. METHODS

Aerial Surveys

Several aerial bird survey techniques were used in the course of this project, depending upon the region surveyed and circumstances. Twin-engine amphibious and single-engine, fixed-wing aircraft and a helicopter were utilized at different times. Airspeed varied from 95 to 225 km/hour and survey altitude from 30 to 45 meters.

Along straight beaches with narrow supratidal zones, the survey aircraft flew 100-200 meters seaward of the waterline. The most frequently used technique involved observers on both sides of the aircraft. The shoreside observer enumerated all birds visible to the high waterline while the oceanside observer recorded all birds within 200 meters of the aircraft. For analyses, it was assumed the shoreside observer was looking at a mean width of 170 meters. Therefore, the total width of the "transect" was 370 meters parallel to the coast. Concentrations of birds outside this zone were recorded, but were not included in analyses.

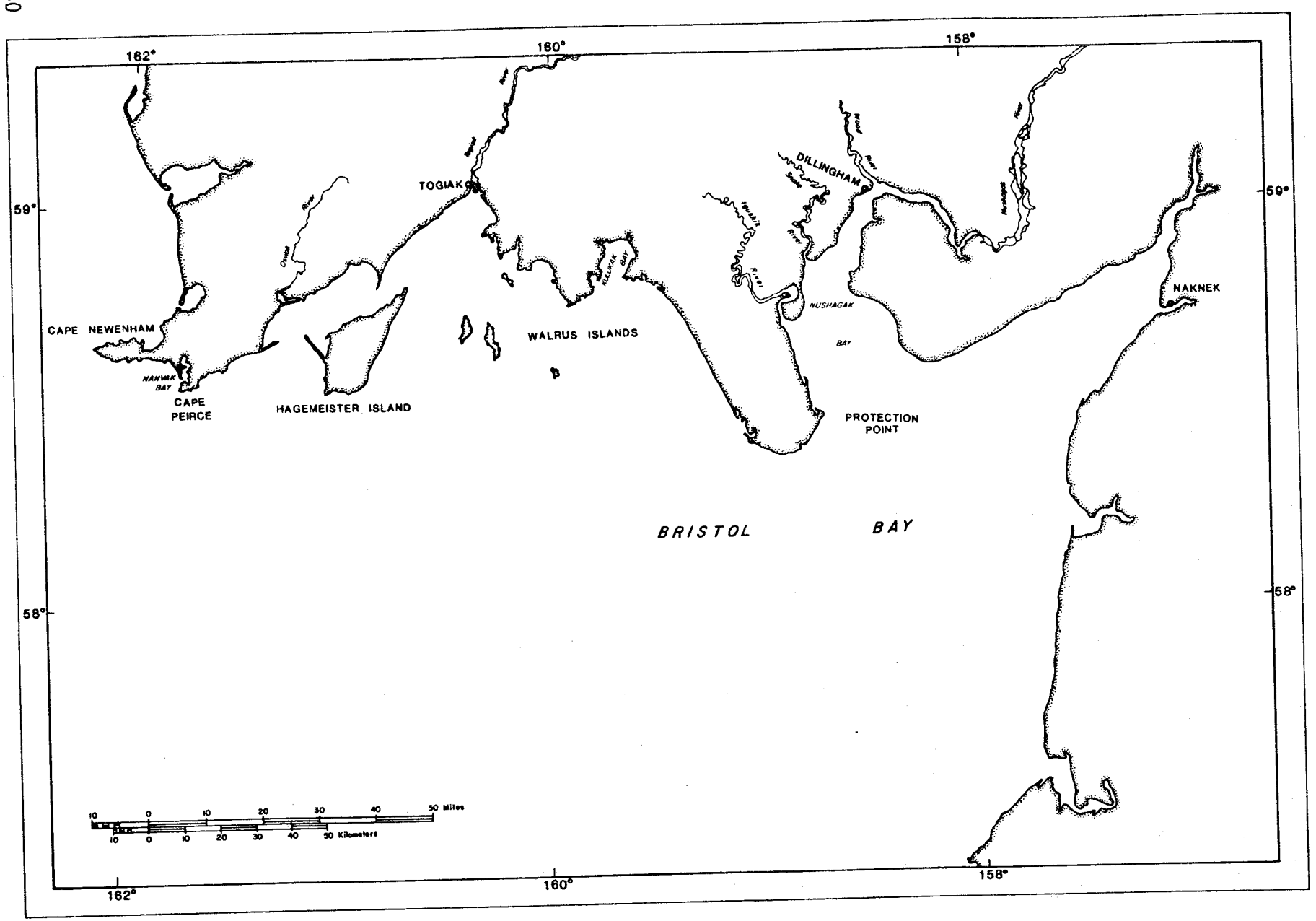

Fig. 6. Survey Region 6: North-Bristol Bay with place names.

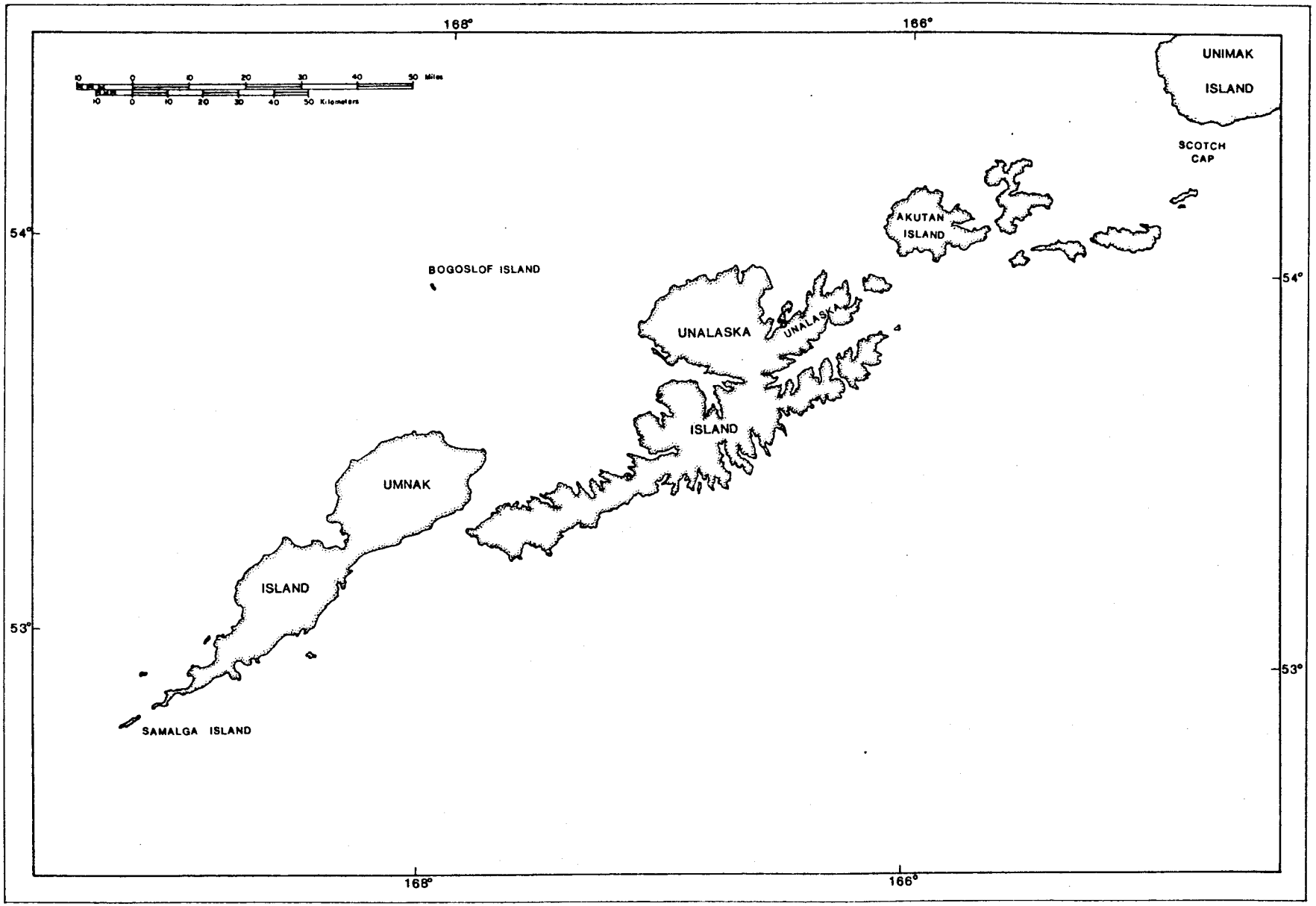

Fig. 7. Survey Region 7: Aleutian Shelf with place names.

In estuarine and coastal floodplain habitat, a total count of birds was attempted; or in some cases, transects were flown. Techniques for obtaining a total count entailed flying back and forth over the estuary or supratidal zone at close enough intervals to get "total" coverage.

While flying over open water between islands or while purposely flying pelagic, nearshore transects, both observers attempted to record all birds within 200 meters of the aircraft. Poor observation conditions or faster flying aircraft necessitated reduction of this zone to 100 meters.

For the winter survey of the Kodiak Archipelago, it was assumed that frequent poor winter weather conditions would preclude the practical use of the standard shoreline survey technique. Therefore, a stratified random census technique was used. The region was separated into eight basic habitat units, stations were numbered and the stations to be surveyed were randomly selected using a table of random numbers. We flew only preselected count units plus a few extra units suspected of being important to birds.

Only one observer was present on certain surveys, particularly when aircraft of opportunity were used (e.g. on marine mammal surveys). When this occurred, a fixed-distance (100 or 200 meters) technique was used when transects or offshore areas were flown. While flying along the coast, the observer counted all birds within the zone from the aircraft to the high tide line. For analysis, it was assumed that the width of the zone in the latter case was 170 meters. In this way, all density figures are based on area and not solely on distance.

Station Designation

The shoreline of each region was subdivided into "stations" or count units to facilitate recording bird locations. A requirement of the station designation scheme was that unit boundaries be easily identifiable at low altitudes while counting birds. Therefore, recognizable geographic features were used as starting and ending points and stations were of variable size. In most instances they were between 2 and 16 kilometers in length.

For analyses in this report, stations were combined into more meaningful and manageable sections of coastline. An attempt was made to maintain similar physiographic features within each section or at least to use logical starting and ending points.

Parameters Recorded

All observations were recorded on cassette-type tape recorders. Information recorded included the following: bird identification to lowest taxon possible (order, family, genus, species), bird numbers and habitat type in which the bird was found. Any other useful information including activity, sex, color phase and counting method was recorded when obtainable. Weather observations were recorded at the start of each flight and a coded survey condition was noted as often as conditions changed. Time was recorded at the start and end of each station.

Survey Priorities

Priority of selection of regions for surveying was based largely upon presumed importance of the area to bird populations, vulnerability of the area to oil development and the proposed OCS planning schedule for oil lease sale areas (the earliest lease sale areas were surveyed first). The amount of existing knowledge about certain areas and the extent of current research being conducted by other organizations or individuals also influenced which areas most needed research emphasis.

Species Group Designations

Because of the large quantity of data generated by the surveys and because of limited time and space for this report, certain abbreviations in the analyses were necessary. First, birds were consolidated into 17 ecological groupings plus an eighteenth "catch-all" group. The groupings were those Which are most frequently seen in coastal environments. The eighteenth group consists of birds that did not fit into the previous 17 groups (such as ptarmigan [*Lagopus* spp.] or Belted Kingfishers [*Megaceryle alcyon*]) and unidentified birds. Few swans (*Olor* spp.) or jaegers (*Stercorarius* spp.) were observed but their numbers were combined with their nearest phylogenetic relatives, geese and gulls, respectively. In many cases, data on a species or species group basis were available but could not be presented here. For this report, dabblers (or dabbling ducks) included: Mallard (*Anas platyrhynchos*), Gadwall (*A. strepera*), Pintail (*A. acuta*), Green-winged Teal (*A. crecca*), Northern Shoveler (*A. clypeata*), European Wigeon (*A. penelope*) and American Wigeon (*A. americana*). Divers (or diving ducks) included: Canvasback (*Aythya valisineria*), Redhead (*A. americana*), Ring-necked Duck (*A. collaris*), Greater Scaup (*A. marila*), Lesser Scaup (*A. affinis*), Common Goldeneye (*Bucephala clangula*). Barrow's Goldeneye (*B. islandica*) and Bufflehead (*B. albeola*). Sea ducks included: Oldsquaw (*Clangula hyemalis*), Harlequin Duck (*Histrionicus histrionicus*), Steller's Eider (*Polysticta stelleri*), Common Eider (*Somateria mollissima*), King Eider (*S. spectabilis*), Spectacled Eider (*S. fischeri*), White-winged Scoter (*Melanitta deglandi*), Surf Scoter (*M. perspicillata*) and Black Scoter (*M. nigra*). Mergansers included: Common Merganser (*Mergus merganser*) and Red-breasted Merganser (*M. serrator*) Raptors included hawks, eagles, falcons and owls.

Habitat Type Designation

The habitat preference analysis also required abbreviation. During surveys, 473 different habitat combinations were recorded using the scheme in Table 1. These were consolidated into 39 habitat types plus four partially identified types (Table 2). Four habitat types were excluded because a total of less than 200 birds was seen on them. The substrate for each habitat type was designated as often as possible to be able to compare those habitats with the oil spill vulnerability index of Hayes et al. (1977).

Table 1. Four digit coding system used to classify habitats during coastal bird surveys. For each bird observation, one item for each column was recorded.

CODE	WATER TYPE	PHYSIOGRAPHIC FEATURE	SUBSTRATE TYPE	COVER TYPE
0	Indeterminable from air	Indeterminable from air	Indeterminable from air	Indeterminable from air
1	Undetermined	Undetermined	Undetermined	Undetermined
2	Combination of below	Combination of below	Combination of below	Combination of below
3	Bay	Beach	Mud	Bare
4	Lagoon	Coastal Floodplain	Sand	*Elymus* - beach rye
5	Embayment	Salt Chuck	Gravel	*Carex* - sedge
6	Fjord	Inter-tidal area	Large rocks	*Zostera* - eelgrass
7	Unprotected shoreline	Tide Upwelling	Mud and sand	Mixed grass
8	Brackish pond or lake	Sand Spit	Sand and gravel	Mixed forbs
9	Fresh water pond or lake	Barrier Island	Sand, gravel and rocks	Algae - kelp
A	Lotic Environment	Other Island	Water	Coniferous trees
B	Open water (Pelagic)	River Delta	Land ice	Deciduous trees
C	-	Stream Delta	Sea ice (floating)	-
D	-	Cliff	-	-
E	-	Manmade structure	-	-
F	-	River Bank	-	-

Table 2. Coastal habitats used in analyses of bird surveys.

I. Offshore Waters (pelagic and inshore transects)

II. Exposed Inshore (coastal) Waters
- A. Open Water
- B. Tideflats (Mud and Mud/Sand)
- C. Beach
  - (1) Sand and Sand/Gravel
  - (2) Gravel and Sand/Gravel/Rock
  - (3) Rock
- D. Islands (Barrier and other) and Pinnacles
  - (1) Upland Soil*
  - (2) Sand Beach
  - (3) Gravel Beach
  - (4) Rock Beach

III. Protected Nearshore Waters (estuarine)
- A. Bays and Fjords
  - (1) Open Water
  - (2) Tideflats (Mud and Mud/Sand)
  - (3) Beach
    - a. Sand and Sand/Gravel
    - b. Gravel and Sand/Gravel/Rock
    - c. Rock
  - (4) Islands (Barrier and other) and Pinnacles
    - a. Upland Soil
    - b. Sand Beach
    - c. Gravel Beach*
    - d. Rock Beach
- B. Lagoons and Embayments
  - (1) Open Water
  - (2) Tideflats (Mud and Mud/Sand)
  - (3) Beach
    - a. Sand and Sand/Gravel
    - b. Gravel and Sand/Gravel/Rock
    - c. Rock
  - (4) Islands (Barrier and other) and Pinnacles
    - a. Upland Soil
    - b. Sand Beach
    - c. Gravel Beach

IV. Sedge/grass Saltmarshes (includes those from exposed inshore waters, bays and fjords, lagoons and embayments, brackish and freshwater ponds and tideguts/sloughs).

V. Fluviatile Waters (streams and rivers)
- A. Exposed Deltas
  - (1) Open Water
  - (2) Bare Substrate
    - a. Mud
    - b. Sand
    - c. Gravel
    - d. Rock*
- B. Protected Alluvia (river waters, banks, floodplains and deltas from bays, fjords, lagoons and embayments).
  - (1) Open Water
  - (2) Bare Substrate
    - a. Mud
    - b. Sand
    - c. Gravel
  - (3) Vegetated Floodplain

VI. Dry Coastal Upland (includes tundra, subterranean soil)*

VII. Unidentified Habitats
- A. Exposed Inshore
- B. Bay/Fjord
- C. Lagoon Embayment
- D. Protected Alluvial

* Habitats dropped from analyses because of low bird usage

Season Designation

The following definitions were used for seasons: spring-April, May; summer-June, July, August; fall-September, October, November; winter-December, January, February, March. This breakdown is arbitrary, and migrating birds did not strictly follow this pattern. Many marine birds did not reach their wintering areas until well into November so this month was included as a "fall" month. During the course of the study, there were three unusually mild winters. Therefore, cold weather did not force certain bird species to final wintering areas until late in the fall or early winter.

Habitat Mapping

The second major objective of this project was to map habitat types in the high tide to supratidal zones of the coastline. This was done in snow-free months from aircraft at an altitude of 90-120 meters. Information on substrate type, height and slope of the bank at high tide line, type of vegetation and stormtide line were color-coded onto USGS 1:63,360 or 1:250,000 maps. Information concerning the mapping project, including areas of coverage, was summarized in Arneson (1977). Formal presentation of this information is beyond the scope of this report. An atlas on both scales of maps is located at Alaska Department of Fish and Game, 333 Raspberry Road, Anchorage, Alaska.

VI. RESULTS

From October 1975 to August 1978, 33 surveys were conducted by observers from this research unit (Table 3). Twenty-nine surveys were conducted using fixed-wing aircraft, two using a rubber raft, one using a helicopter and one from a stationary platform. For analyses, the latter survey was omitted, and the other surveys were combined by season within each region.

For correct interpretation of the tables and figures in this report, it is essential to understand more about our data collection procedures and how bird behavior or distribution patterns may affect the results. In many cases, surveys in the same lease area and in the same season but different years were not duplicated station by station. Therefore, different amounts of a given habitat were searched, perhaps biasing results toward, or away from, certain habitats. For example, there were two types of surveys done in successive fall seasons on North-Alaska Peninsula. The first year the entire coastline and all estuaries were surveyed. To save time (i.e. money) the second year, we spent more time searching estuaries (where most birds are normally found). Therefore, habitats found in estuaries will be overemphasized and exposed beaches underemphasized in the habitat-usage analysis. Also, when we flew surveys in conjunction with marine mammal surveys, we searched types of habitats different from our normal coastal bird surveys. One must be familiar with survey trackline maps for each region to properly interpret the tabular and pictorial data.

Information on the quantities of each habitat type that were searched for each survey was not collected. Also, the time spent surveying specific habitat types was not recorded. Therefore, data on habitat usage presented in the following discussion only reflect habitat types in which the birds were found at the time of the survey.

When the coastline was flown in summer, we did not normally count birds in breeding colonies. For large colonies, it was impossible to get an accurate count from the air. Also, it was often hazardous for the aircraft to get too close. We did, however, count concentrations of roosting or feeding birds in the vicinity of colonies.

Birds' habitat preference and behavior also affected our counts. For example, tubenoses seldom occur nearshore and, therefore, we found them in large numbers only when doing pelagic transects. Shorebirds were most easily counted when they flushed. Consequently, when they remained on the ground, particularly the rock-dwelling species, they were frequently underestimated or likely overlooked entirely. Passerines were likely present in larger numbers than we found, but they, too, were small and were seldom observed unless flushed. Bird species which dove at the approach of aircraft were also likely underestimated. This was probably most true for grebes, cormorants and several sea duck species. Bird distributions also changed with the tides, time of day, and weather conditions and a one-time survey may have missed the period of peak occurrence.

Table 3. List of all surveys conducted in southcentral Alaska for Research Unit #1.

File Identification Number	Date of Survey	Season	Region Surveyed	Observers	Type of Survey	Number of Stations Surveyed	Total Time in Survey Hrs.	Min.
FY 1976								
FG7601	13-27 Oct 75	F	N. AK Pen., S. AK Pen.	P. Arneson, N. Johnson, D. Timm, J. Sarvis	Shoreline, Transects	157	Unknown	
FG7602	9-11, 18 Feb 76	W	Lower Cook Inlet	P. Arneson, D. Erikson, W. Ballard	Shoreline	120	10:00	
FG7603	22 Feb-3, 21-24 Mar 76	W	Kodiak/Afognak	P. Arneson, V. Berns, W. Donaldson, R. MacIntosh	Stratified-Random Shoreline	76	9:51	
FG7604	1-9 May 76	Sp	Northeast Gulf of AK	P. Arneson, D. Kurhajec, M. Isleib	Shoreline	142	13:06	
FG7605	3, 4-7, 11 May 76	Sp	Lower Cook Inlet	D. Erikson, W. Ballard	Shoreline	148	11:43	
FG7606	17-20 May 76	Sp	N. Bristol Bay	P. Arneson, D. Kurhajec	Shoreline	110	9:20	
FG7607	21-25 June 76	Su	Lower Cook Inlet	P. Arneson, D. Erikson	Shoreline	180	12:46	
FG7608	24 July 76	Su	Northeast Gulf of AK	D. Kurhajec	Shoreline-One Side	26	2:02	
FG7609	30-31 July 76	Su	N. AK Peninsula	P. Arneson	Pelagic Transects-One Side	39	6:18	
FG7610	16 June 76	Su	N. AK Peninsula	D. Kurhajec	Pelagic Transects-One Side	7	:33	
FG7611	5,6 March 76	W	Lower Cook Inlet	D. Erikson, W. Ballard	Pelagic Transects	5	2:01	
FG7612	1 April 76	Sp	Lower Cook Inlet	P. Arneson, D. Erikson	Pelagic Transects	28	4:37	
FG7613	10 May 76	Sp	Lower Cook Inlet	D. Erikson, W. Ballard	Pelagic Transects	8	2:38	
FG7614	24 June 76	Su	Lower Cook Inlet	P. Arneson, E. Erikson	Pelagic Transects	8	2:28	
FG7615	30 Sept 76	F	Lower Cook Inlet	D. Kurhajec, D. Erikson	Pelagic Transects	8	2:29	
FY 1977								
FG7701	30 Sept-2 Oct 76	F	Lower Cook Inlet	D. Kurhajec, D. Erikson	Shoreline	176	10:44	
FG7702	13, 14&16 Oct 76	F	N. AK Peninsula	P. Arneson, D. Kurhajec	Shoreline-Estuaries	38	10:01	
FG7703	28 Feb-4 Mar 77	W	N. AK Peninsula, Aleutian Shelf	P. Arneson, D. McDonald	Shoreline	167	8:48	
FG7704	4 March 77	W	N. AK Pen., S. AK Pen.	P. Arneson, D. McDonald	Shoreline	59	3:34	
FG7705	16-18 March 77	W	S. and N. AK Pen.	P. Arneson	Pelagic Transects, Shoreline	102	11:19	
FG7706	6,7 May 77	Sp	N. AK Peninsula, N. Bristol Bay	P. Arneson, D. McDonald	Shoreline (helicopter)	28	4:52	
FG7707	10-12 May 77	Sp	N. AK Peninsula	P. Arneson, D. McDonald	Shoreline	136	12:20	
FG7708	13 May 77	Sp	N. Bristol Bay	P. Arneson, D. McDonald	Shoreline	41	3:18	
FG7709	17 June-14 July 77	Su	N. Bristol Bay	P. Arneson, D. McDonald	Pelagic Transects (raft)	18	5:41	
FY 1978								
FG7801	22 Nov 77	F	Lower Cook Inlet	P. Arneson, M. Allen	Shoreline/Pelagic Transects	34	4:22	
FG7802	12 Jan 78	W	Lower Cook Inlet	P. Arneson, M. Allen	Shoreline/Pelagic Transects	35	4:45	
FG7803	3 Mar 78	W	Lower Cook Inlet	P. Arneson, M. Allen	Shoreline/Pelagic Transects	35	4:28	
FG7804	28 Apr 78	Sp	Lower Cook Inlet	P. Arneson, R. Johnston	Shoreline	17	:55	
FG7805	1 May 78	Sp	Lower Cook Inlet	P. Arneson, R. Johnston	Shoreline	30	1:51	
FG7806	4 May 78	Sp	Lower Cook Inlet	P. Arneson, R. Johnston	Shoreline	33	1:36	
FG7807	11 May 78	Sp	Lower Cook Inlet	P. Arneson, R. Johnston	Shoreline	35	2:05	
FG7808	7 Jun-16 Aug 78	Su	Lower Cook Inlet	P. Arneson	Shoreline, Pelagic Transects (raft) Walking	81	69:46	
FG7809	19 Jun-13 Aug 78	Su	Lower Cook Inlet	P. Arneson	Stationary	26	8:52	

On the density maps that follow, it was impossible to plot all station densities. Therefore, only sectional densities are presented. If high densities occurred within each section, their locations were plotted on the maps. The scheme used to designate high densities combined a minimum density with a minimum number of that species grouping. Any value exceeding both those assigned in Table 4 was plotted on the density maps as a "site of high density."

NORTHEAST GULF OF ALASKA (NEGOA)

Two surveys were conducted in the NEGOA region (Fig. 8). The spring 1976 survey covered the entire area thoroughly. In Controller Bay, Copper River Delta and Orca Inlet equidistant transects were flown because the areas were too large for total coverage. Only one observer was present on the summer 1976 survey, and only three sections of exposed beach and the southern portion of Icy Bay were surveyed. For data summary, the coastline was subdivided into 11 sections (Fig. 9).

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Density - An overall bird density of 151 birds/km^2 was found for NEGOA in spring 1976 (Table 5). Maps of bird densities by sections are shown in Figs. 10-27. Shorebirds and gulls were the most abundant groups with 67 and 45 birds/km^2, respectively. Shorebird populations were most dense on the Copper River Delta, Orca Inlet and Controller Bay (Fig. 22) where large areas of intertidal mudflats are found. Large flocks of Black-legged Kittiwakes (*Rissa tridactyla*) roosted on the beach and water near their colony on Martin Islands in Section 9. Because the area was small in this section, densities of gulls (774 birds/km^2) for this section were magnified. The inclusion of counts of birds near colonies in Section 7 also helped increase gull densities to 163 birds/km^2. Sections 7 and 9 also had the highest alcid densities of 81 and 33 birds/km^2, respectively. Alcids (mostly murres) had arrived at their colony sites by the early May survey but roosted mainly on adjacent waters.

Densities for all other bird groups were much less. This was more a result of the timing of the survey in relation to spring migration than to lack of use of the area. For example, geese and dabblers moved through the area in late April. The survey in early May was timed to catch the peak of shorebird migration, and it also occurred during peak tern and, possibly gull, migrations. The mean density was 9/km^2 for sea ducks and 7/km^2 for dabblers, divers and terns. Sea duck densities were highest in Icy Bay at 46 birds/km^2. Total numbers of sea ducks were greatest in Section 3, Russell and Nunatak Fjords. Scoters were the most abundant (84%) sea duck and Surf Scoters were the prevalent (76%) identified scoter.

Dabbling ducks were densest in Controller Bay (Section 8) with 17 birds/km^2 and most numerous in Section 3 (2020 individuals). Pintails were the most numerous (721) dabbler species identified in NEGOA followed by American Wigeon (549) and Mallards (473). Diving ducks, primarily Greater Scaup were densest (23 birds/km^2) and most numerous (2288 individuals) in Russell and Nunatak Fjords (Section 3). Goldeneyes were the next most abundant diver but were one-fourth as numerous as scaup.

Table 4. Minimum density and total number criteria used to designate sites of high density.

	Minimum density (birds/km^2)	Minimum number in station
Loon	20	40
Grebe	10	20
Tubenose	1000	1000
Cormorant	100	100
Goose and Swan	500	1000
Dabbler	500	1000
Diver	250	500
Sea Duck	500	1000
Merganser	25	50
Raptor	5	15
Crane	20	50
Shorebird	1000	2000
Gull and Jaeger	750	1000
Tern	100	250
Alcid	1000	1000
Corvid	50	50
Other Passerine	50	100

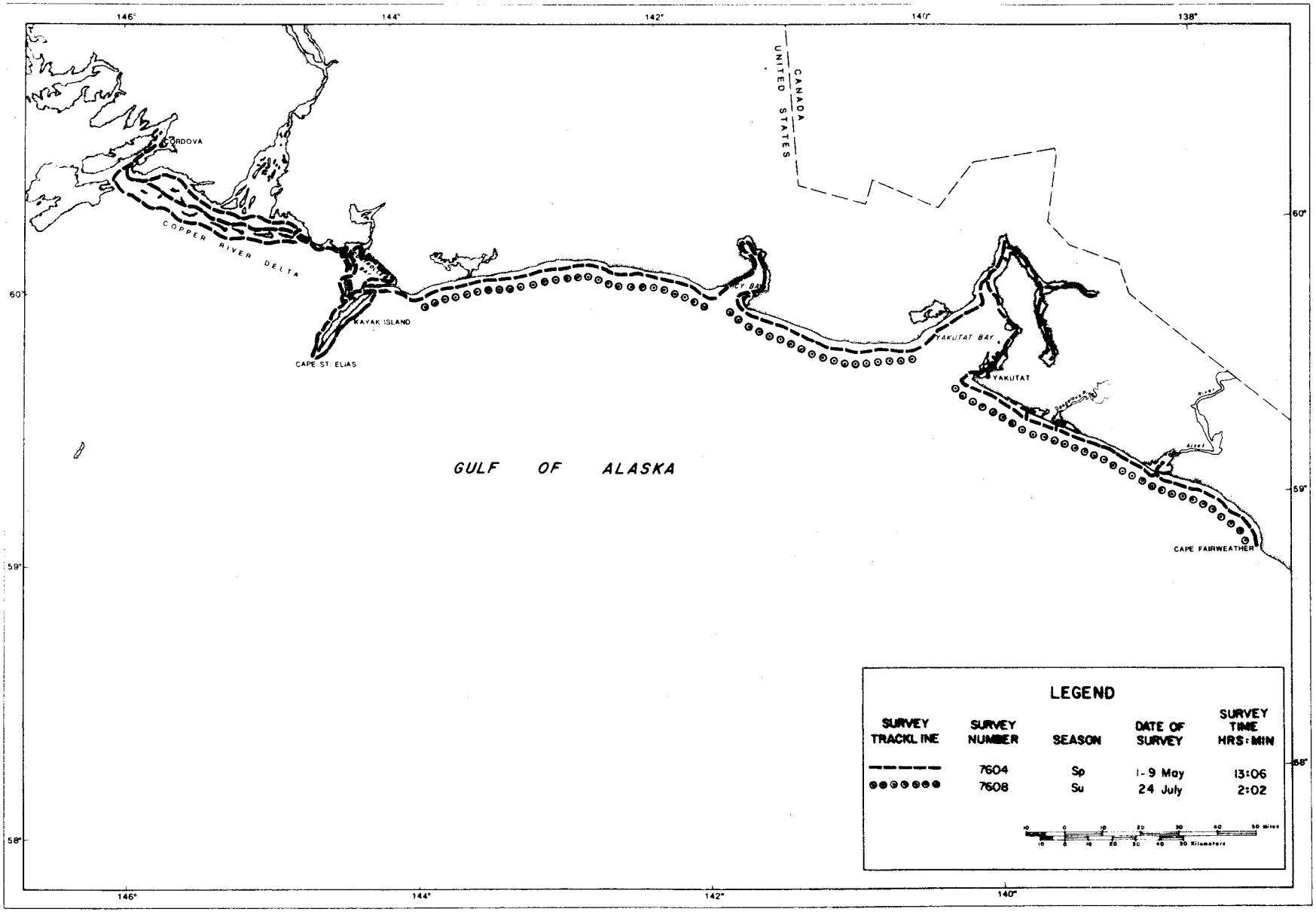


Fig. 8. Tracklines of aerial bird surveys in Northeast Gulf of Alaska, 1976.

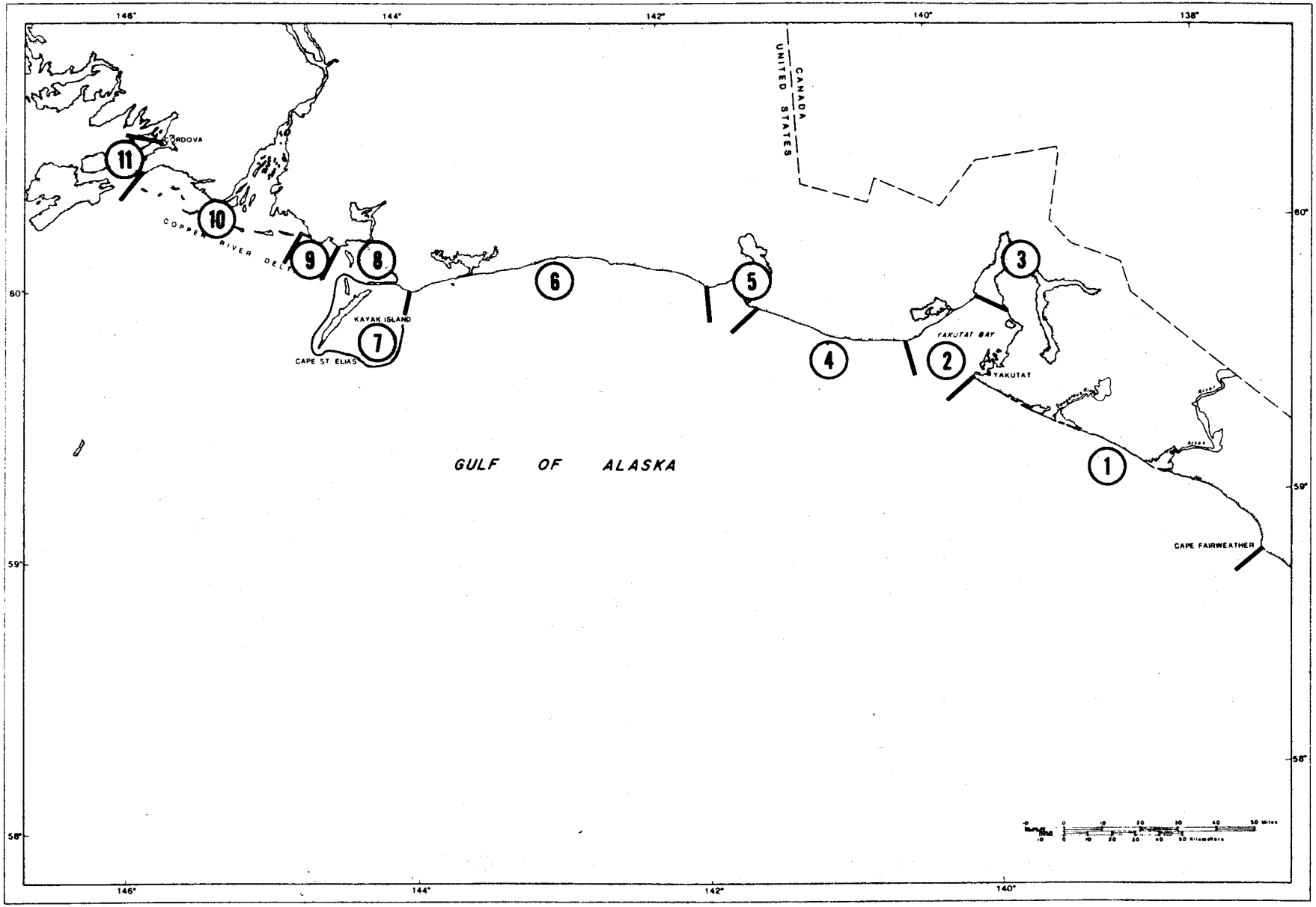


Fig. 9. Physiographic subdivision of Northeast Gulf of Alaska for bird density analysis. Each numbered section contains several survey stations.

Table 5. Bird density by section of coastline in Northeast Gulf of Alaska, spring and summer 1976. See Figure 9 for section boundaries. (T=trace).

	Spring Densities (birds/km^2)												Summer Densities (birds/km^2)				
	Section of Coastline												Section of Coastline				
Bird Group	1	2	3	4	5	6	7	8	9	10	11	Total	1	4	5	6	Total
Loon	T	2	T	T	1	T	T	1	1	1	T	1	T	T		T	T
Grebe		T	T				T	T	T	T	T	T					0
Tubenose												0					0
Cormorant	T	1	T	T	T		7	T	1	T	1	1	1				1
Goose and Swan	2	T	T	2	2	3	2	2	T	4	1	2					0
Dabbler	3	15	6	2	3	4	5	17	1	14	8	7					0
Diver	2	3	23	1	15	1	6	15	1	11	15	7					0
Sea Duck	T	4	26	T	46	3	30	3	27	4	20	9	3	2	252	88	49
Merganser	2	T	1	T	T	1	1	1	T	1	T	1					0
Raptor	T	T	T	T	T	1	T	T	1	T	T	T	T	T	T	T	T
Crane		T								1		T					0
Shorebird	24	4	22	2	38	24	98	138	7	222	316	67	T	13		14	7
Gull and Jaeger	7	7	20	38	55	81	163	12	774	32	76	45	106	4	59	677	284
Tern	7	4	2	23	34	5	T	2	T	4	T	7	33	4	19	48	32
Alcid		T	T		T		81		33		T	4					0
Corvid	T		T		T	T	T		T	T		T		T			T
Other Passerine	T				T	T	T		T	T		T		T			T
Other Bird								1		T		T					0
TOTAL	48	41	101	69	194	122	393	192	849	296	440	151	143	22	330	827	373

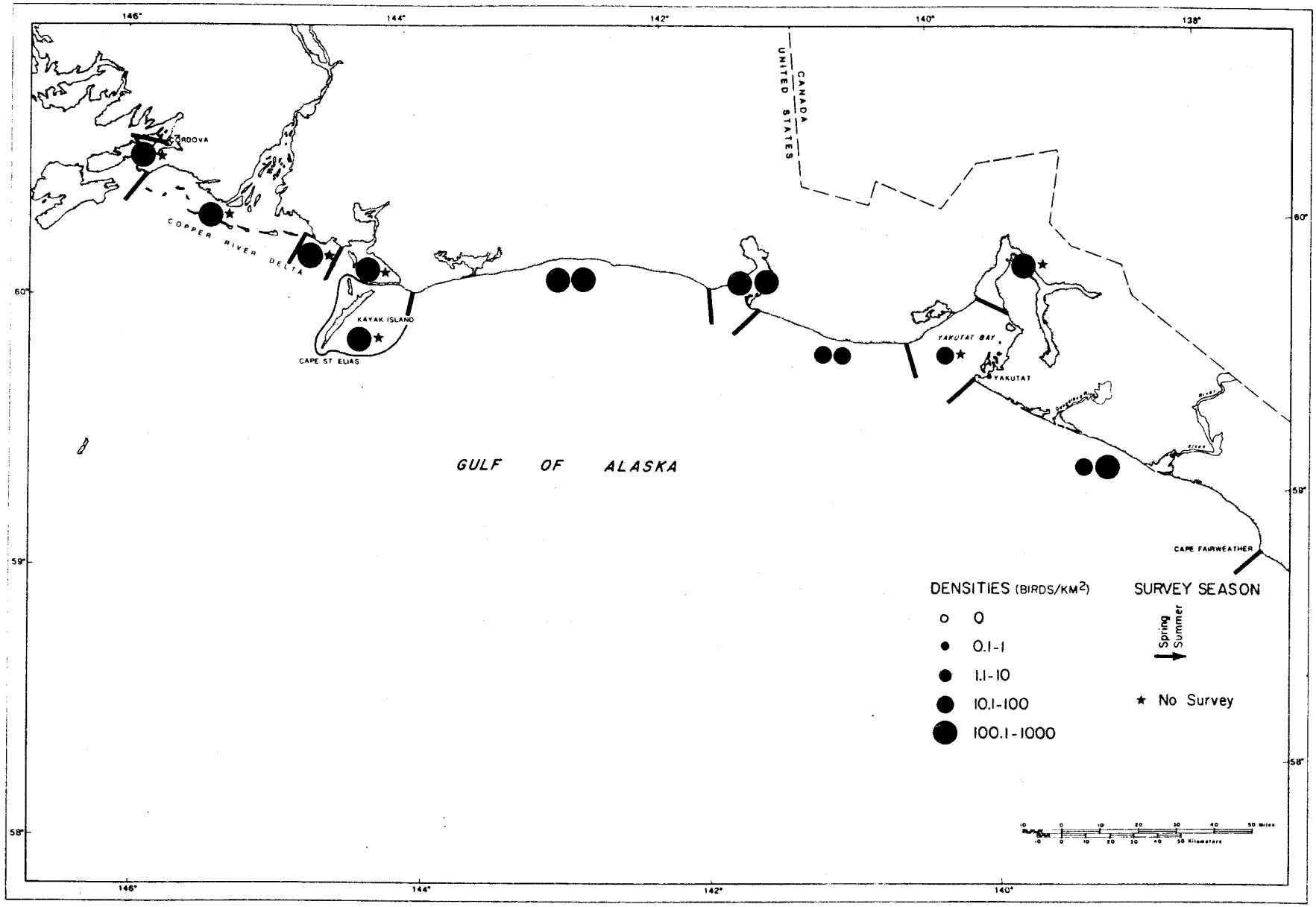


Fig. 10. Total bird density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

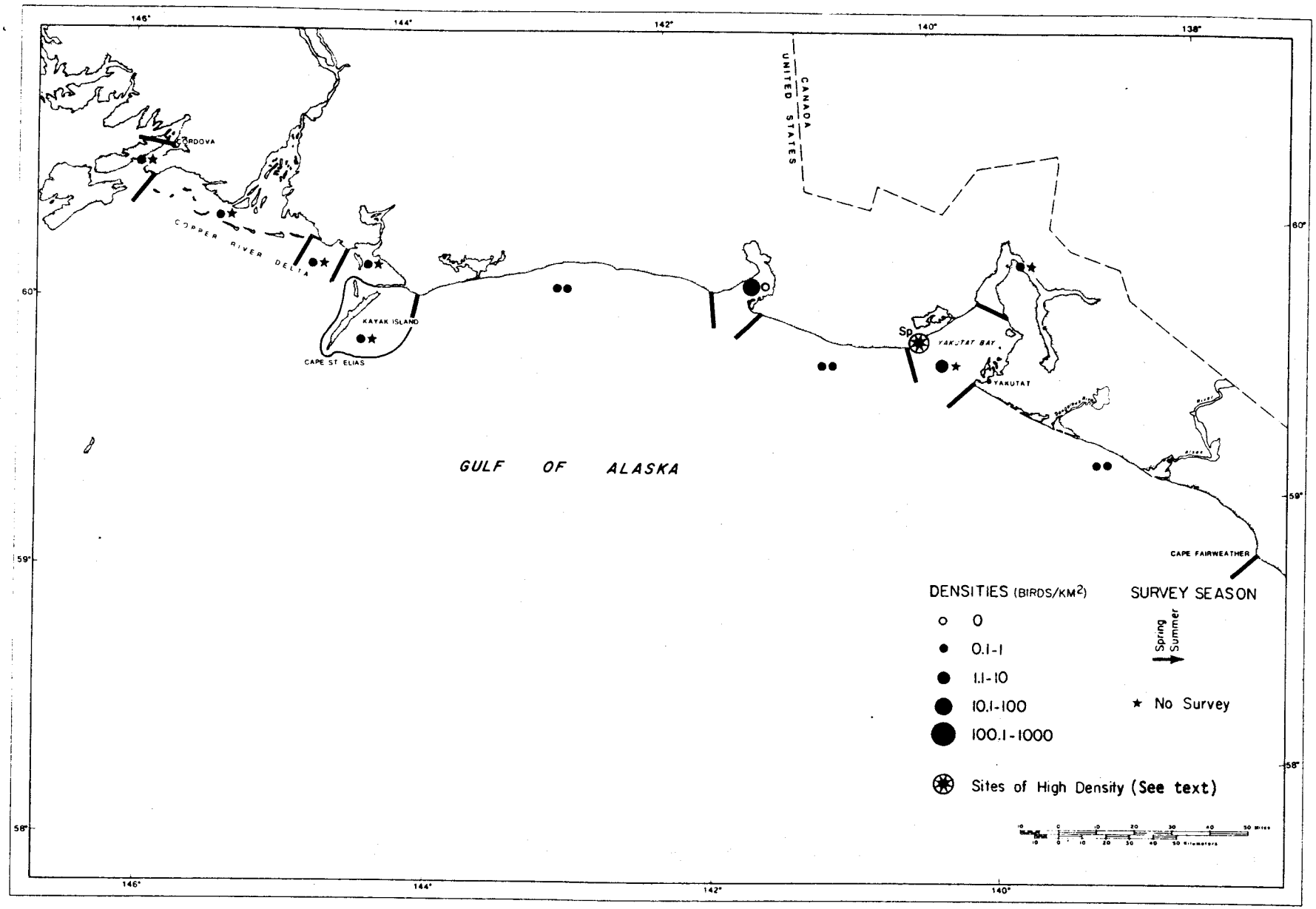


Fig. 11. Loon density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

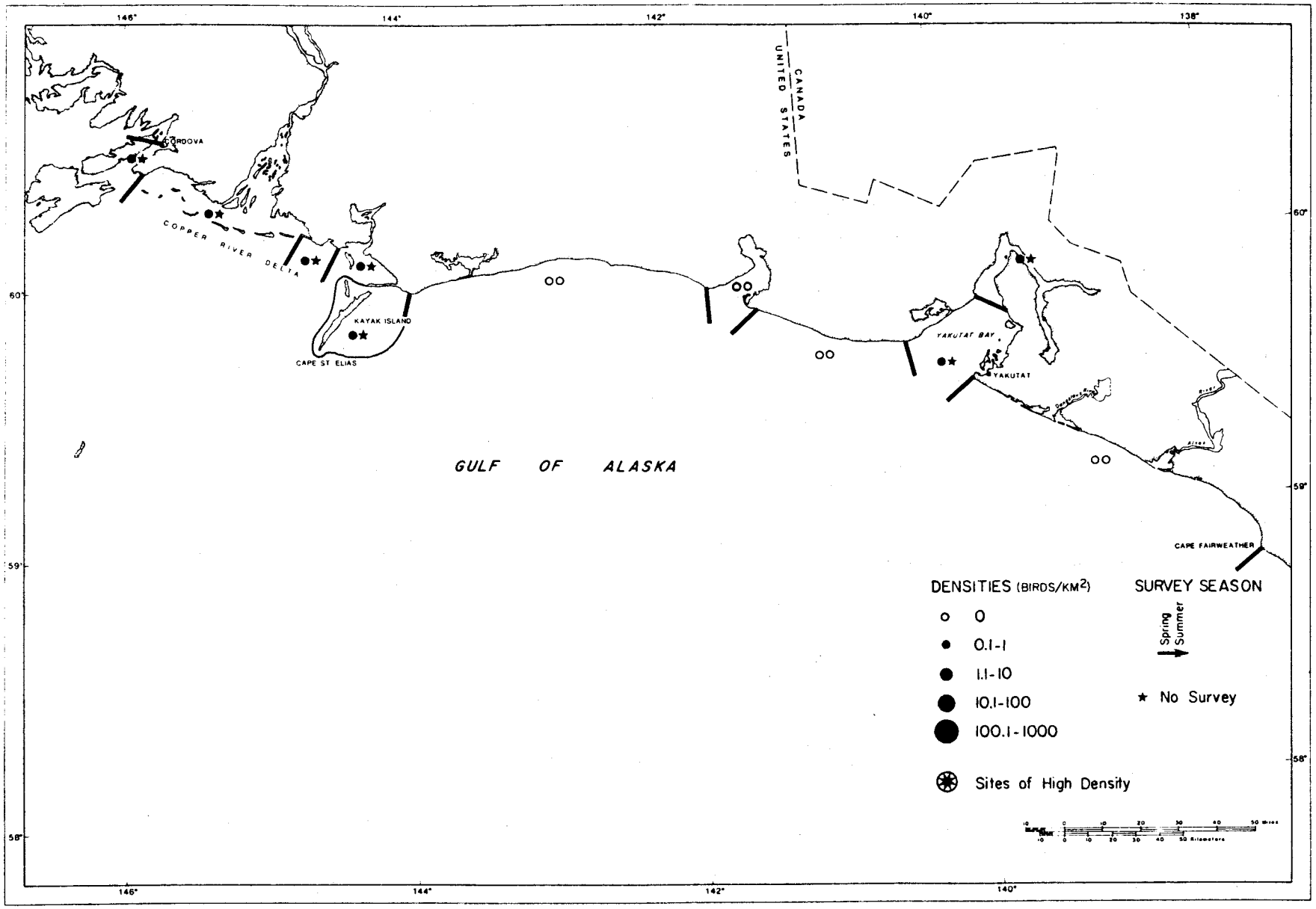


Fig. 12. Grebe density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

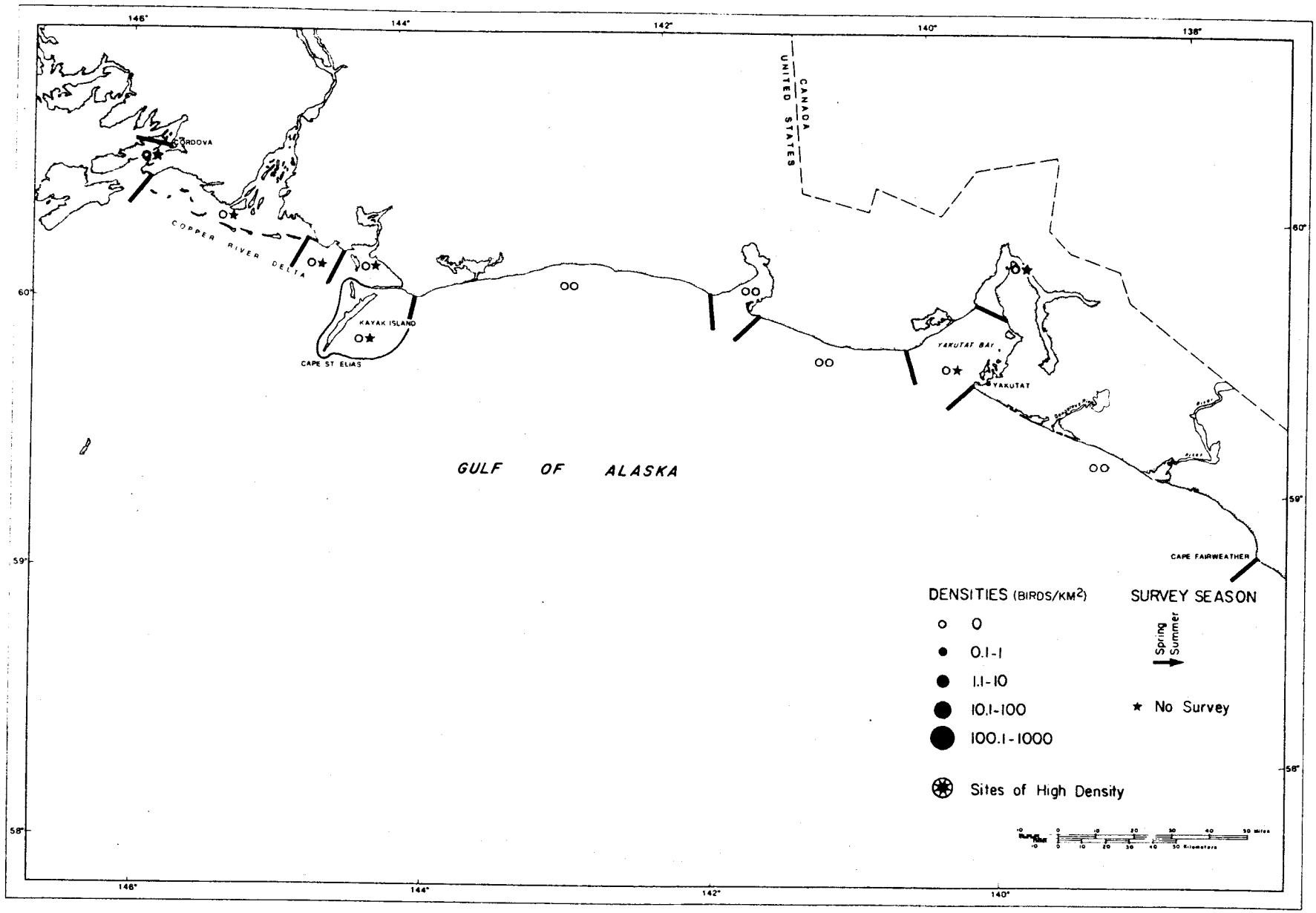


Fig. 13. Tubenose density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. No tubenoses were sighted.

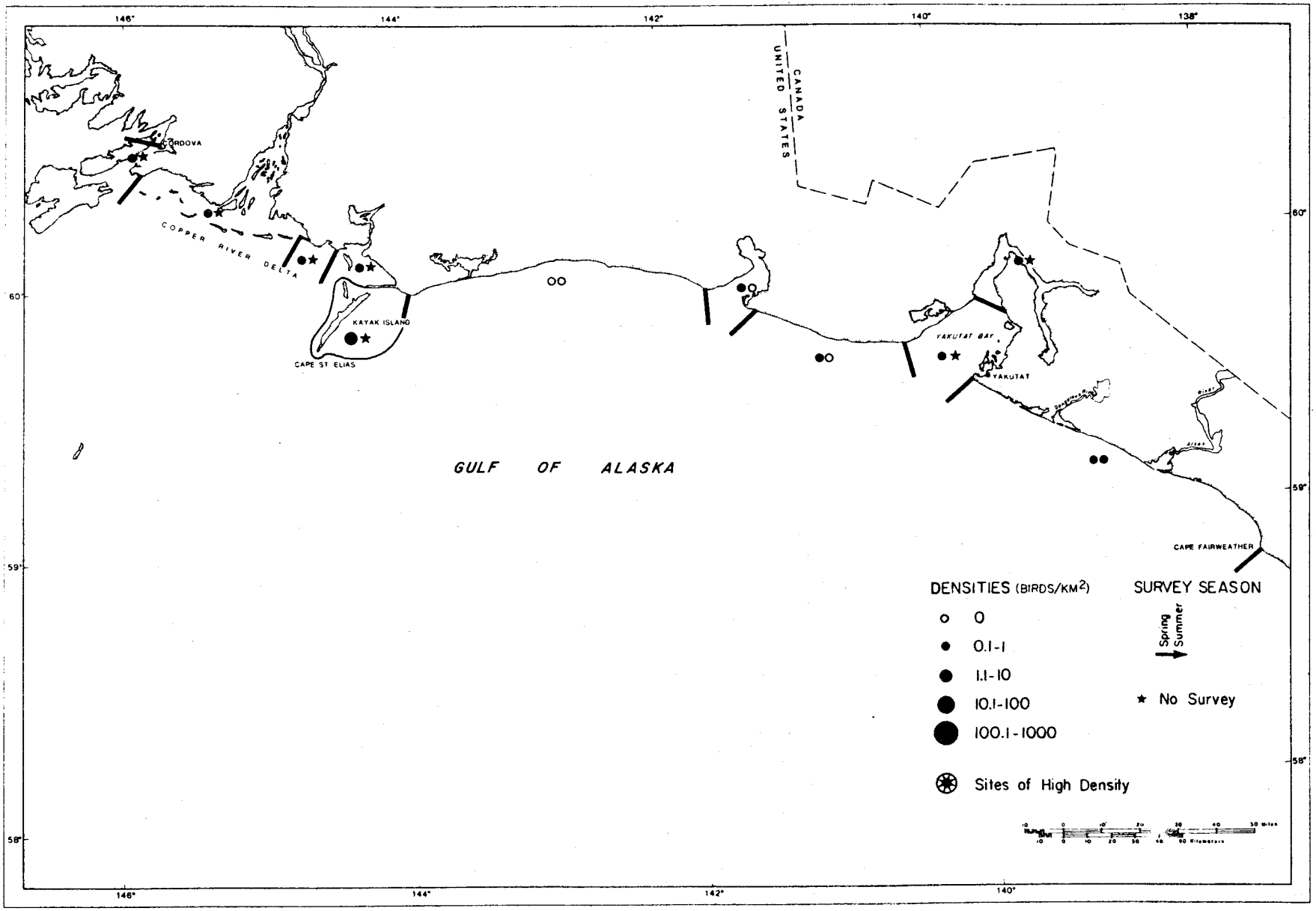


Fig. 14. Cormorant density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

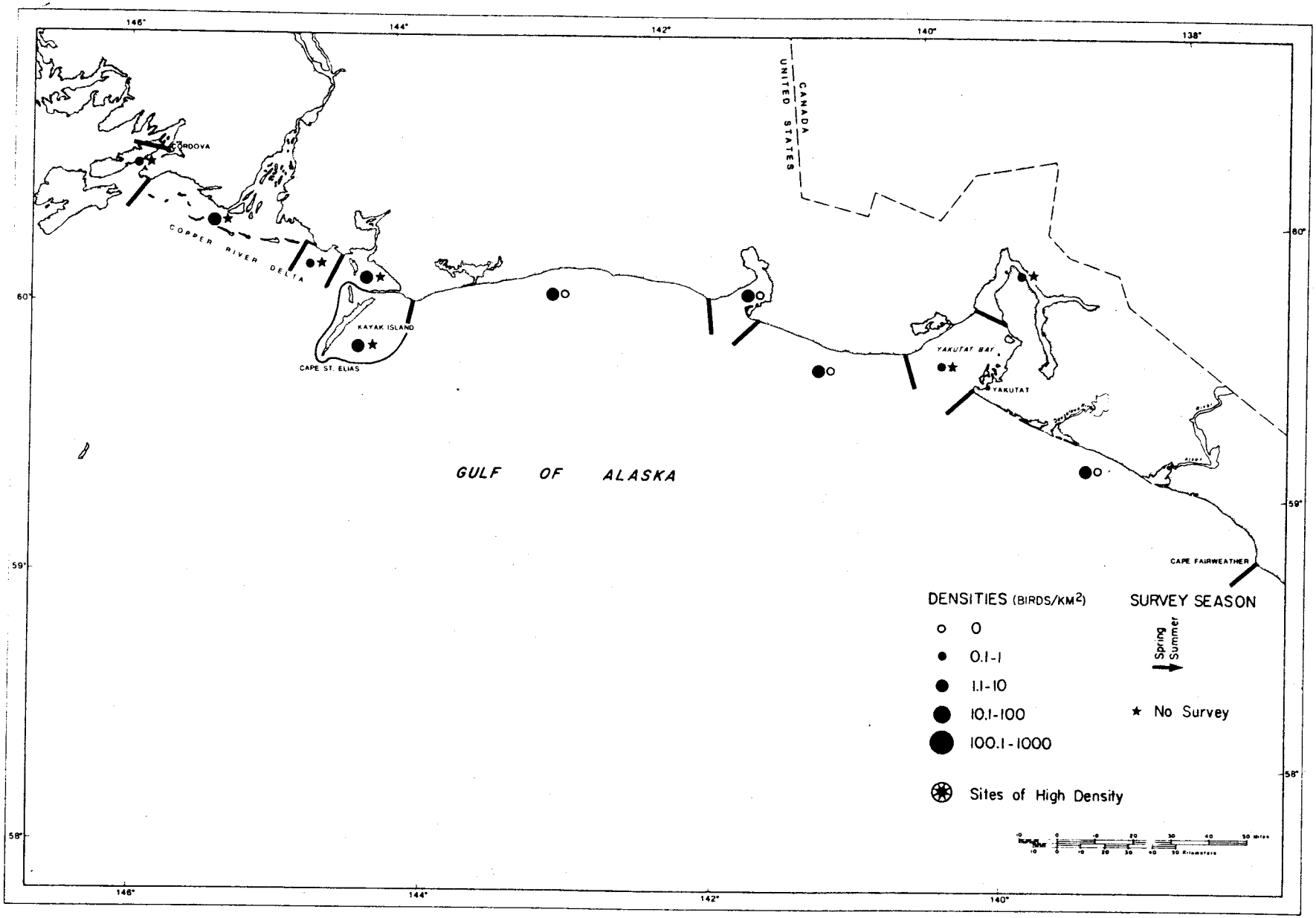


Fig. 15. Goose and swan density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

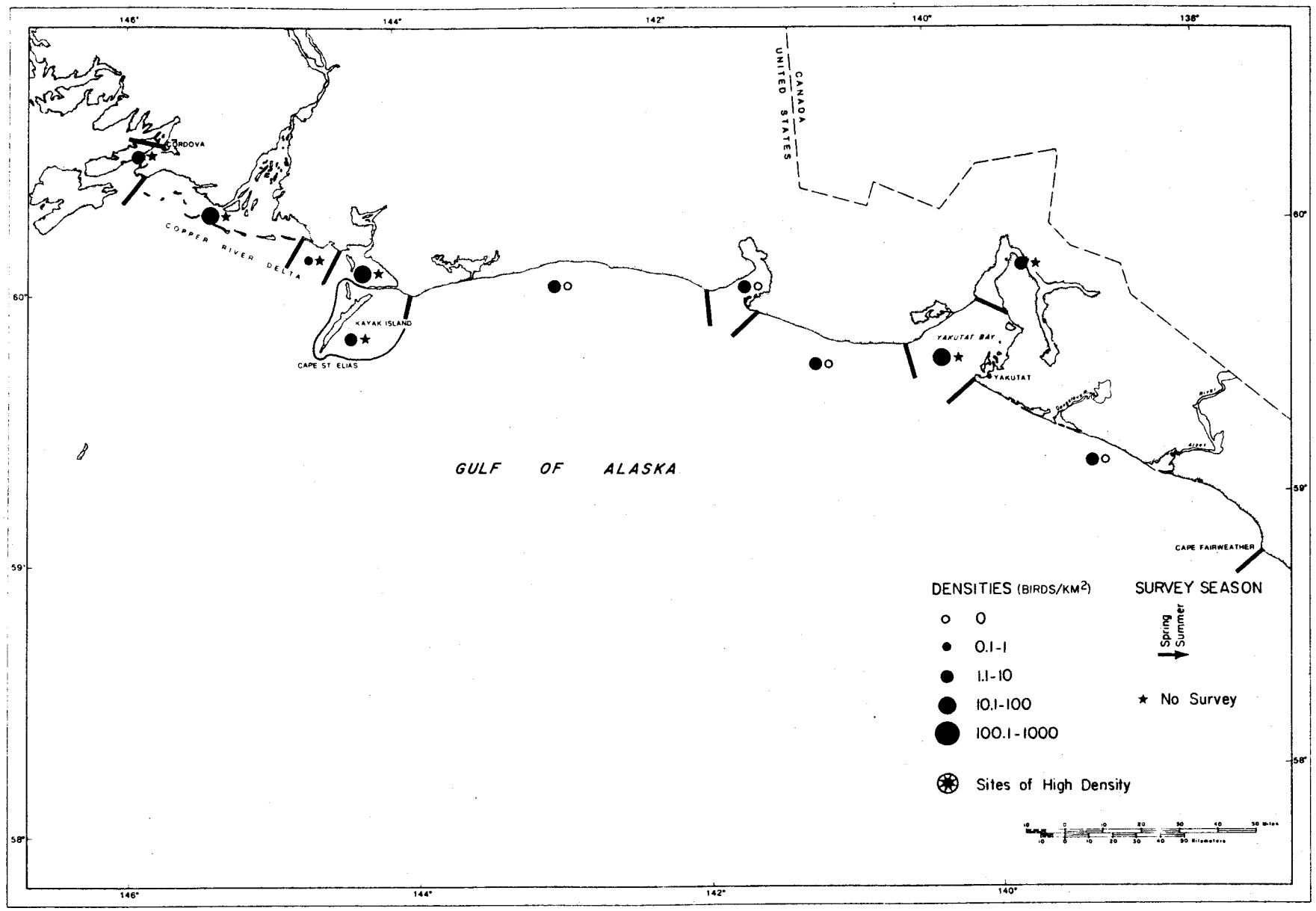


Fig. 16. Dabbling duck density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

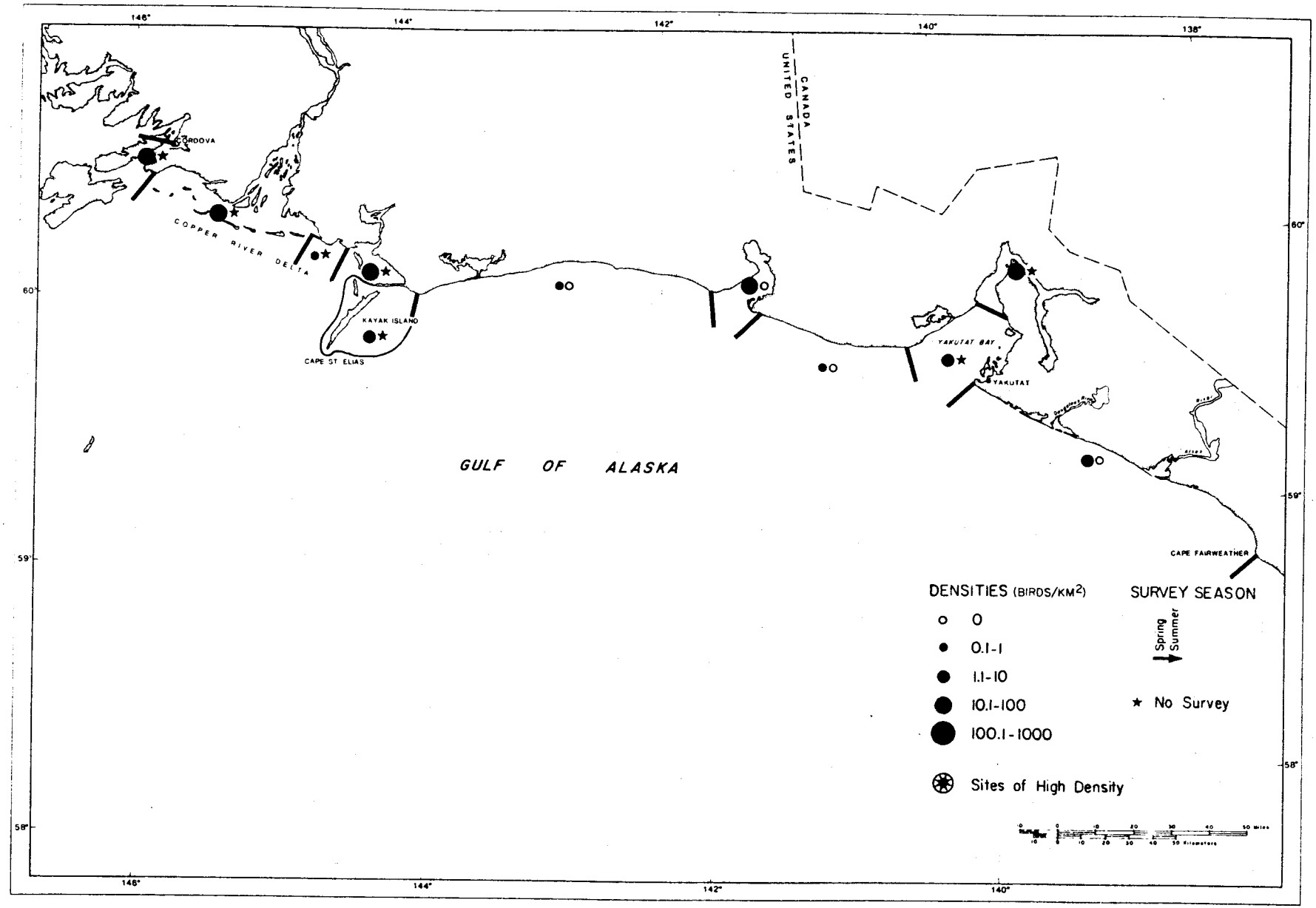


Fig. 17. Diving duck density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

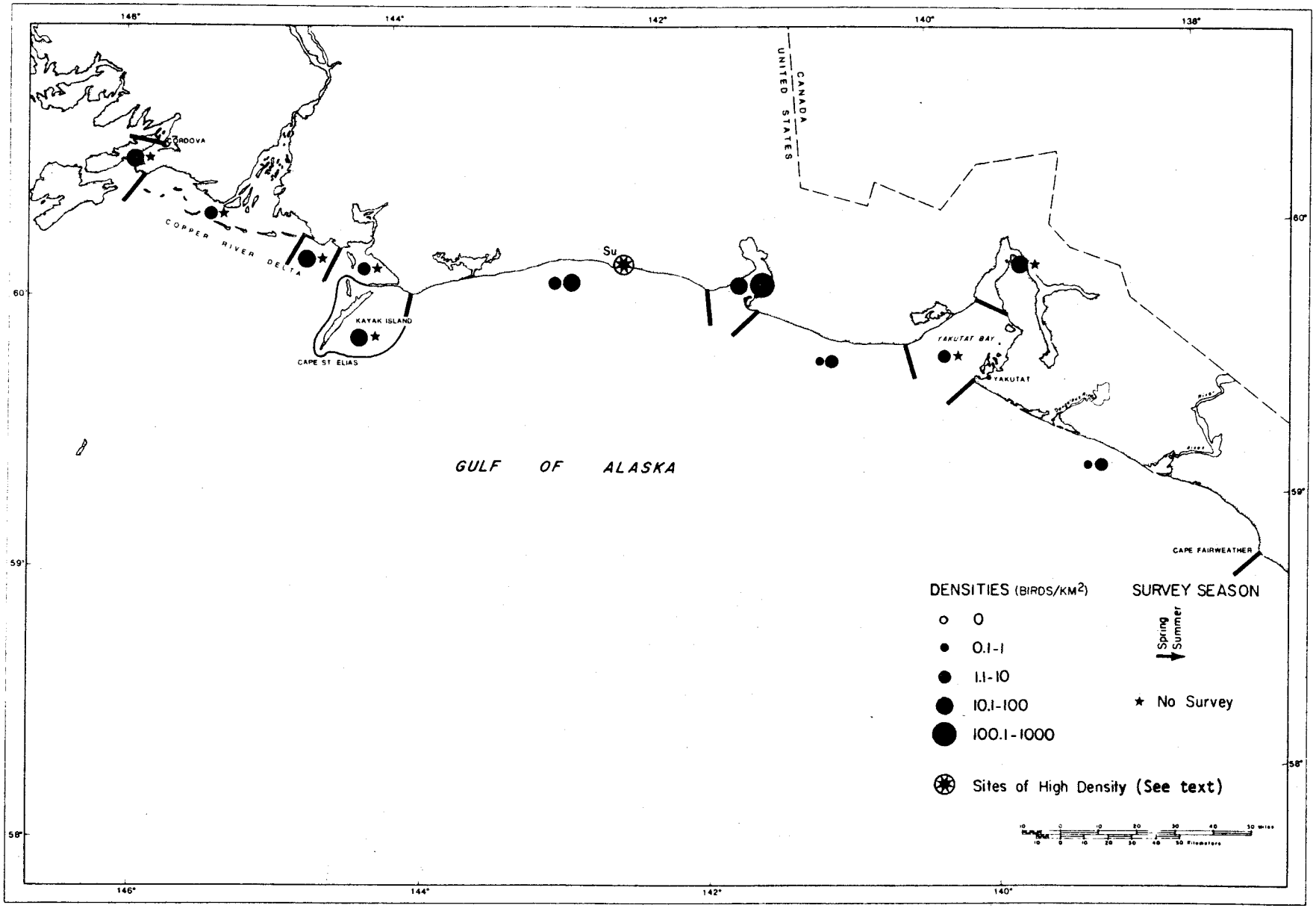


Fig. 18. Sea duck density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

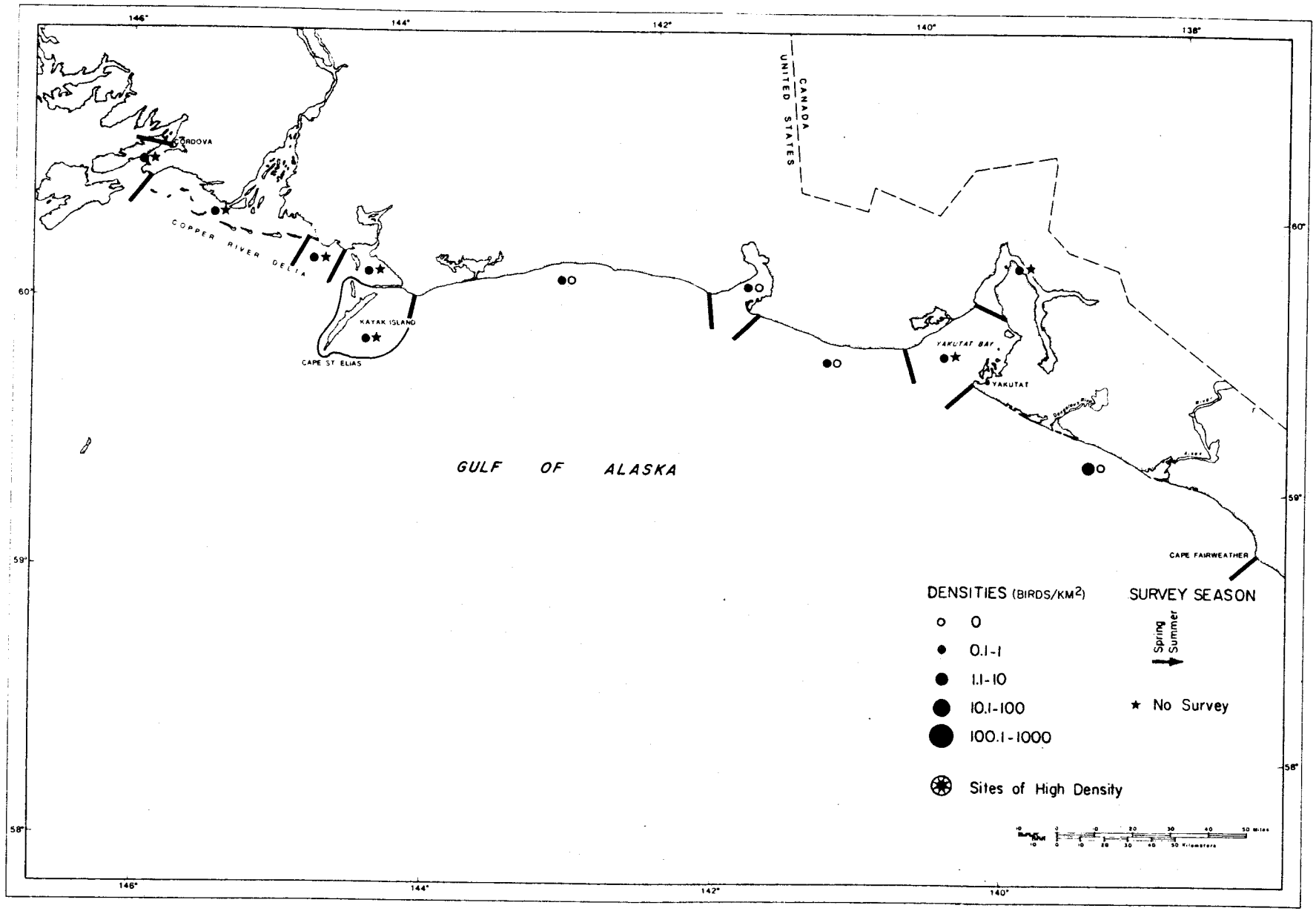


Fig. 19. Merganser density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

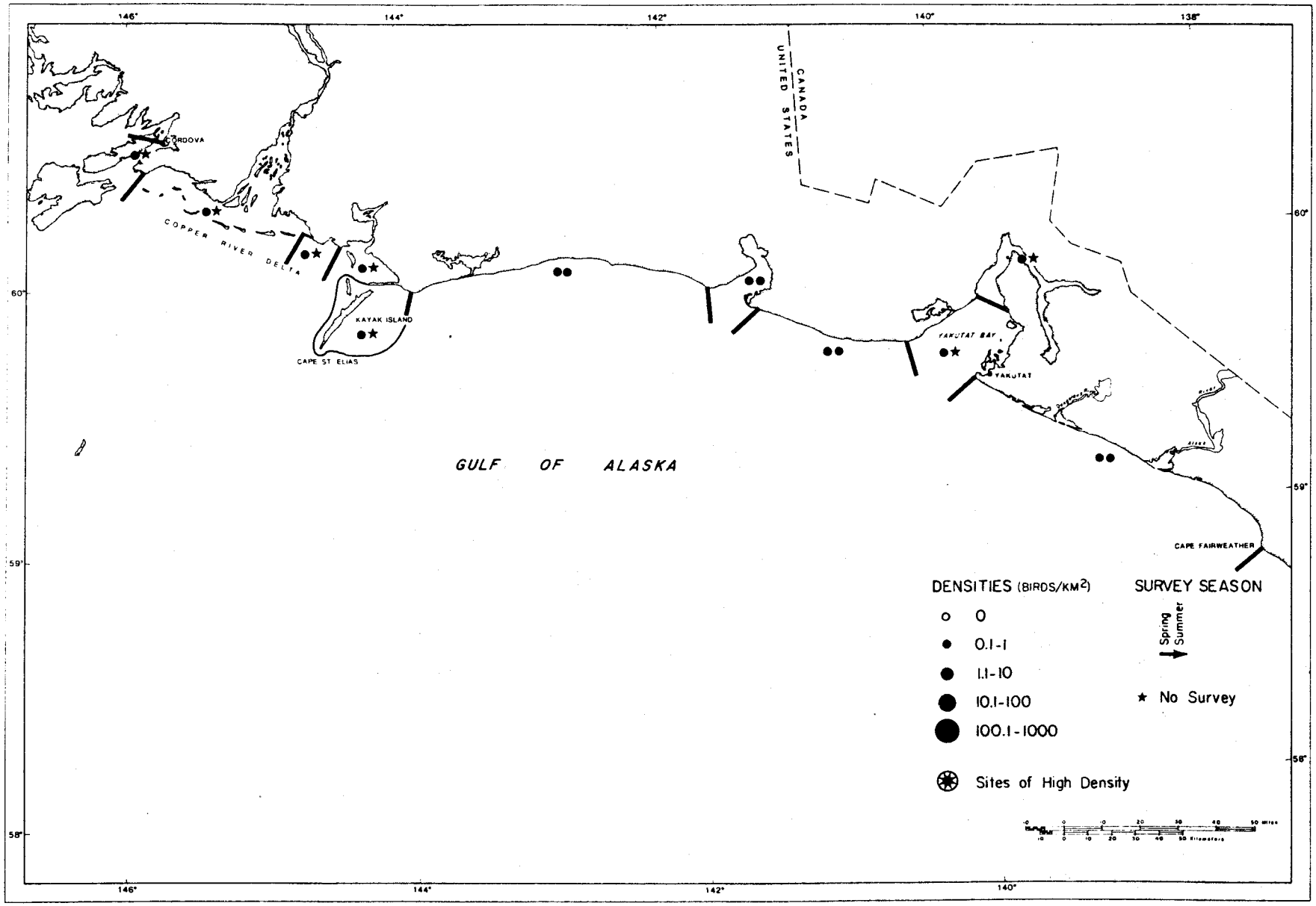


Fig. 20. Raptor density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

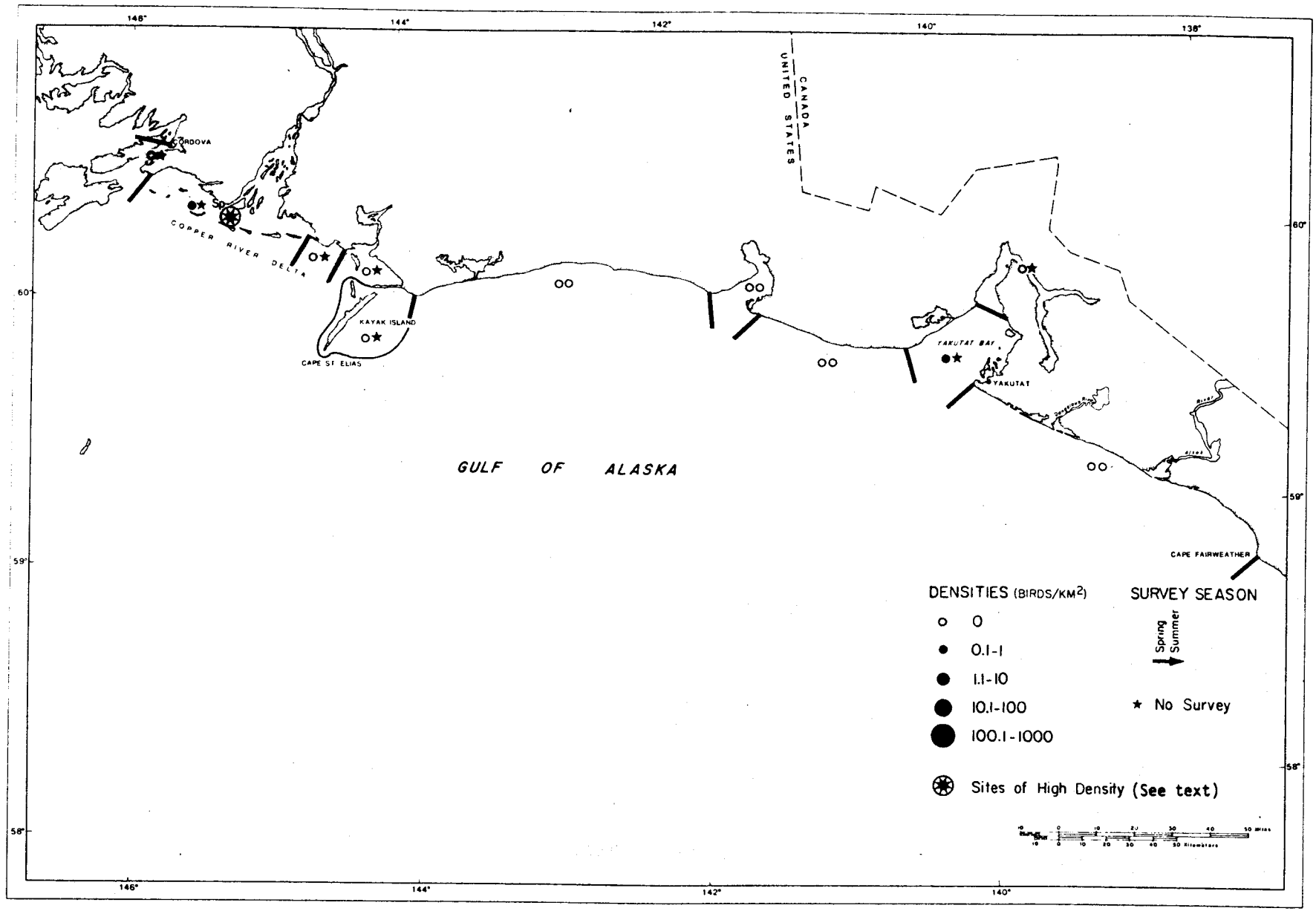


Fig. 21. Crane density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

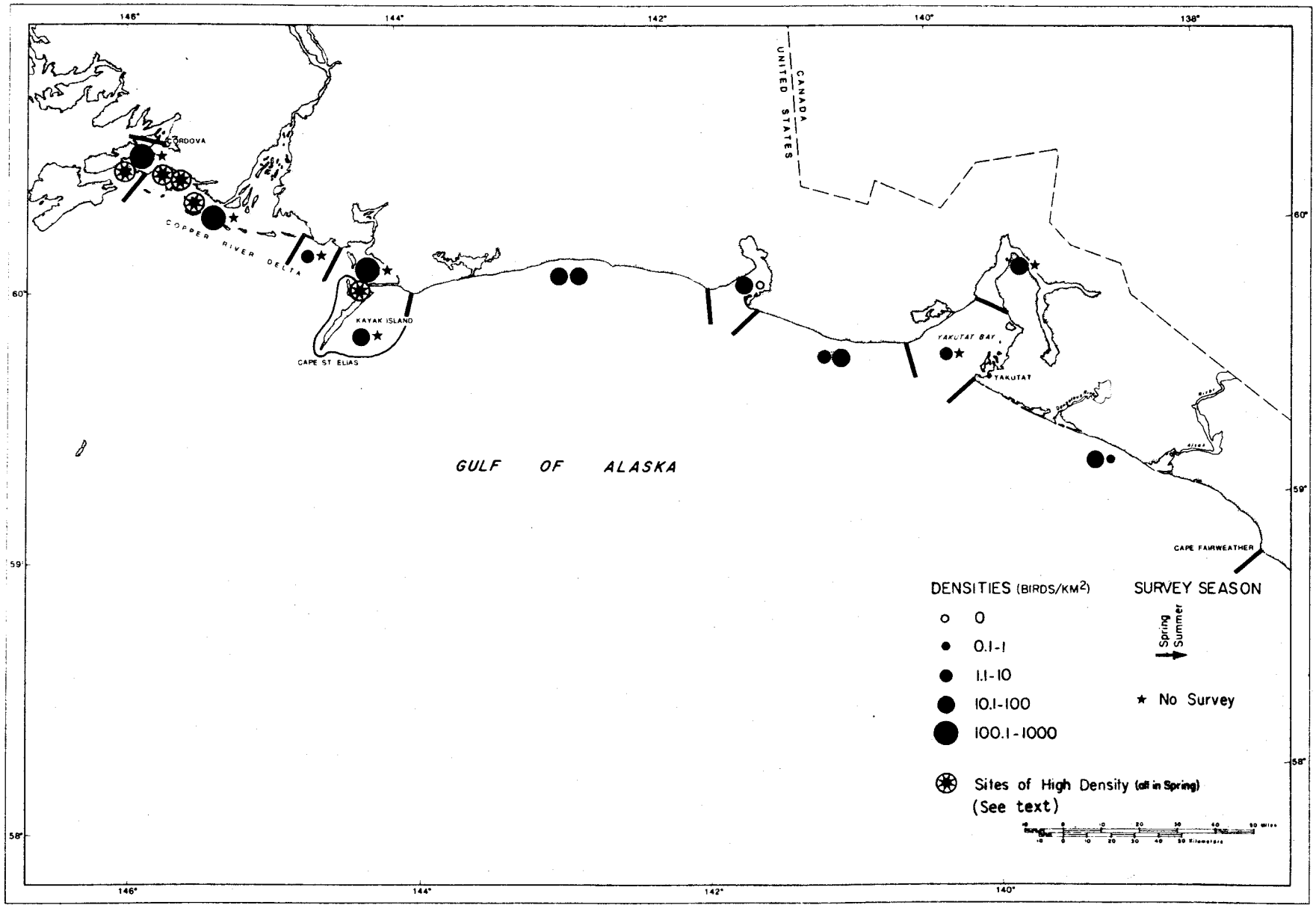


Fig. 22. Shorebird density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

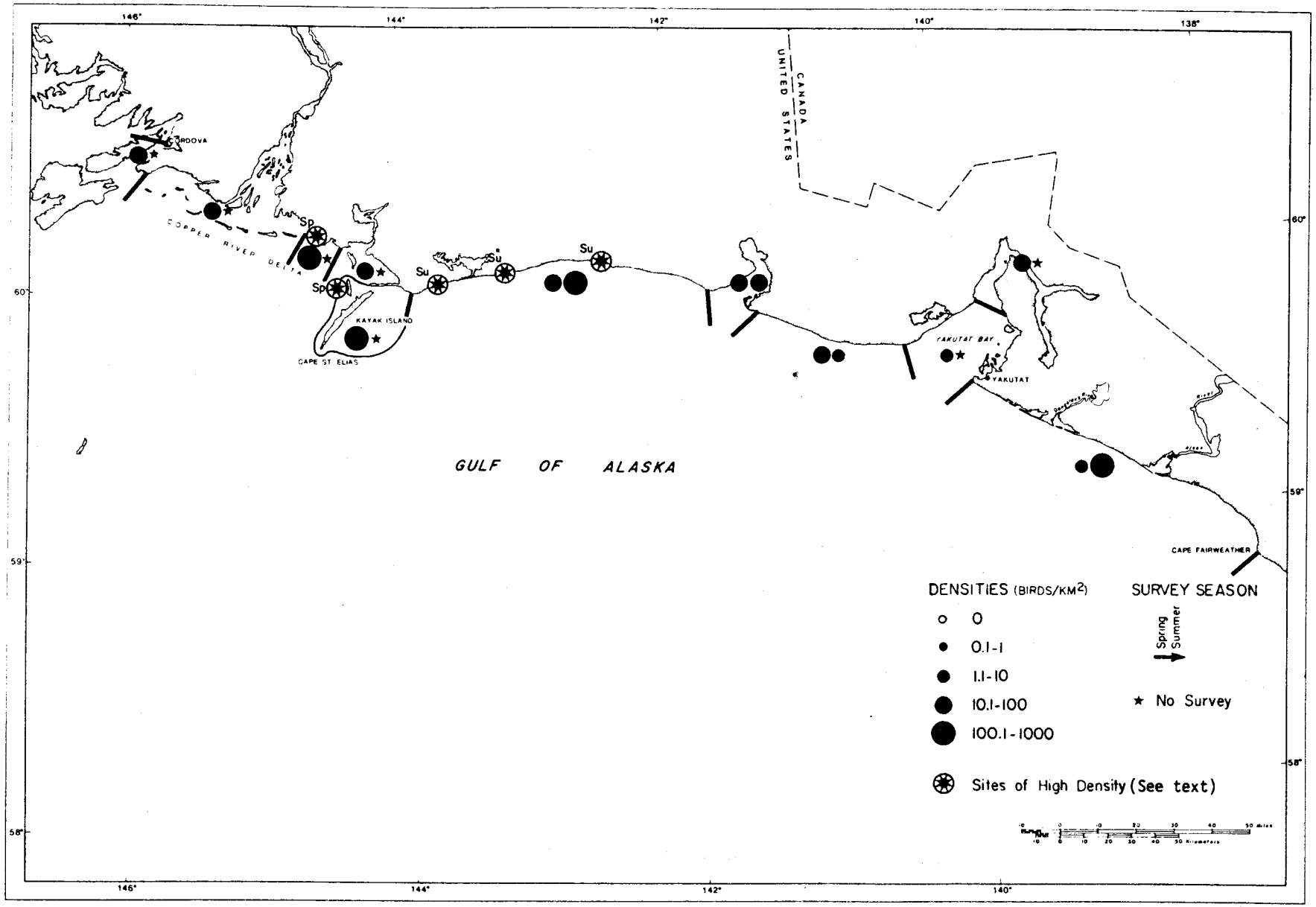


Fig. 23. Gull and jaeger density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

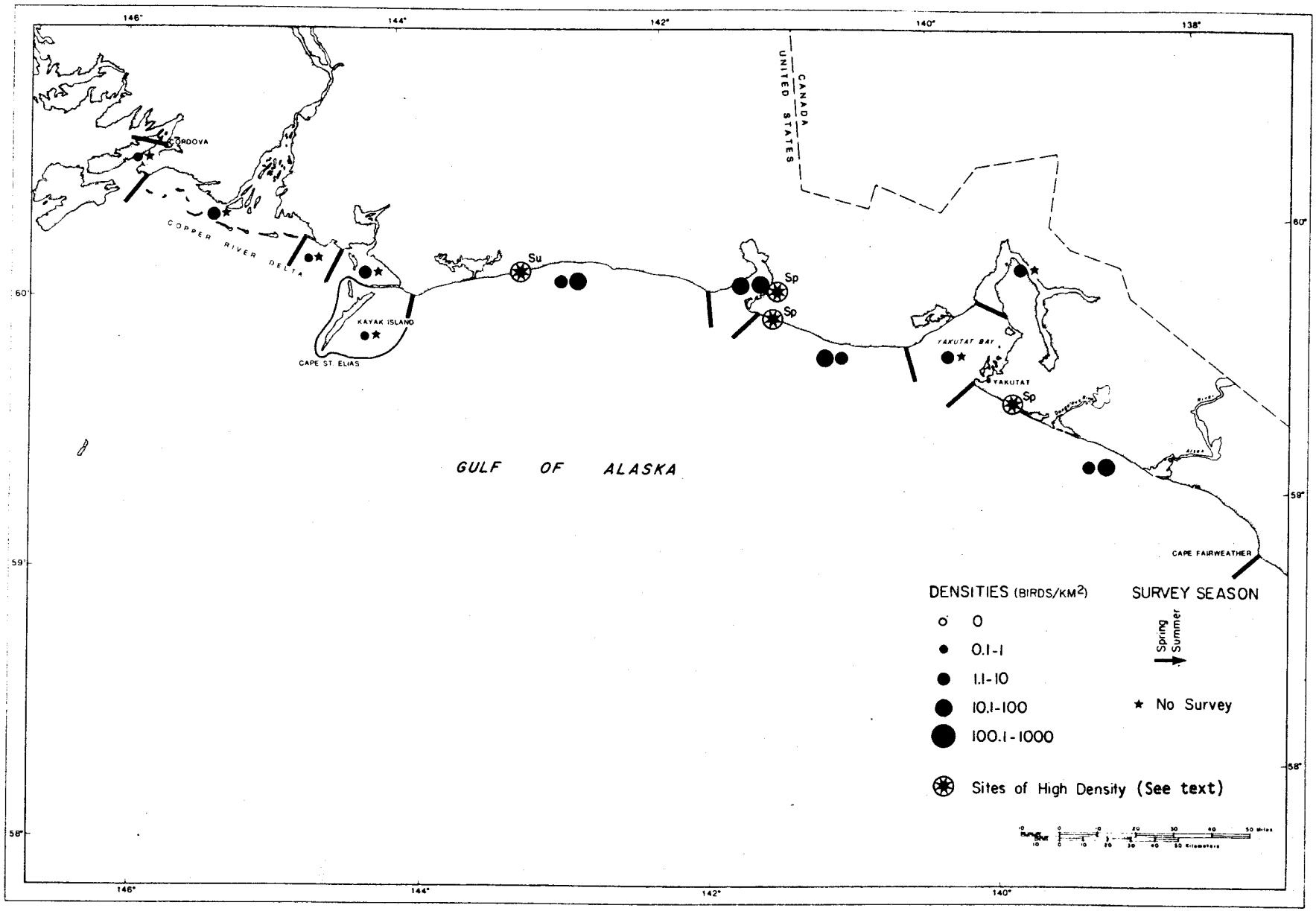


Fig. 24. Tern density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

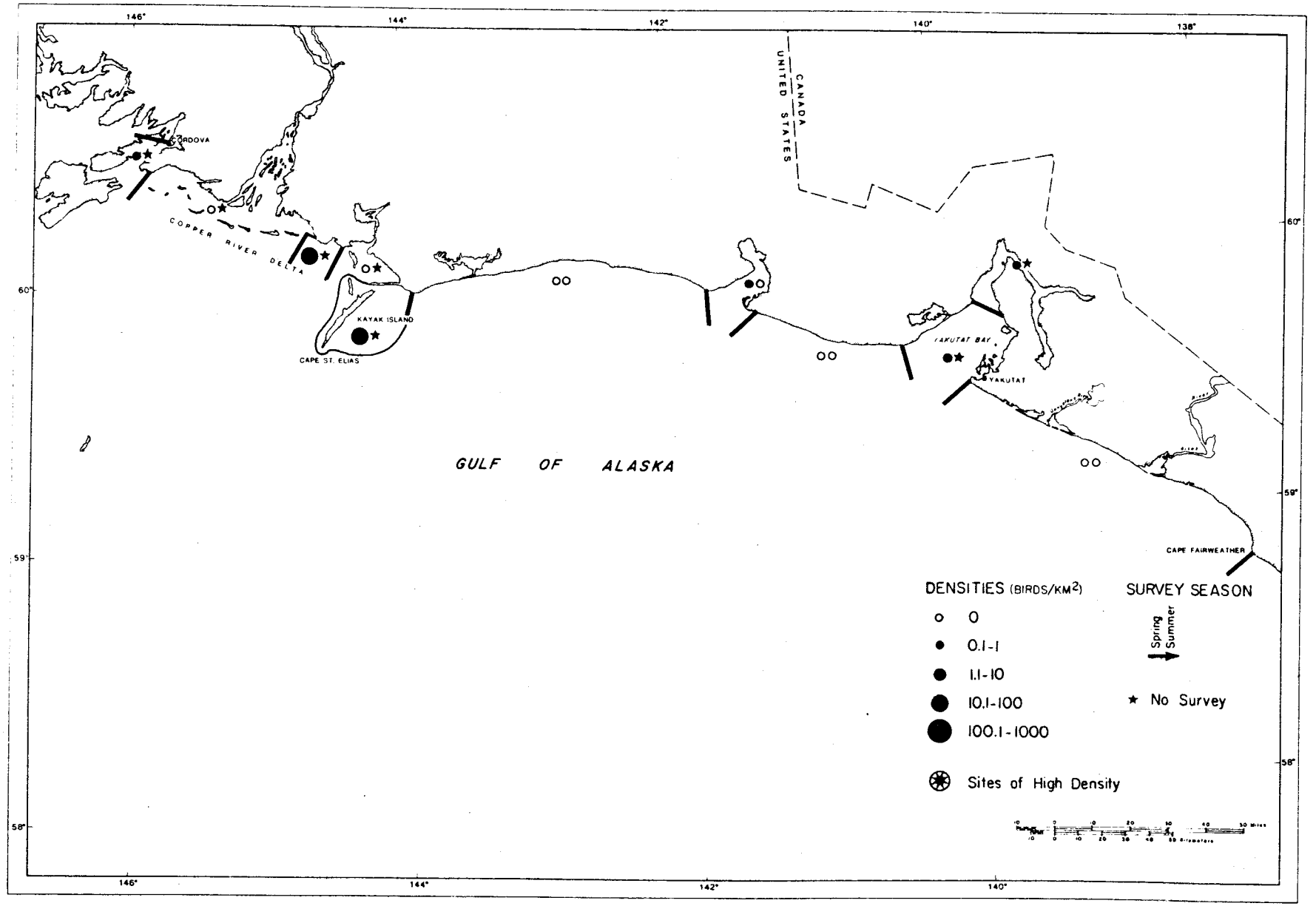


Fig. 25. Alcid density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

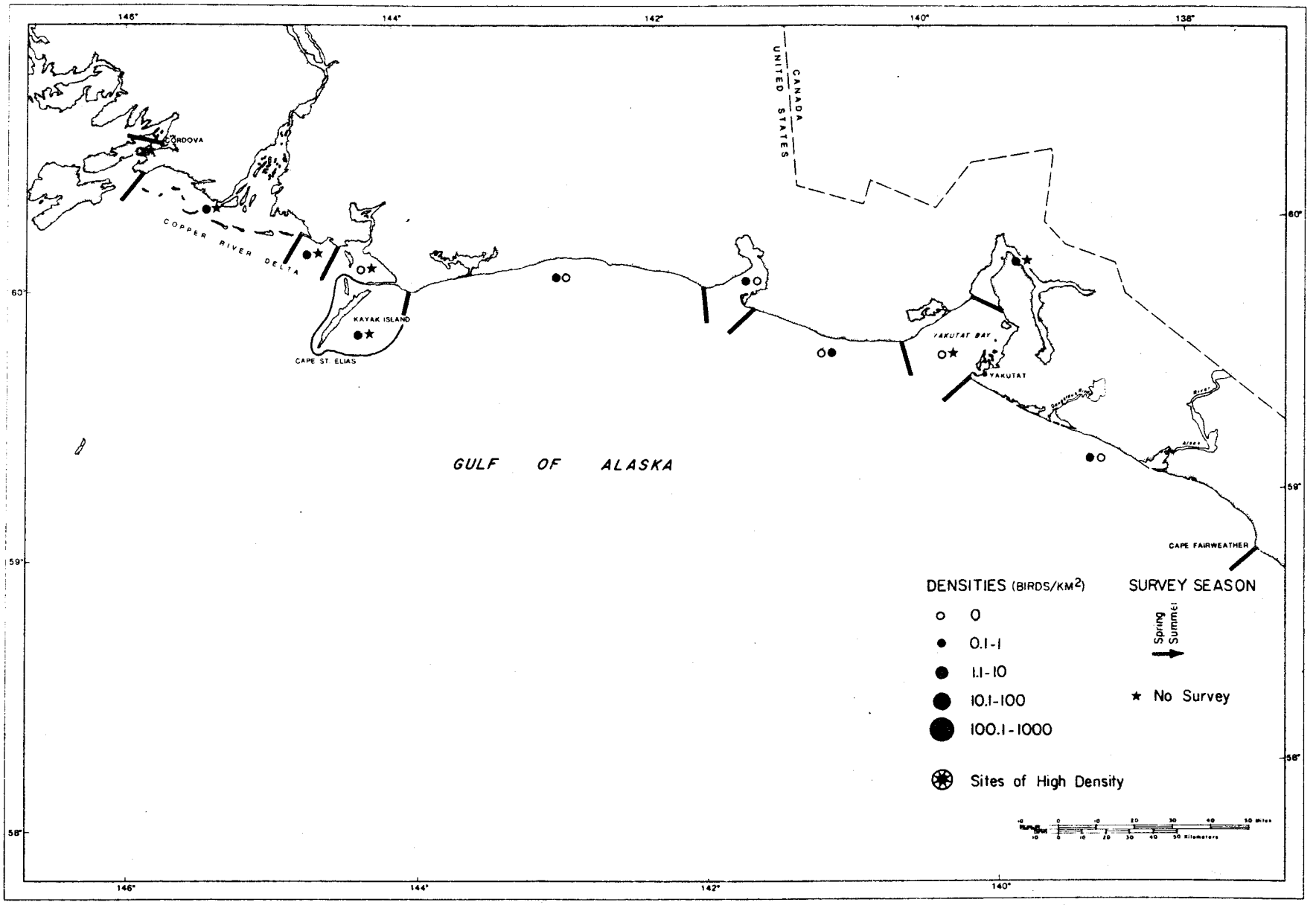


Fig. 26. Corvid density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

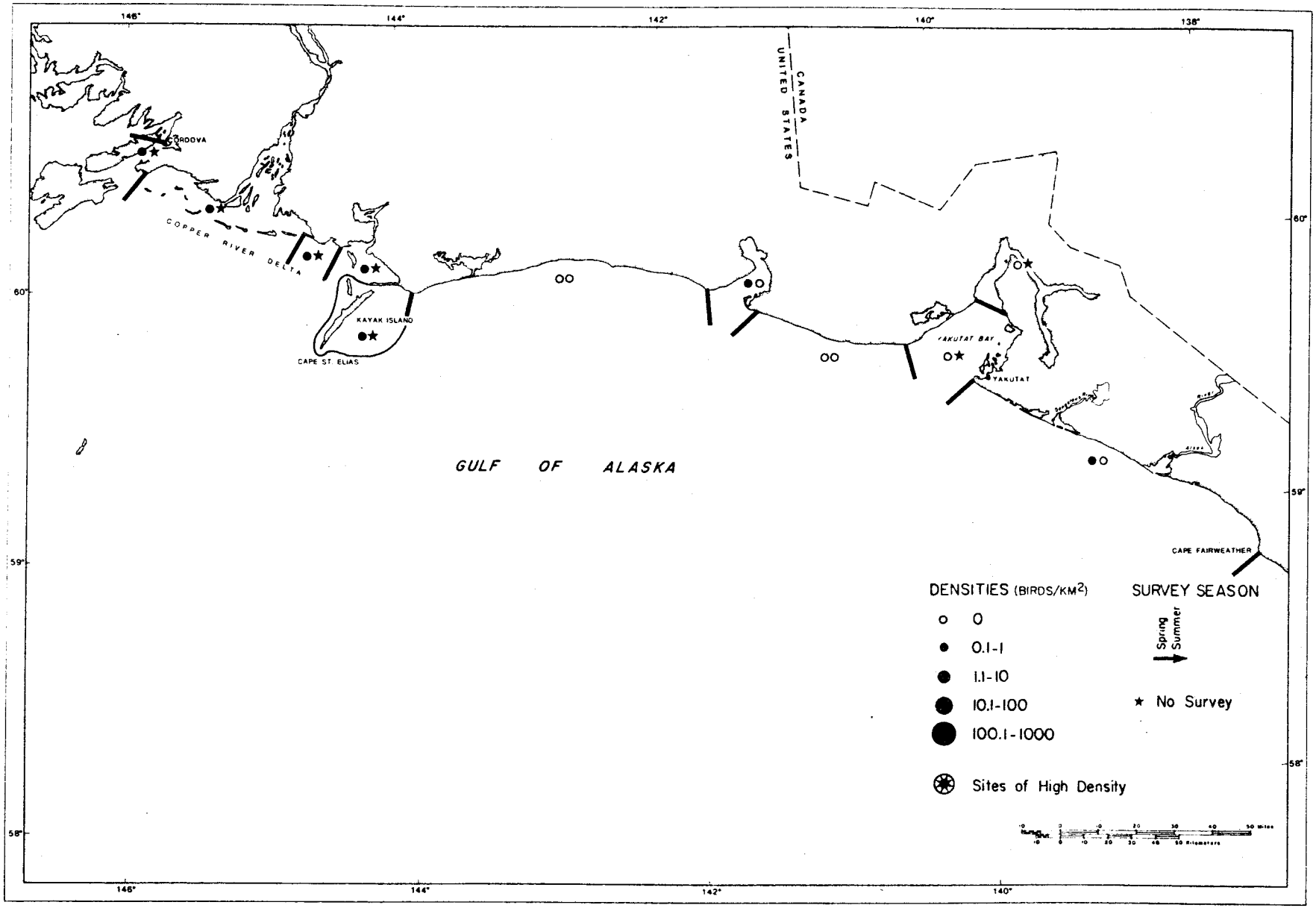


Fig. 27. Passerine (other than corvid) density by section in Northeast Gulf of Alaska during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

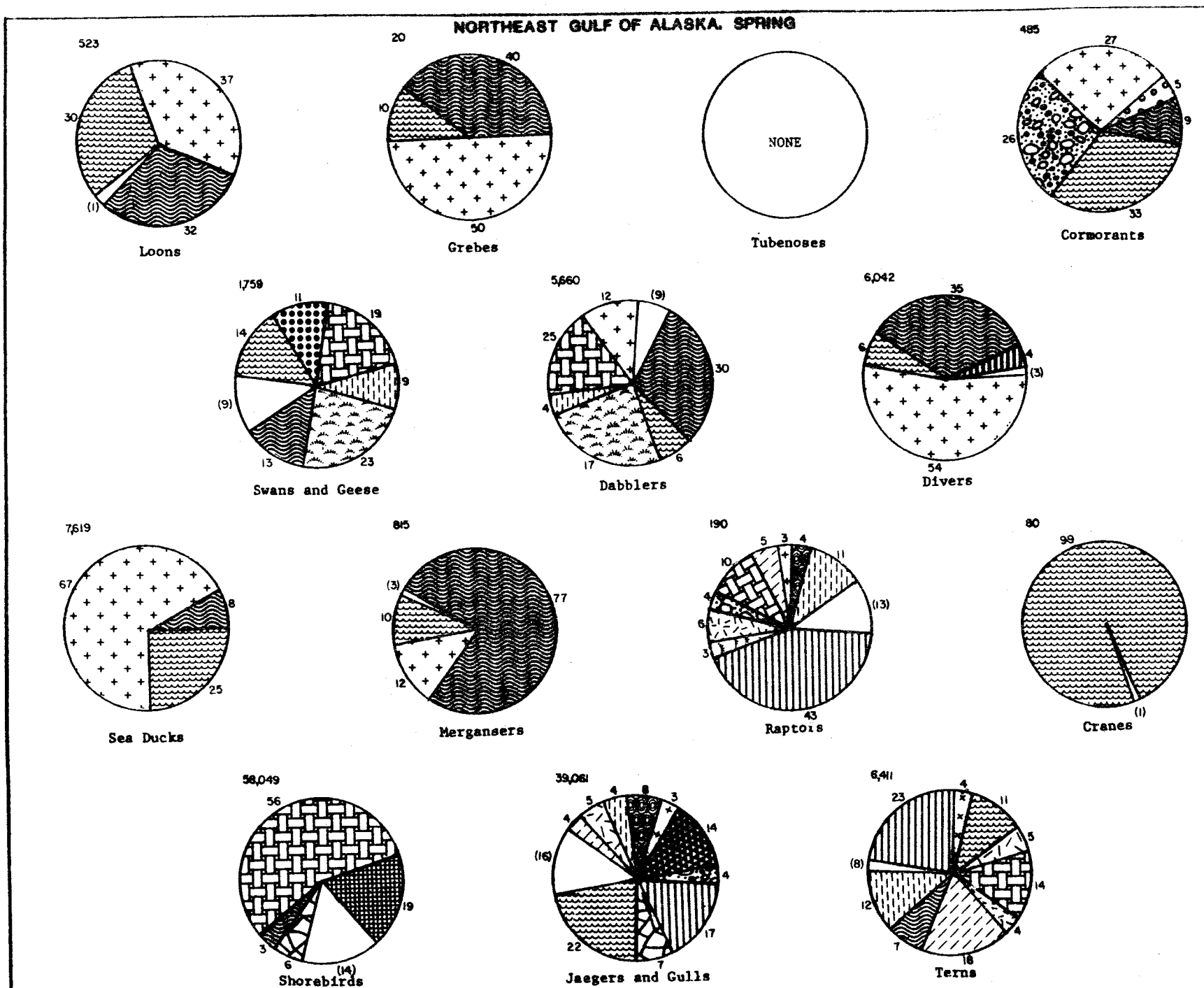
Spring migration of Arctic Terns (*Sterna paradisaea*) was near a peak in NEGOA at the time of the survey. Large flocks roosted at mouths of streams and on sandspits reaching highest densities in Icy Bay (34 birds/km^2) and on the coast from Yakutat Bay to Icy Bay (23 birds/km^2). Numbers of terns were also high (1751) from Cape Fairweather to Ocean Cape in Section 1 but the area searched was larger and, therefore, the density was less.

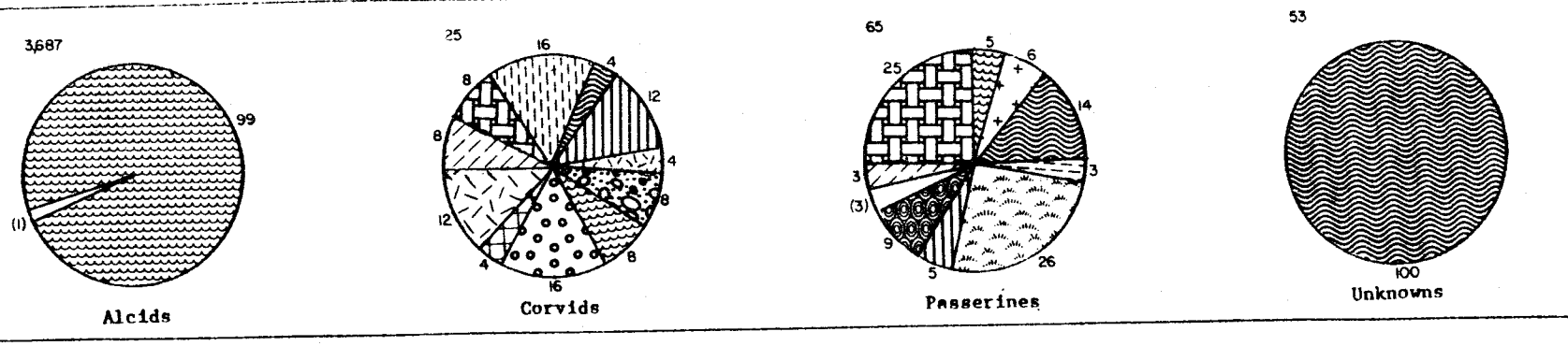
All other bird groups had densities less than 10 birds/km^2. The peak migration period for geese had already passed and those on the Copper River Delta had established breeding territories in fresh water areas above the supratidal survey region. Most geese were in estuaries of Section 1 (532 individuals) and on the Copper River Delta (457). Merganser populations, although never dense, were found most frequently in Section 1 where one-half of the total for NEGOA were found (403 of 815). Red-throated Loons (*Gavia stellata*) were the most common (72%) of identified loons. Loons were most abundant in Sections 2 and 10 with 150 and 164 individuals, respectively. Cormorants were abundant only in the Kayak Island vicinity where several small colonies were located. There were 7 birds/km^2 and 262 individuals in that section. Raptors [95% of which were Bald Eagles (*Haliaeetus leucocephalus*)] were found in every section, but were most numerous in Section 1 (49) and Section 6 (46). All sectional densities for raptors were 1 bird/km^2 or less. Few corvids [Common Ravens (*Corvus corax*) or Northwestern Crows (*C. caurinus*)] were observed in the entire region.

Habitat Usage - Because survey coverage included most NEGOA stations in spring, most littoral habitat types were searched for birds. However, no offshore transects were surveyed in this region and, therefore, offshore-dwelling species such as shearwaters and other tubenoses were not observed. Habitat preferences of each species group and observations of species groups on each habitat type for the spring survey are shown in Figures 28 and 29, respectively.

Loons were found in almost equal numbers in three water types, bay water, protected delta water and exposed inshore water. Cormorants shared nearshore water habitats with loons but were also frequently found on intertidal rocks where they dried their plumage. Geese and dabblers selected similar habitats and were most frequently seen at river mouths on floodplains, mudflats or on fluvial water. Over half of the diving ducks were on bay waters and most of the remainder on protected delta water. Only 6 percent were on exposed inshore waters. Sea ducks, the third most abundant species group, were found primarily on bay/fjord waters (67%) with lesser amounts on exposed inshore water (25%) and protected delta water (8%). Mergansers preferred the mouths of rivers and streams where over three-fourths of the mergansers were found.

Bald Eagles were uniformly dispersed along the entire coastline and were found in a variety of habitats. The predominant habitat for eagles was exposed sand beaches (43%) where they frequently roosted on drift logs and fed on carrion washed ashore. Most cranes overfly NEGOA in spring (Isleib and Kessel 1973) and those few we saw (80) were flying along exposed inshore waters. Shorebirds were by far the most abundant species


NORTHEAST GULF OF ALASKA. SPRING
523
37
30
(1)
32
Loons
20
40
10
50
Grebes
NONE
Tubenoses
485
27
5
9
26
33
Cormorants
1,759
11
19
14
9
(9)
13
23
Swans and Geese
5,660
12
(9)
25
30
4
17
6
Dabblers
6,042
35
6
4
(3)
54
Divers
7,619
67
8
25
Sea Ducks
815
(3)
77
10
12
Mergansers
190
5
3
4
10
11
4
(13)
6
3
43
Raptors
80
99
(1)
Cranes
58,049
56
19
3
6
(14)
Shorebirds
39,081
5
4
3
14
(16)
4
17
22
7
Jaegers and Gulls
6,411
4
23
11
5
(8)
14
12
4
7
18
Terns



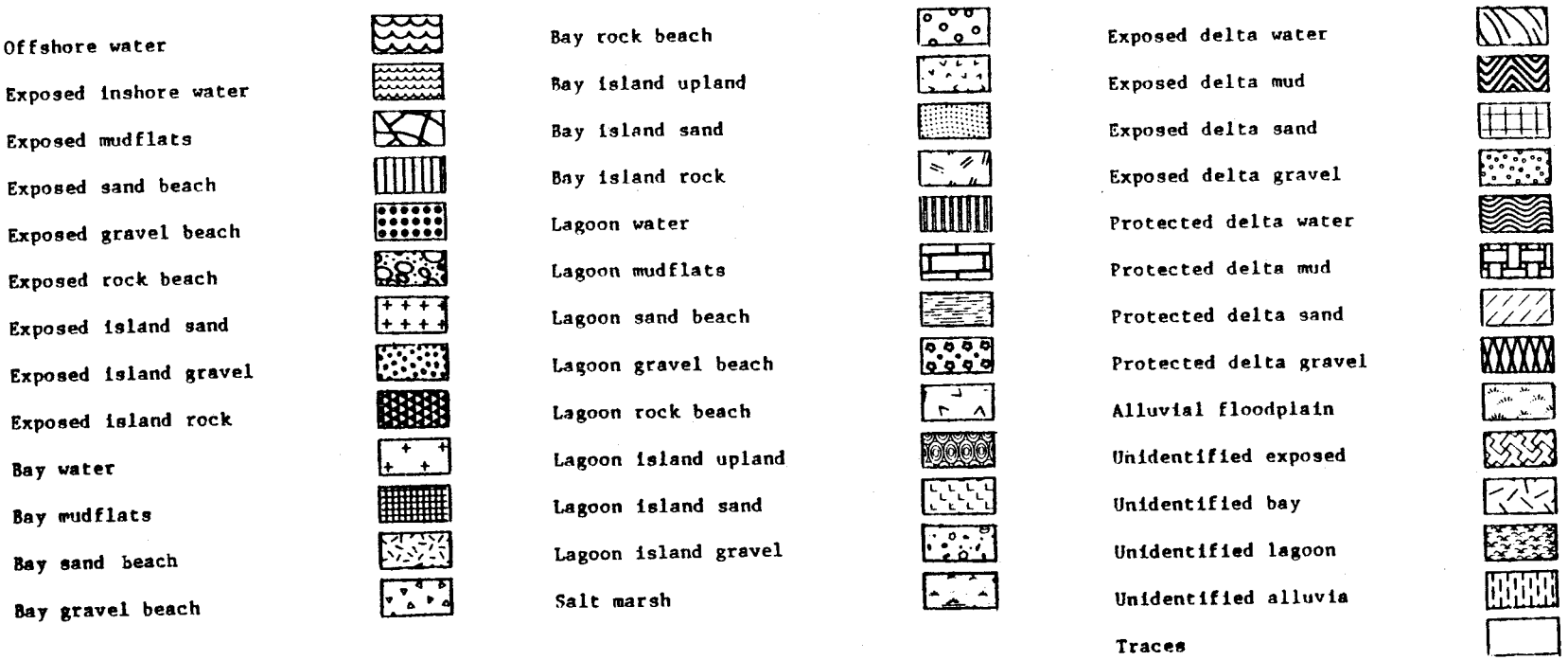
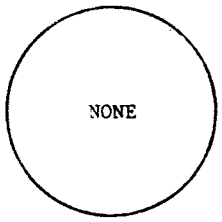
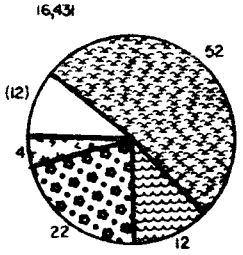


Fig. 28. Northeast Gulf of Alaska, Spring, 1976. Habitat preference of marine birds as determined by aerial survey. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

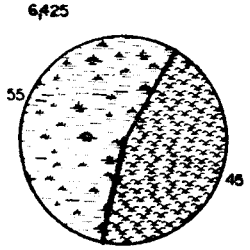
NORTHEAST GULF OF ALASKA. SPRING



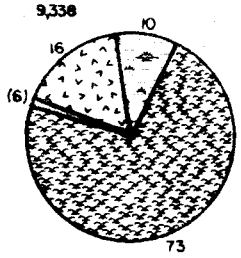
Offshore water



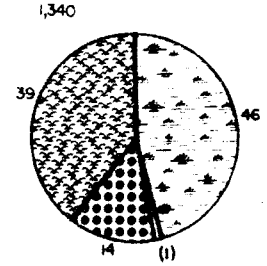
Exposed inshore water



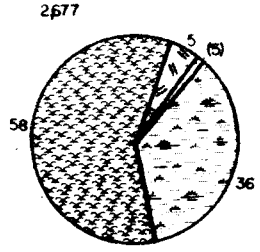
Exposed mudflats



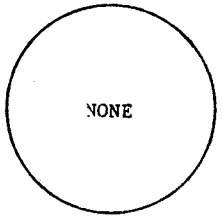
Exposed sand beach



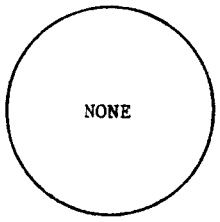
Exposed gravel beach



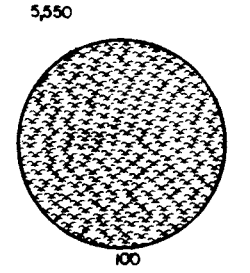
Exposed rock beach



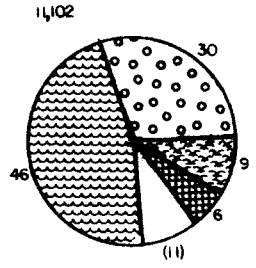
Exposed island sand



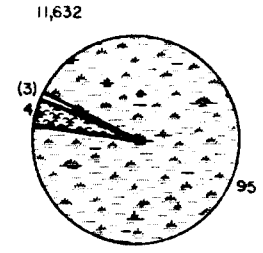
Exposed island gravel



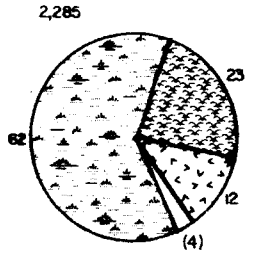
Exposed island rock



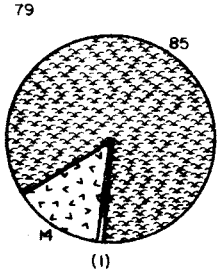
Bay water



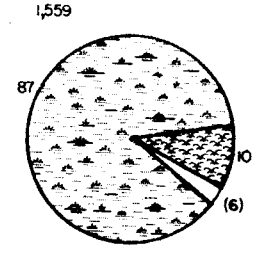
Bay mudflats



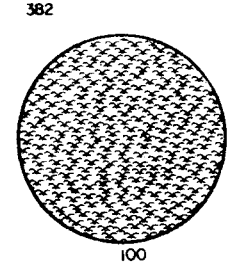
Bay sand beach



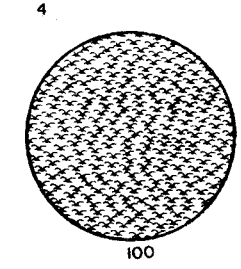
Bay gravel beach



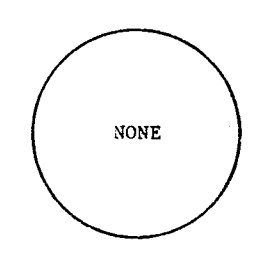
Bay rock beach



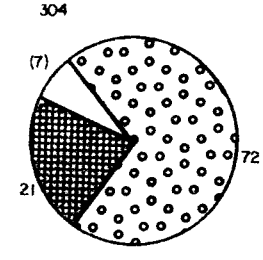
Bay island upland



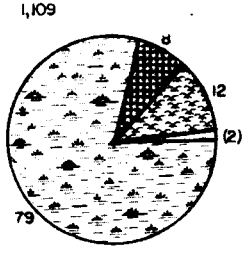
Bay island sand



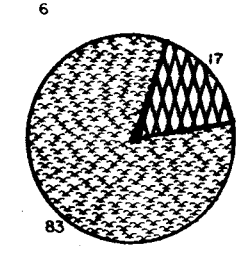
Bay island rock



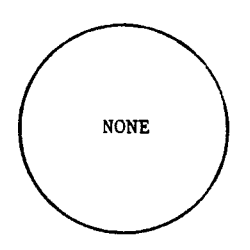
Lagoon water



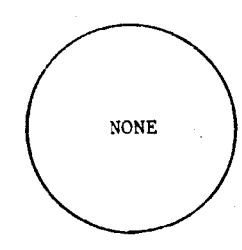
Lagoon mudflats



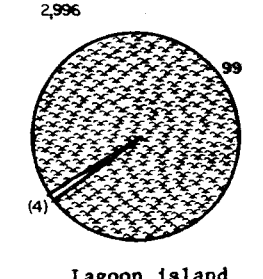
Lagoon sand beach



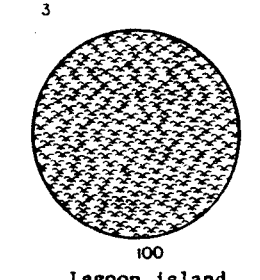
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

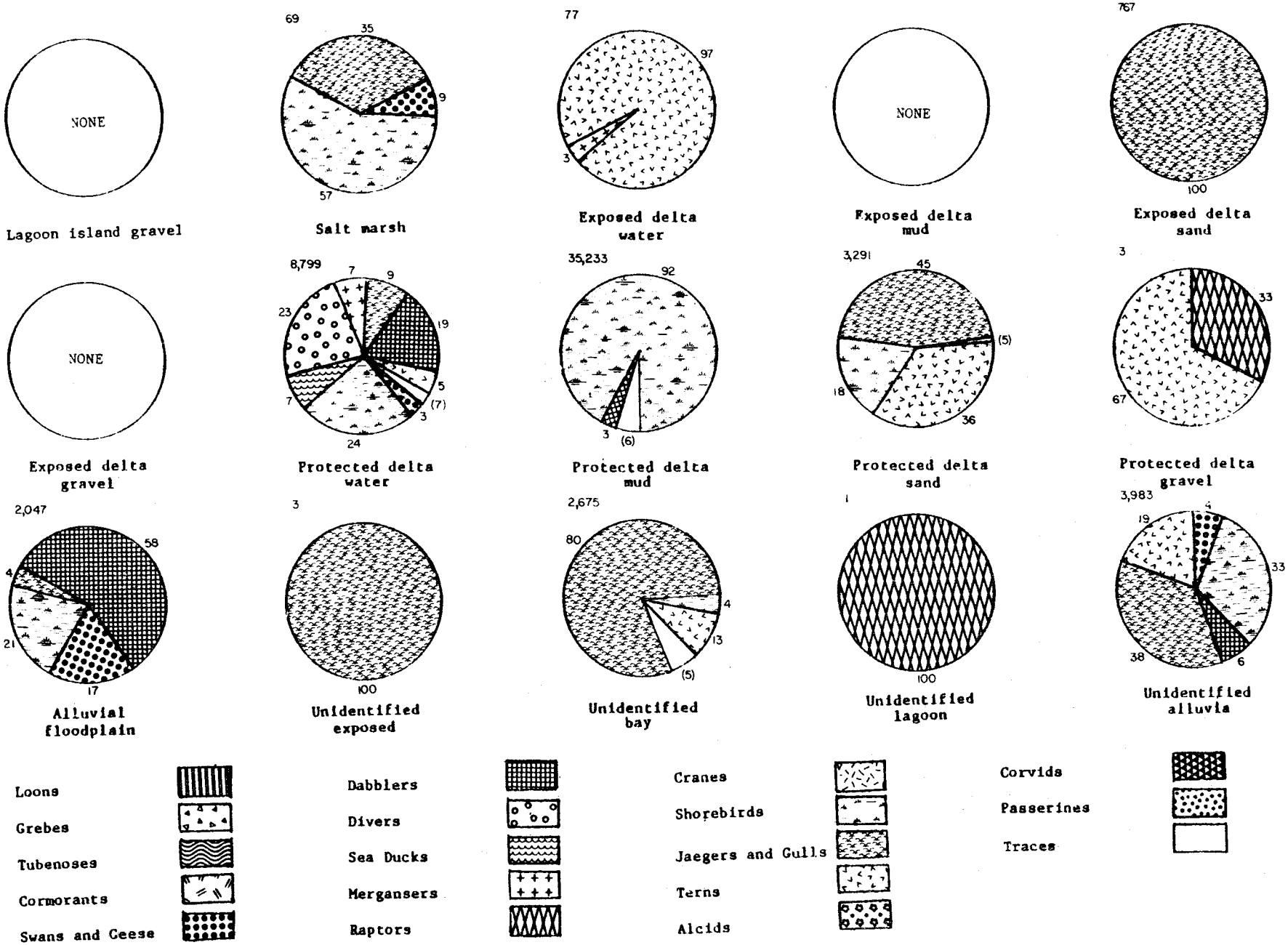


Fig. 29. Northeast Gulf of Alaska, Spring, 1976. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

group, and the importance of the mudflats of the Copper River Delta, Orca Inlet and Controller Bay was further substantiated. Shorebirds were found on a greater variety of habitat types (16 of 26) than was expected, but this was probably a result of the wide diversity of species observed. Each species had its own habitat requirements; some preferred brackish floodplains, some rock beaches and others mudflats.

Six species of gulls were found in all but 3 of the 26 different habitat types. They were most frequently seen along exposed inshore waters (22%), on exposed sand beaches (17%), or at colony sites on exposed island rock (14%). Densest concentrations of breeding gulls were on barrier islands of the Copper River Delta. A sandy substrate along exposed beaches and in protected deltas was selected by terns for roosting, and they were frequently seen flying along exposed beaches and over delta mudflats in migration and feeding. Receding glaciers have left deposits of sand or gravel moraine providing habitat for nesting Arctic and Aleutian Terns (*Sterna aleutica*). Few alcids except murres had returned to breeding sites at the time of the survey and 99 percent of the murres were rafted on exposed inshore waters near their colonies. Few corvids or other passerines were observed, and those that were used a variety of habitats.

Protected delta mud was the habitat type used by the largest number of birds (35,233) but 92 percent of these were shorebirds. The next most used habitat, exposed inshore water (16,431 birds), had all 16 bird groups present. Over half the birds found in this type were gulls (52%); 22 percent were alcids and 12 percent sea ducks. Other groups were present in small numbers.

Other habitats with high bird usage were bay mudflats (11,632) and bay water (11,102), but the same pattern of usage was found as in the two habitats mentioned above. Shorebirds comprised 95 percent of the birds on the mudflats, and a variety of species were found in bay water. Sea ducks were the most abundant species group in bay water (46%); diving ducks were second (30%), followed by gulls (9%). Protected delta water was another habitat used by most species groups (14 of 16). Shorebirds, diving ducks and dabbling ducks were the groups most frequently found in this habitat (24%, 23% and 19%, respectively).

SUMMER

Density - The abbreviated survey in NEGOA in late July provided data on summering populations of gulls and terns along the exposed beaches and of sea ducks in Riou Bay. Gulls were most common on the section of beach from Icy Cape to Cape Suckling where 677 gulls/km^2 and 14,343 individuals were recorded. The section south of Yakutat had 106 gulls/km^2 and 2608 individuals. Those sections also had the densest tern populations with 48 birds/km^2 in Section 6 and 33 birds/km^2 in Section 1. Sea ducks were found in all sections surveyed but were densest in Section 5. Over 1,000 scoters were found summering in Riou Bay. These may have been non-breeders that spent the entire summer in the area, or they could have

been breeding males that had returned to saltwater to molt. Most of the 1867 scoters recorded in Section 6 were observed at Cape Yakataga. Sea ducks were frequently concentrated at promontories along exposed coasts. Substrates were usually mixed at these capes but included much rock. This and current patterns may have concentrated food organisms.

Shorebirds were the only other relatively abundant bird group seen on this short summer survey, and Sections 4 and 6 had highest densities with 13 and 14 birds/km^2, respectively. Only four other species groups were recorded (all in small or trace densities). These were loons, cormorants, raptors and corvids.

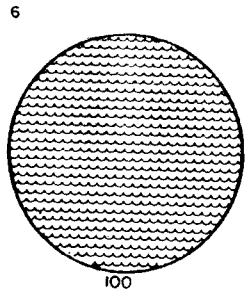
Habitat Usage - Because of limited coverage on this survey, little can be said for bird usage of NEGOA habitats in summer. The data are summarized in Figs. 30 and 31. We recorded birds on only six habitat types. Most birds (76%) were on exposed sand beaches; however, this was the habitat most searched for birds. Eighty-eight percent of the birds on this habitat were gulls and 10 percent were terns. Exposed inshore water was the next most used habitat (12% of the total birds) followed by exposed rock beaches (8%) and bay water (4%). This represents most of the habitats searched on the summer survey. Eighty-nine percent of both gulls and terns were observed flying over, or roosting on, exposed sand beaches. Nine percent of the gulls and 69 percent of the shorebirds were found on exposed rock beaches. On this survey, sea ducks were found on exposed inshore waters most frequently (66%) with the remainder on bay waters (29%) or roosting on exposed sand beaches (5%).

Spring Migration, Cape St. Elias - In spring 1977 and 1978, W. Cunningham and S. Stanford were placed at Cape St. Elias on Kayak Island to obtain marine mammal data. As time permitted, they also conducted sea watches for birds and recorded other information including first arrival dates, peak migration periods and migration directions. The 1977 information was briefly summarized by Arneson (1978). Following is a brief account of what occurred in 1978. It is hoped that a detailed report of the birds of Kayak Island will be published in the future.

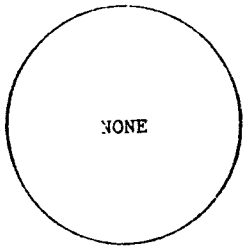
Birds migrating past Cape St. Elias chose one of several flight paths (Fig. 32). Most flew around the Cape and back up the northwest side of Kayak Island or easterly towards the mainland. Others flew north, northwest, west or even southwest toward Middleton Island. Flocks of some species were observed crossing over Kayak Island and many proceeded directly up the coast bypassing Kayak Island.

Some birds stopped to rest and feed near the Cape; others migrated past low to the water, and some were migrating so high as to be visible only with binoculars. Certain species passed by the Cape only during a short time span in spring, others passed by the Cape on diurnal migrations to and from roosting and feeding areas, while still others nested at colonies on the Cape. Flocks of some species migrated directly past, or over, the Cape while others seldom came closer than a kilometer or more. Following is a brief account by species group of the spring migration status of various birds at Cape St. Elias.

NORTHEAST GULF OF ALASKA, SUMMER



Loons



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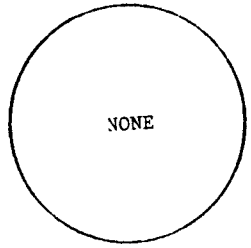
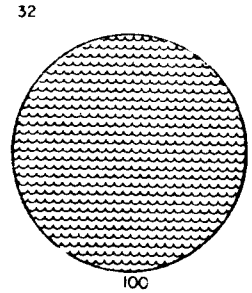
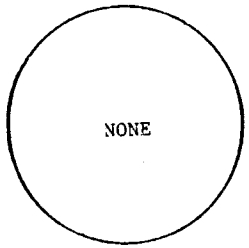


Tubenoses



Cormorants



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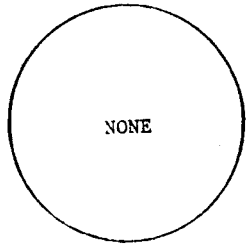

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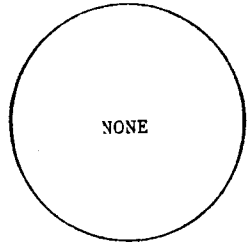

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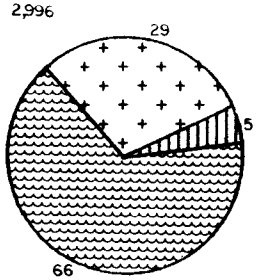

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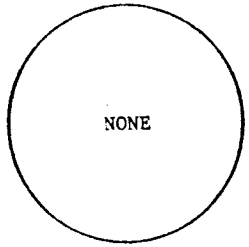
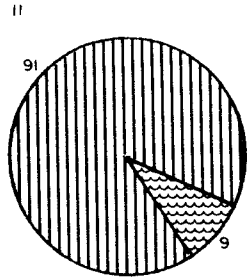
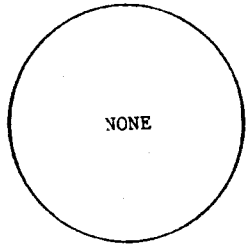


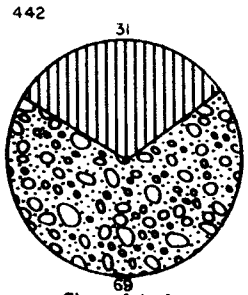
Mergansers



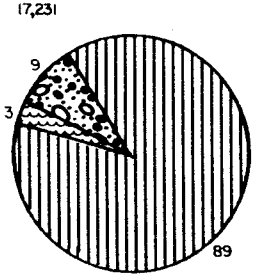
Raptors



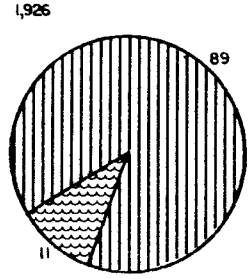
Cranes



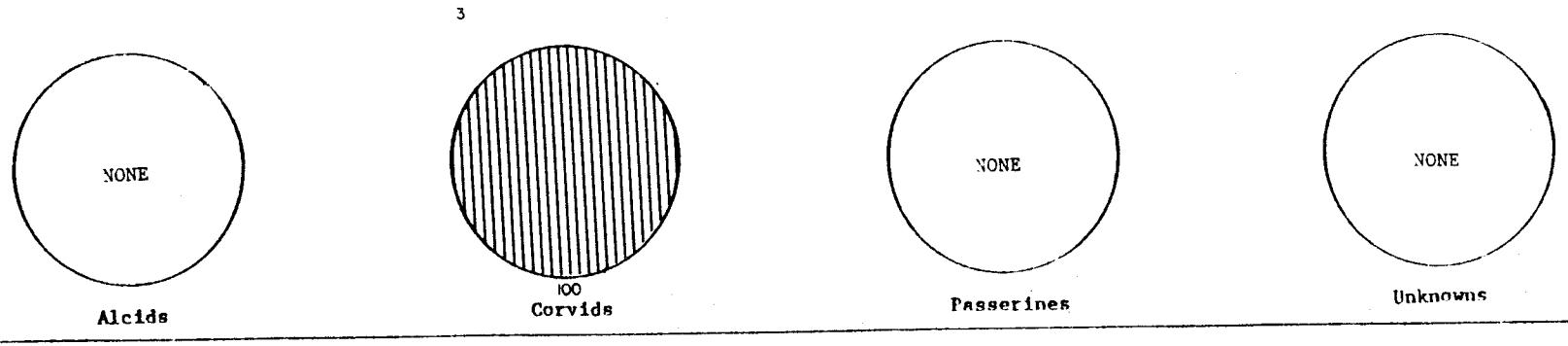
Shorebirds



Jaegers and Gulls



Terns



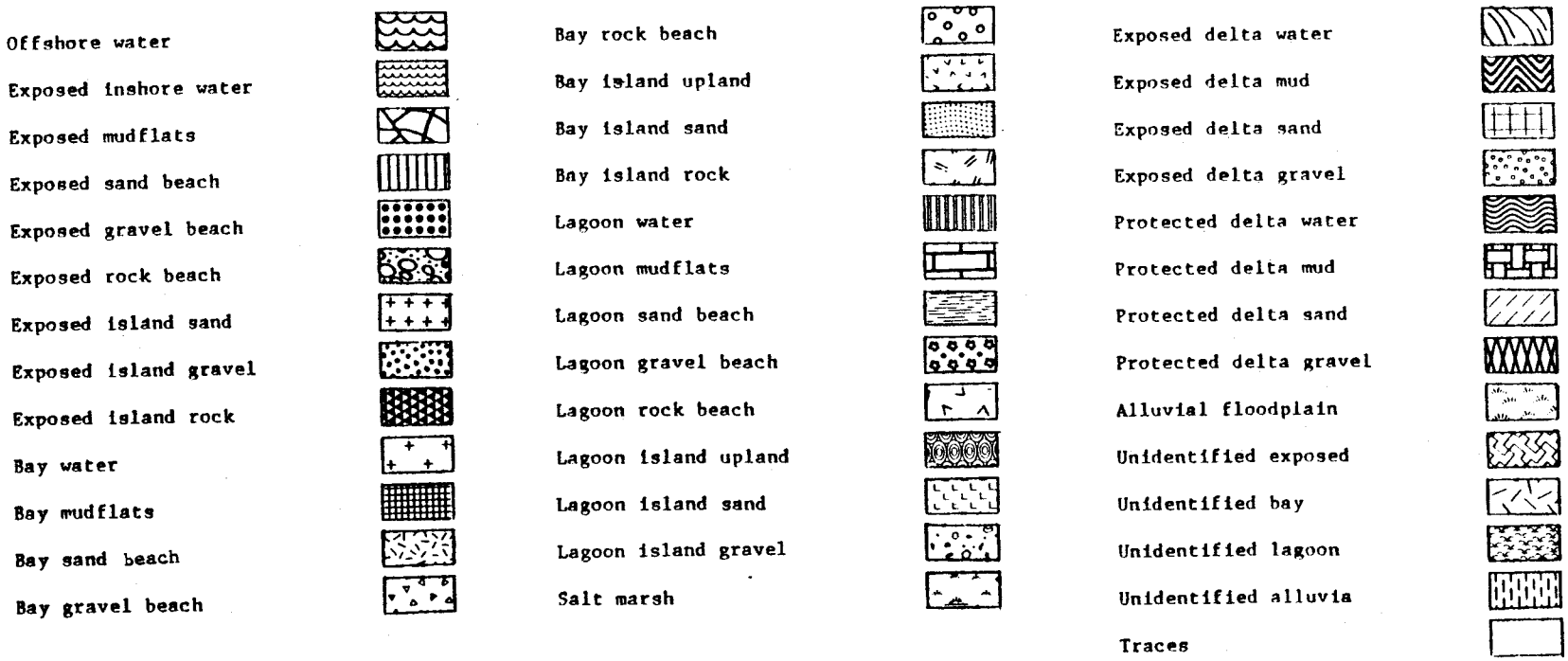
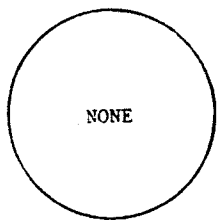
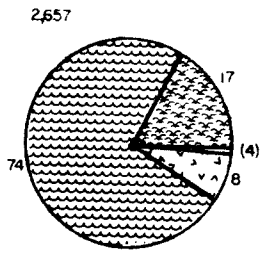


Fig. 30. Northeast Gulf of Alaska, Summer, 1976. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

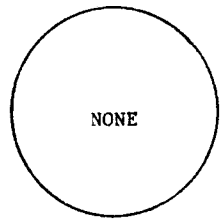
NORTHEAST GULF OF ALASKA, SUMMER



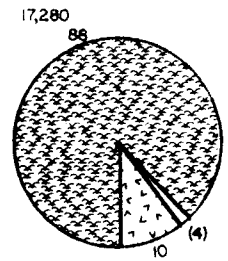
Offshore water



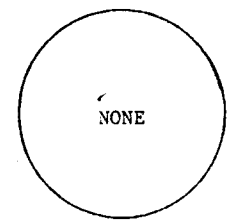
Exposed inshore water



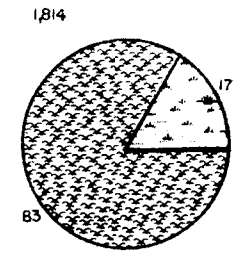
Exposed mudflats



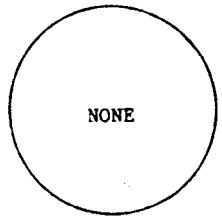
Exposed sand beach



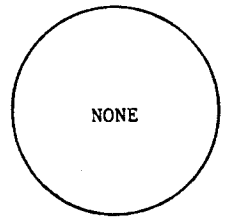
Exposed gravel beach



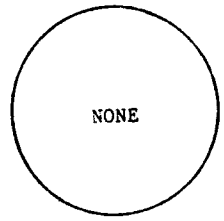
Exposed rock beach



Exposed island sand



Exposed island gravel



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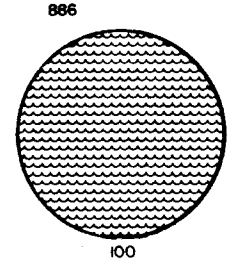
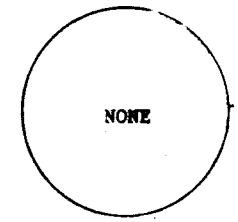
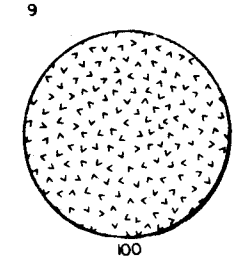


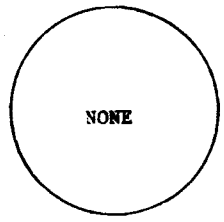
Bay water



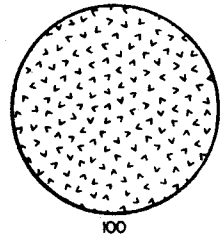
Bay mudflats



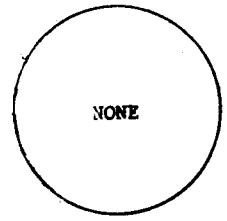
Bay sand beach



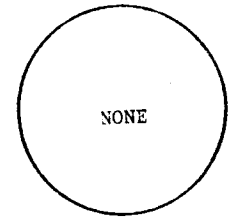
Bay gravel beach



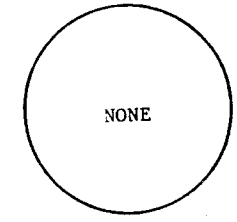
Bay rock beach



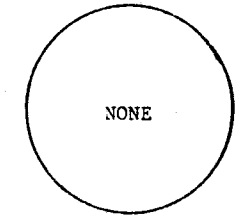
Bay island upland



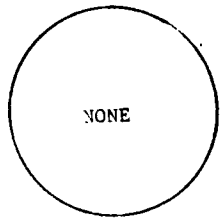
Bay island sand



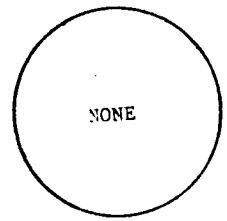
Bay island rock



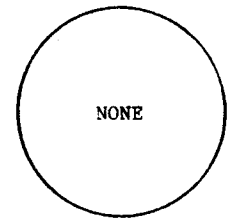
Lagoon water



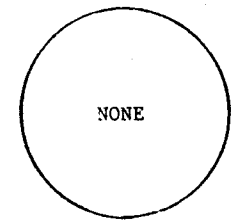
Lagoon mudflats



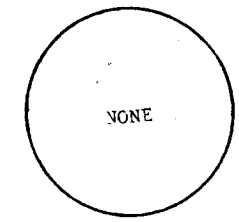
Lagoon sand beach



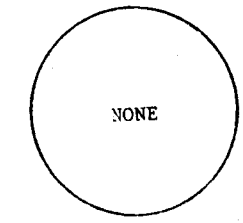
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

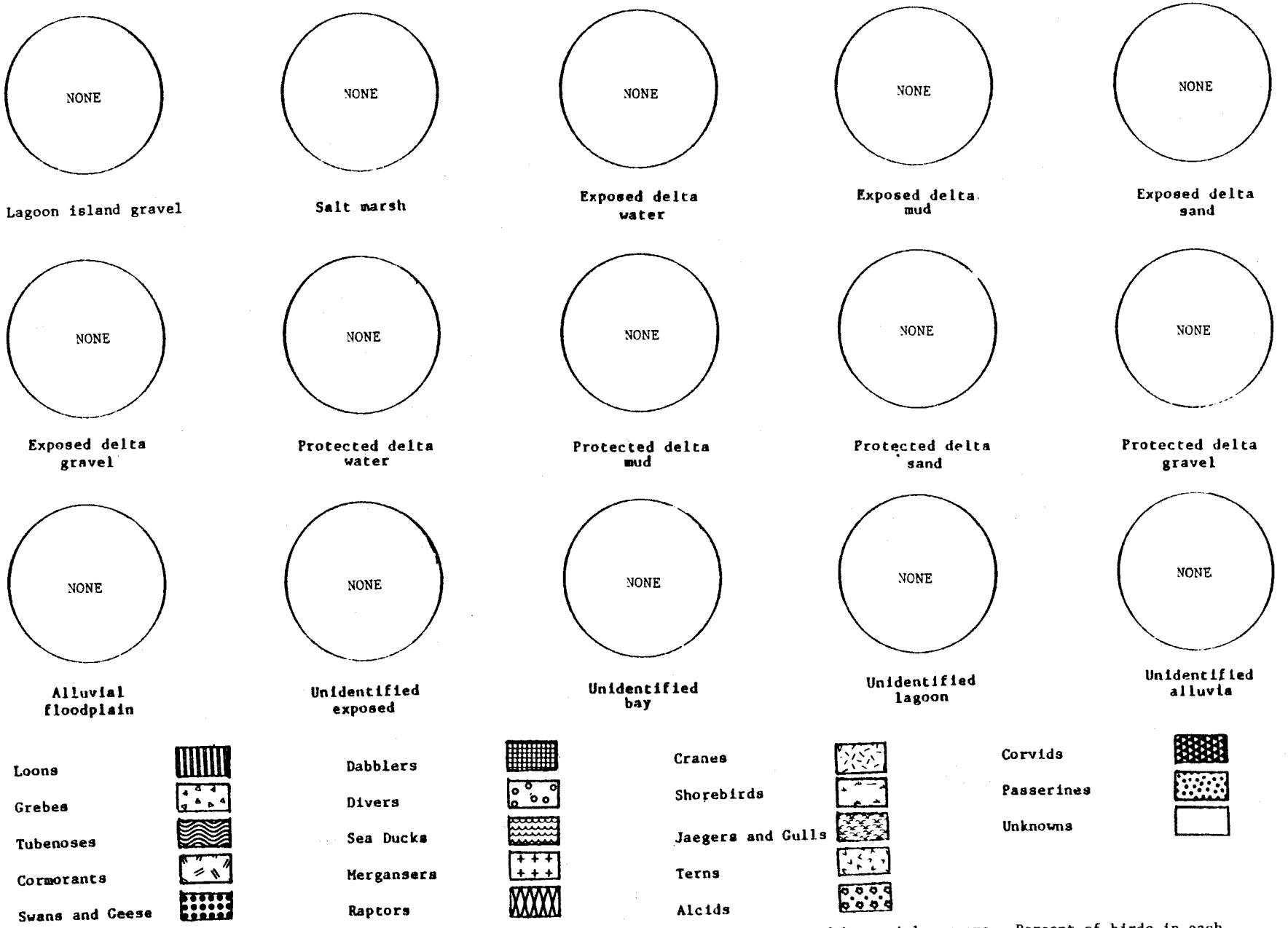


Fig. 31. Northeast Gulf of Alaska, Summer, 1976. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

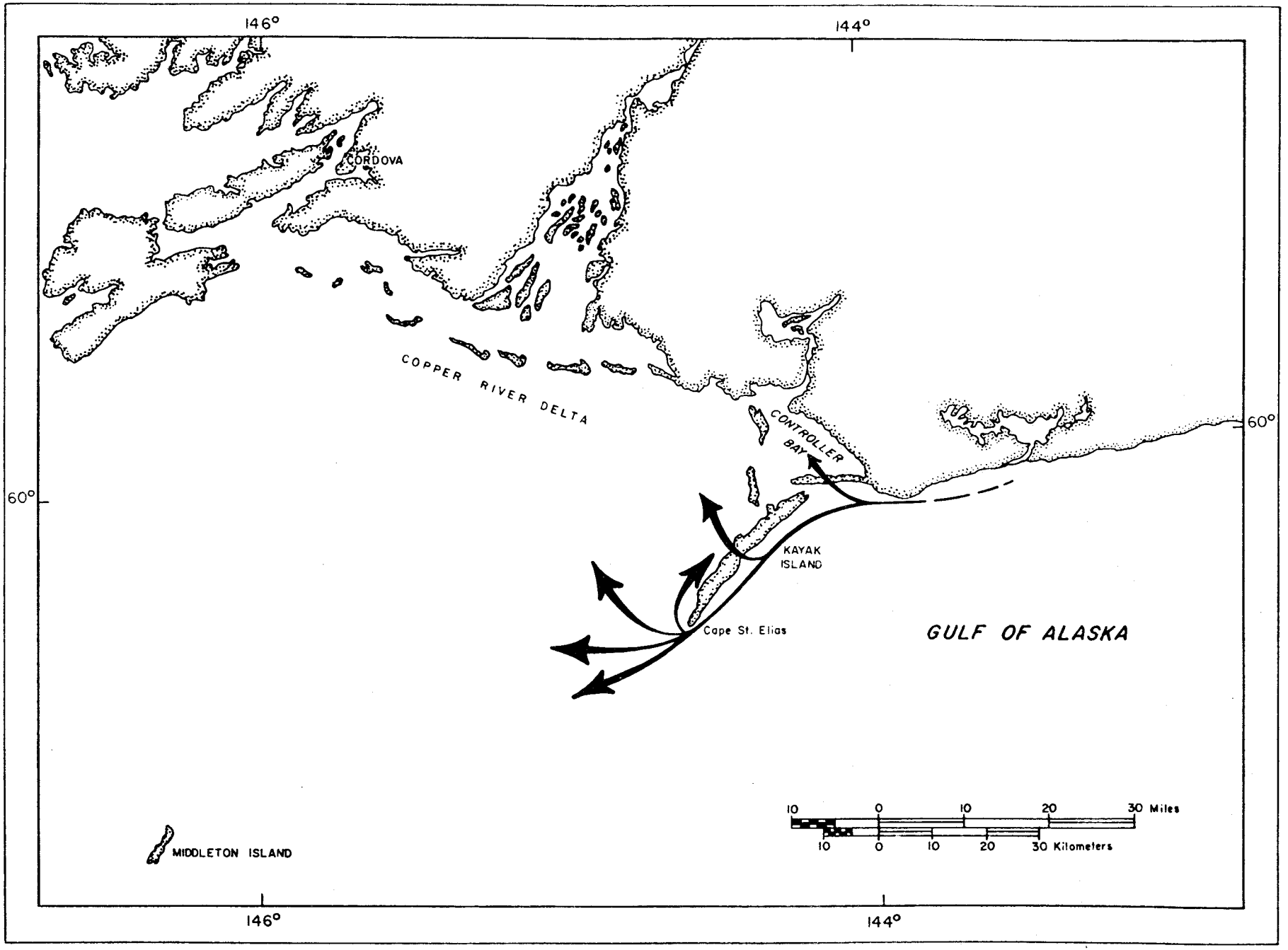


Fig. 32. Bird migration past Cape St. Elias, Kayak Island. Most migrants turned at the Cape and flew up the northeast coast of the island. Others flew north, northwest or west. A small percentage flew southwest toward Middleton Island or over Kayak Island. An unknown portion continued up the mainland coast past Controller Bay.

Loons - Common Loons (*G. immer*) were first observed on 29 March 1978 and were observed almost daily thereafter. Red-throated and Arctic Loons (*G. arctica*) were first recorded on 12 April and were seen almost daily afterward. From sea watch counts, as many as 10 loons per minute were migrating past the Cape from 8 May to 20 May with a peak of 20 loons per minute on 16 May. It was estimated that as many as 10,000 loons per day were migrating past during this peak period. Frequently they would stop to feed and rest in rafts numbering up to several hundred in a cove about 2 km southeast of the lighthouse. Others fed in a small area at the tip of a reef just west of the pinnacle at the Cape. On June 3, when seas were calm, loons were sighted "everywhere" out to 3 km. When migrating, their path beyond the Cape was usually back up the island's northwest coast but was occasionally due north or west. Their migrating flocks were frequently mixed with other species including cormorants, Brant (*Branta bernicla*), dabblers, scoters and murres. Migration was reduced from thousands of birds per day to hundreds per day after the first week of June. At that time almost all loons observed were Arctic Loons.

Grebes - Horned Grebes (*Podiceps auritus*) passed the Cape in small numbers from 18 April to 12 May and at times stopped in nearshore waters. Only one Red-necked Grebe (*Podiceps grisegena*) was sighted, on 22 May. Grebes normally migrate at night and would pass unnoticed at Cape St. Elias.

Tubenoses - Individual shearwaters (*Puffinus* spp.) were observed on 10 and 21 April; on 2 May several thousand appeared and remained until the end of the observation period at the end of June. On 21 May, although seas were calm and visibility excellent for observation, no shearwaters were sighted. Generally, flock size varied from a few hundred to several thousands. They fed in scattered clusters in an arc from southeast of the Cape to due north, seldom getting closer than 2 km from shore. Occasionally they fed near the reef west of the pinnacle. Occasionally dead shearwaters washed ashore (some were oiled), but beaches were not conducive to systematic beached bird surveys. Only one storm-petrel (*Oceanodroma* spp.) was observed on 20 June.

Cormorants - Pelagic (*Phalacrocorax pelagicus*) and Red-faced Cormorants (*P. urile*) were resident in the area and were seen on the arrival date of the observers, 22 March, and daily thereafter. Double-crested Cormorants (*P. auritus*) were first seen on 12 April. However, cormorants that wintered farther south did migrate past the Cape. Migration occurred from mid-April until about 5 May. After that, local movements of resident breeders past the Cape obscured migratory patterns. Three-to six-hundred per day were counted during the peak of migration. Their paths were generally close to the pinnacle and then up the northwest coast of Kayak Island. Others crossed the Gulf in a westerly or northwesterly direction.

Geese and Swans - Brant were the only common species to migrate past the Cape. Their migration began 3 April and continued until 15 June. Migration occurred daily throughout the month of May. Their flight pattern was generally well offshore (up to 5 km) south of the Cape and continued in a west or northwest direction. Brant occasionally stopped and rested on the cove southeast of the Cape, and some returned easterly when fog or inclement weather prevented migration to the west. Flocks of swans and Canada Geese (*Branta canadensis*) were observed only 4 and 8 times, respectively: swans from 13-22 April and Canadas from 23 March to 23 April. The earliest flock of swans was 5 km south of the pinnacle and headed west southwest across the Gulf. Swans and Canada Geese both flew northwest from the pinnacle or up the northwest coast of the Island. White-fronted Geese (*Anser albifrons*) were seen only once on 22 April and no Snow Geese (*Chen caerulescens*) were recorded. It was assumed that most of these birds continued straight up the coast to the Copper River Delta bypassing Kayak Island.

Dabblers - Mallards and Pintails first appeared on 6 April but 14 April was the date when heavy migration began. On that day Mallards, Pintails, Green-winged Teal, Northern Shovelers and American Wigeon rounded the Cape and flew back up the northwest side of Kayak Island. The peak of pintail migration was 25 April when 8,543 were observed passing the Cape. In 1977 this occurred on 26 April. The 1978 peak decreased on 28 April, but migrants of most dabbler species passed daily until 22 May. Late migrants were seen on several days after that. Most migrating dabblers at the Cape flew in a westerly or northwesterly direction over the Gulf, thereby bypassing the Copper River Delta. Others flew up the northwest coast of Kayak Island and back toward the mainland. Dabblers seldom stopped near the Cape; however, they did utilize brackish ponds on the uplifted southern shore of the island. Migrating flocks were frequently consisted of mixed dabbler species or even other species of birds.

Divers - Only two diving duck species groups were observed in the 1978 migration. A total of 17 Goldeneyes was observed on three days in March and one subsequent to that. Scaup appeared on 14 April, 5 May, almost daily from 8 to 21 May and sporadically in June. The largest number was 186 on 8 May and most migrants continued up the northwest coast of the Island. Because divers are normally nocturnal migrants, they did not show up in many counts. They appeared to be a minor constituent of the Cape St. Elias avifauna.

Sea ducks - Six species of sea duck were observed at Cape St. Elias. Oldsquaws and King Eider were observed only once. Oldsquaws are nocturnal migrants (Bellrose 1976), and probably fly overland toward the interior from southeast Alaska wintering grounds (Palmer 1975). They probably would not be expected in large numbers. King Eiders were rare winter visitants in the area and would also not be expected. Harlequin Ducks were resident in small numbers throughout

the observation period and apparent.y did not migrate past the Cape. Three scoter species were the most abundant sea duck migrants. Black Scoters wintered at the Cape and frequently fed in shallow water on both sides of the pinnacle. White-winged Scoters, first observed on 28 March, were present in small numbers until migration began and their numbers increased. Surf Scoters were less commonly observed as winter residents in 1978 but were the most abundant migrant. On 14 April flocks of scoters began flying past the Cape and continued until 1 July. The first peak for migrating Surf Scoters was from 14 to 26 May. A maximum count of 1245 individuals occurred on 20 May. A second minor peak occurred from 2 to 10 June and a third larger peak from 19 to 28 June. White-winged Scoters were second in abundance with 25 to 100 observed migrating daily from 14 April to 16 May, with a second peak from 2 to 10 June as with Surf Scoters, and the largest number observed on 19, 20, 23 and 24 June. When resident Black Scoters left by 4 April, a second migration period occurred. Scattered individuals flew past the Cape from 16 April to 16 May. The most seen was 284 on 5 May and none were seen after 16 May. Flocks of mixed scoter species were frequently seen, and other species, commonly Green-winged Teal, were also observed migrating with scoters. Their flight path was most often around the Cape and up the northwest coast of Kayak Island, but occasionally scoters would travel northwest across the Gulf.

Mergansers - Small numbers of Red-breasted Mergansers wintered at the Cape and were present when observation began. They were observed feeding on both sides of the Cape and pinnacle on sculpins (Cottidae) and an abundant supply of blennies (Stichaeidae). Migrants appeared on 14 May when 85 passed the Cape and continued up the northwest coast of Kayak Island. Small numbers of individuals (5 to 50) were seen in early June, after which none were seen. Common Mergansers were observed only in late April. Some stopped to feed nearshore and others migrated up the northwest coast in the same flight pattern as Red-breasted Mergansers.

Raptors - Cape St. Elias was not a part of the migration corridors for raptors. Two Peregrine Falcons (*Falco peregrinus*) were observed: one on 20 April and another on 12 May. It is unknown whether these were the endangered subspecies *F. p. anatum* or more common *F. p. pealei*. A Merlin (*F. columbarius*) was seen on 26 April and a Marsh Hawk (*Circus cyaneus*) on 8 May. No other migrating raptors were recorded. Bald Eagles were resident in the area (3 active nests were found), and 5 to 12 were seen almost daily at the pinnacle scavenging on dead sea lion pups and other carrion or, occasionally, taking a bird that nested at the pinnacle colonies. A large part of the total population were non-breeding, immature birds.

Cranes - No Sandhill Cranes (*Grus canadensis*) migrated past Cape St. Elias in 1978 (only one in 1977). It appears, therefore, that this species must have followed along the coast to Controller Bay and continued to the Copper River Delta.

Shorebirds - Although 13 species of shorebirds were identified, only two were observed regularly at the Cape, Black Oystercatchers (*Haematopus bachmani*) and Rock Sandpipers (*Calidris ptilocnemis*). Suitable habitat for other species was not prevalent at the Cape. Black Oystercatchers were resident on Kayak Island in small numbers (about 8 at the Cape). This species also migrated past the Cape in relatively large numbers (20-65 per day) in April. Rock Sandpipers were present on the first day of observation, 22 March, and migrating flocks of up to 100 individuals stopped occasionally at the Cape to feed in intertidal rock habitat. None were seen after May 20. Other species like Whimbrels (*Numenius phaeopus*), Wandering Tattlers (*Heteroscelus incanus*), Surfbirds (*Aphriza virgata*) and several sandpiper species, infrequently stopped to feed. After a severe storm that piled kelp and other algae in thick windrows on the beach, shorebirds of several species were observed feeding on amphipods (Talitridae) that were abundant in the algae. Semipalmated Plovers (*Charadrius semipalmatus*) and least Sandpipers (*Calidris minutilla*) nested along the beach on both sides of the island. Northern Phalaropes (*Phalaropus lobatus*) were recorded on only 5 days, but on 15 May several thousand were observed well offshore alternately feeding and migrating in a westerly direction. On 20 May 850 phalaropes migrated past the Cape, and only small numbers were seen subsequently.

Jaegers and Gulls - Although all three jaeger species were observed migrating past the Cape, Parasitic Jaegers (*Stercorarius parasiticus*) were the most common. The first was sighted 21 April and the most (11) on 29 May. Almost all rounded the Cape and headed up the northwest coast. Glaucous-winged Gulls (*Larus glaucescens*) were resident on the Island. An estimated 1-500 were seen in March soon after arrival of the observers. Migration began the second week in April and continued into the first week of May. Local movements past the Cape by resident gulls obscured migration patterns after that. Up to 25 Herring Gulls (*L. argentatus*) were observed migrating past or feeding and roosting in the area. Only two Bonaparte's (*L. philadelphia*) and no Mew Gulls (*L. canus*) were sighted. One would assume they must follow the mainland coast or travel well offshore in their migration. Migration patterns of Black-legged Kittiwakes were obscured by a large diurnal movement past the Cape of birds nesting near Cape St. Elias. In the morning and early afternoon Kittiwakes flew around the Cape and up the northwest coast toward colonies at Wingham and Martin Islands. After 17:00 most reversed the direction and flew up the southeast side of Kayak Island toward the mainland. This diurnal movement involved 10-15,000 birds. As many as 436 Black-legged Kittiwakes per minute were recorded in sea watches. This mass movement ended about 22 May. Subsequently, only a few hundred passed the Cape each day. Occasionally kittiwakes stopped to rest on the water at Cape St. Elias in rafts of 1,000 or more. They also frequently joined feeding rafts of loons, murres and puffins in the vicinity of the Cape.

Terns - Although thousands of terns migrate up the coast of NEGOA in spring, none were seen at Cape St. Elias in 1977 or 1978. They must have followed the mainland coast past Kayak Island or migrated far offshore.

Alcids - The normal migration pattern for most alcids are from offshore wintering areas to coastal breeding areas. Therefore, migration of alcids past Cape St. Elias would not be expected. Most movements were to feeding and roost areas by birds nesting in the vicinity. Murres (*Uria* spp.) had already arrived at the Cape when observations began on 22 March. By March 26,500 murres were rafted on nearshore waters. These birds flew back and forth past the Cape, roosted and fed in the vicinity but did not come ashore until 7 April. At times there were due north diurnal movements past the pinnacle in the morning, with returns in a southeasterly direction in the evening. This pattern was followed by a minimum of 10,000 murres on 15 April. Whether this represented a migration or diurnal movements of birds from colonies at Wingham and Martin Islands was uncertain. The murres could possibly have been feeding in the gyre northwest of Kayak Island. Frequently in the evening during the last 3 weeks of April, a raft of several hundred to over 1,000 murres congregated 1 to 3 km west of the lighthouse at the Cape. Several hundred Tufted Puffins (*Lunda cirrhata*) often joined this raft of birds. Tufted Puffins arrived at Cape St. Elias on 15 April and the population subsequently increased to several hundred birds. ubsequently. Although there was much movement by puffins back and forth past the Cape, no specific migration pattern was noted. There were far fewer (less than 1,000 vs. 6,000) Tufted Puffins nesting at the pinnacle than reported by Isleib and Haddock in Sowls et al. (1978). Horned Puffins (*Fratercula corniculata*) were reported as being "found largely at colonies from Cape St. Elias westward" by Isleib and Kessel (1973) but Horned Puffins were not observed in 1977 or 1978 at Cape St. Elias. Marbled Murrelets (*Brachyramphus marmoratus*) were the next most commonly observed alcid, and this bird may nest on the island. They were observed occasionally in April and early May, but after 29 May they were seen regularly, feeding near the Cape or flying past in both directions. As many as 60 to 70 were observed on some days. Ancient Murrelets (*Synthliboramphus antiquus*) and Cassin's Auklets (*Ptychoramphus aleuticus*) were sporadically observed but never abundant. An estimated 150 Cassin's Auklets per hour flew easterly past the Cape most of the day on 18 May. At that time mating was observed so it appeared that this auklet may nest near Cape St. Elias. Pigeon Guillemots (*Cepphus columba*) were observed on only 10 days; the most observed was three.

Corvids - Common Ravens were the only corvid regularly observed at the Cape. A family group exploited the nesting murres, gulls and cormorants and scavenged on the beach. Northwestern Crows were seldom seen and no more than three individuals were present at one time.

Other Passerines - Although many were recorded on the island, few directly used marine habitats. However on 14 May Steller's Jays (*Cyanocitta stelleri*), American Robins (*Turdus migratorius*) Varied Trushes (*Ixoreus naevius*), Savannah Sparrows (*Passerculus sandwichensis*) and Fox Sparrows (*Passerella iliaca*) fed with shorebirds on amphipods and insects that were in the windrows of algae on the beach.

KODIAK

Only one coastal bird survey was conducted by this research unit in the Kodiak lease area. A stratified-random survey design was used in winter 1976 (Arneson 1976). Eight strata were preselected in the stratification: exposed waters-forested, protected waters-forested, heads of bays-forested, exposed waters-tundra/alder, protected waters-tundra/alder, heads of bays-tundra/alder, estuaries-lagoons and embayments and low tundra/ sand beach. Count units were randomly selected within each stratum (Fig. 33). Because of the stratification, all coastal habitats found on Kodiak may not have been searched.

Two observers recorded all birds within a section of bay or along an exposed coast rather than along an entire coast as in other surveys. This increased the observational area for birds beyond 400 meters from the tideline but decreased it for those birds near the tideline. All major islands of the archipelago were surveyed.

For analysis, the survey area was divided into five sections (Fig. 34) which were based partially on habitats and exposure: Section 1 - Afognak/Shuyak is almost entirely forested, Section 2 - North side is only partially forested and protected by Chiniak and Kizhuyak Bays, Section 3 - West side has a tundra/alder shore but is exposed to Shelikof Strait, Section 4 - East side is exposed to Gulf of Alaska and has a tundra/alder shore, and Section 5 - South side has several low, sand/gravel beaches.

WINTER

Density - In the 1976 Kodiak winter survey, we found an average bird density of 39 birds/km^2 (Table 6). Over half of the birds were sea ducks (20 birds/km^2). Diving and dabbling ducks were a distant second and third with densities of 5 and 4 birds/km^2, respectively. Alcid densities were slightly higher than densities of gulls and shorebirds (3 vs. 2 birds/km^2). On a percentage basis, the relative abundance was seabirds 51 percent, divers 13 percent, dabblers 10 percent, alcids 9 percent, gulls 5 percent and shorebirds 4 percent.

Bird densities by section are depicted in Figs. 35-52. Most sea ducks were in the Chiniak/Kizhuyak section of Kodiak Island (44 birds/km^2) and the Gulf of Alaska side (23 birds/km^2). Of identified sea ducks, 40 percent were scoters, 28 percent Oldsquaws, 22 percent eiders and 11 percent Harlequin Ducks. Sixty-three percent of the identified scoters were Black, 20 percent Surf and 18 percent White-winged. Steller's Eiders comprised 69 percent of the identified eiders, 22 percent were King Eiders and 9 percent Common Eiders.

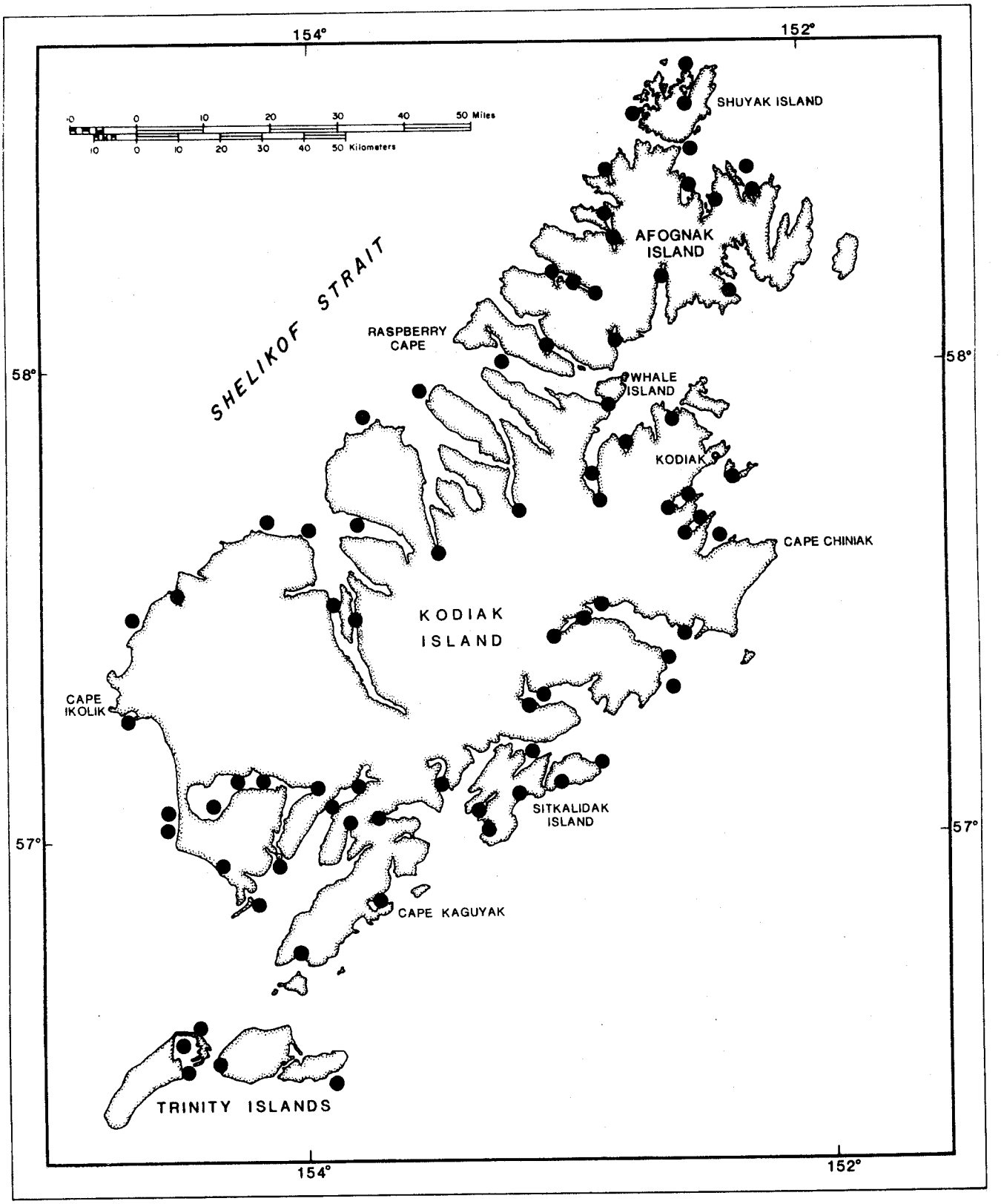


Fig. 33. Count areas sampled during aerial bird survey along Kodiak archipelago, Winter 1976. A stratified random design was used. This was survey number 7603 conducted from 22 February to 3 March, and 21-24 March; total time of survey was 9 hours, 51 minutes.

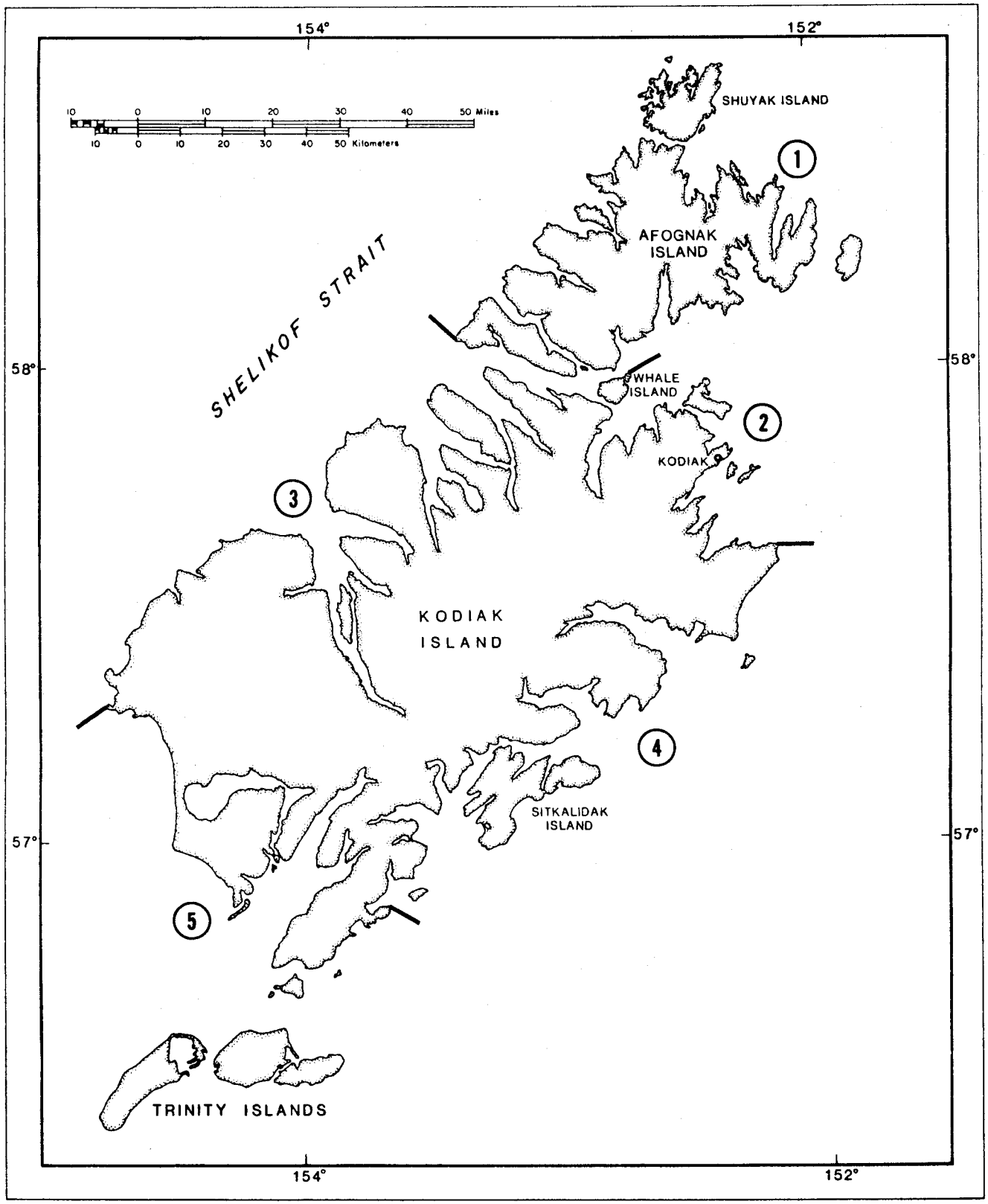


Fig. 34. Physiographic subdivision of Kodiak archipelago for bird density analysis. Each numbered section contains many count areas.

Table 6. Bird density by section of coastline in Kodiak Archipelago, winter, 1976. See Figure 34 for section boundaries. (T=trace).

Bird Group	Winter Density (birds/km^2) Section of Coastline 1	2	3	4	5	Total
Loon	T	T	T	T	T	T
Grebe	T			T	T	T
Tubenose						0
Cormorant	2	2	T	1	T	1
Goose and Swan				T	T	T
Dabbler	3	2	8	4	1	4
Diver	14	9	2	4	2	5
Sea Duck	13	44	12	23	12	20
Merganser	T	T	T	T	T	T
Raptor	T	T	T	T	T	T
Crane						0
Shorebird	2	2	T	2	1	2
Gull and Jaeger	1	4	1	1	3	2
Tern						0
Alcid	1	2	3	9	T	3
Corvid	2	T	T	1	T	1
Other Passerine	T				T	T
Other Bird	T		T	T	T	T
TOTAL	40	67	28	48	20	39

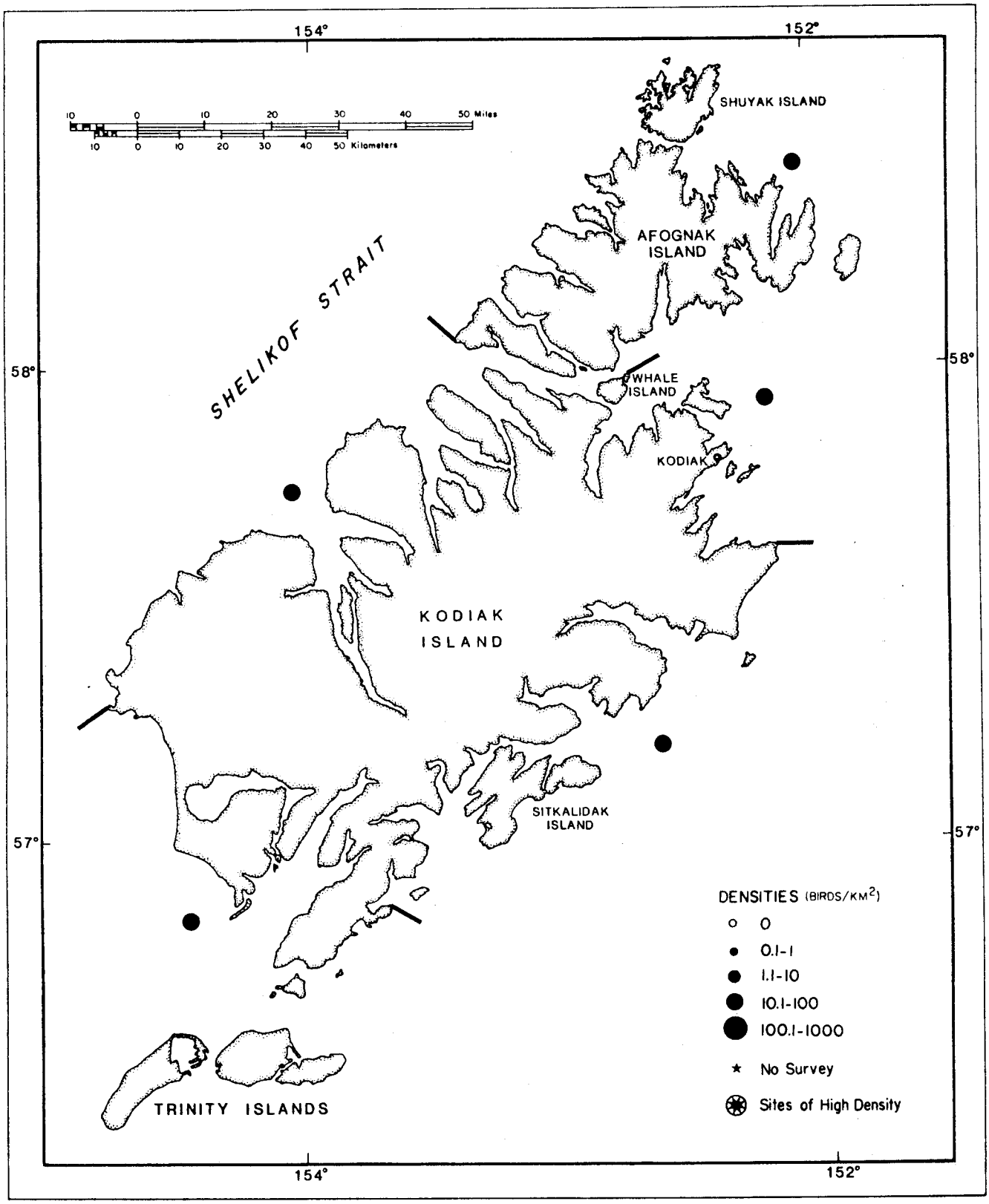


Fig. 35. Total bird density by section in Kodiak archipelago during winter as determined by aerial survey.

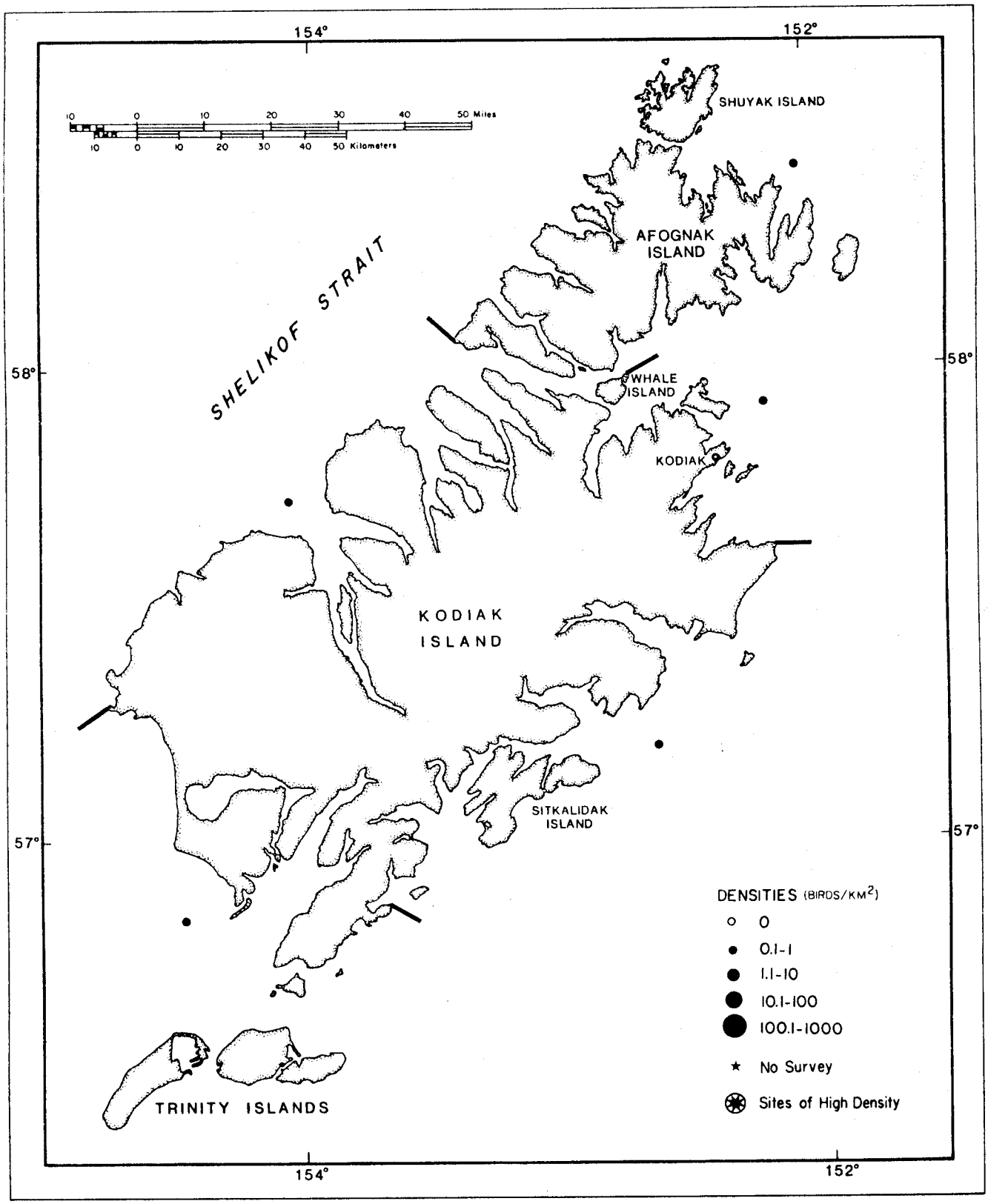


Fig. 36. Loon density by section in Kodiak archipelago during winter as determined by aerial survey.

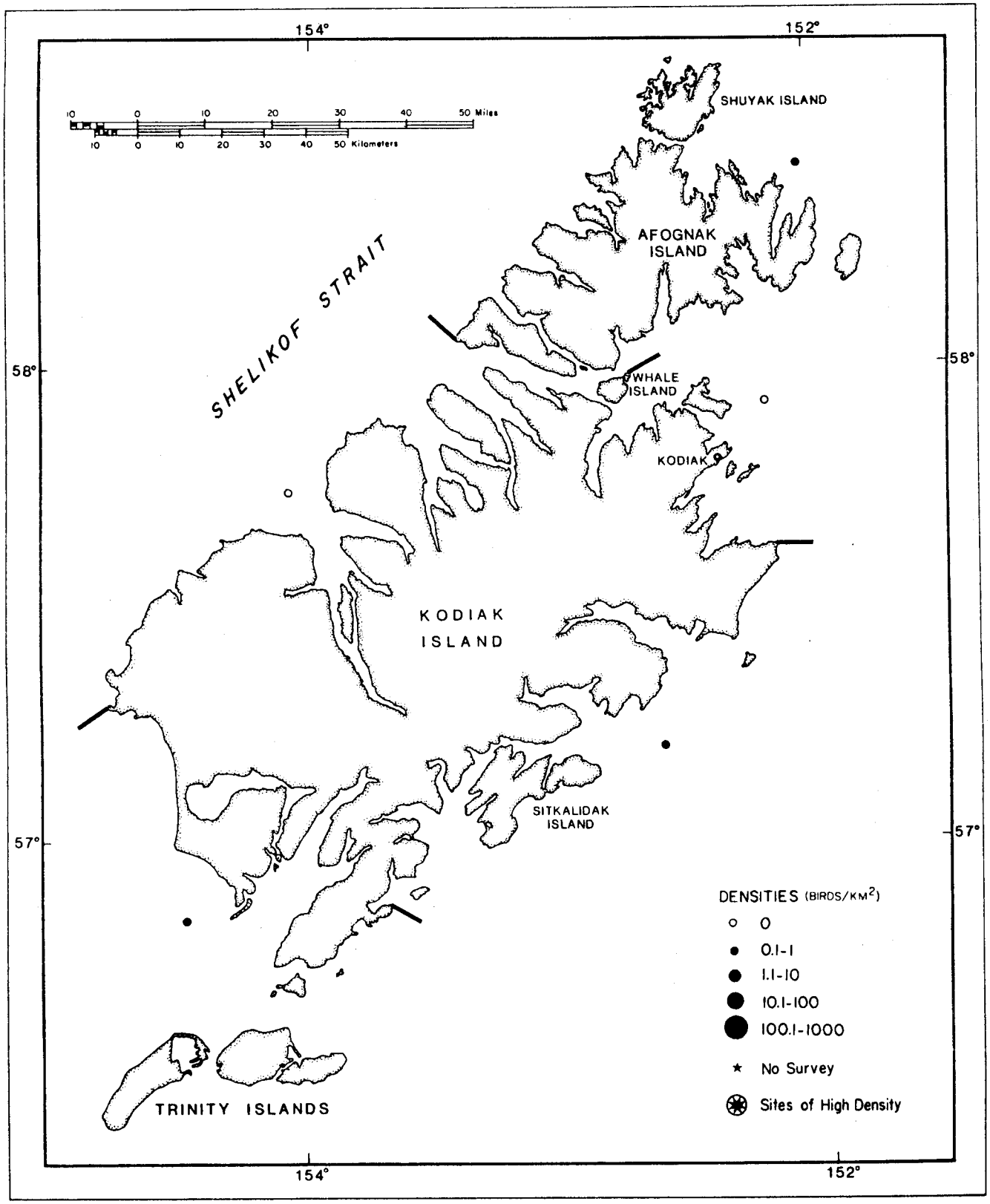


Fig. 37. Grebe density by section in Kodiak archipelago during winter as determined by aerial survey.

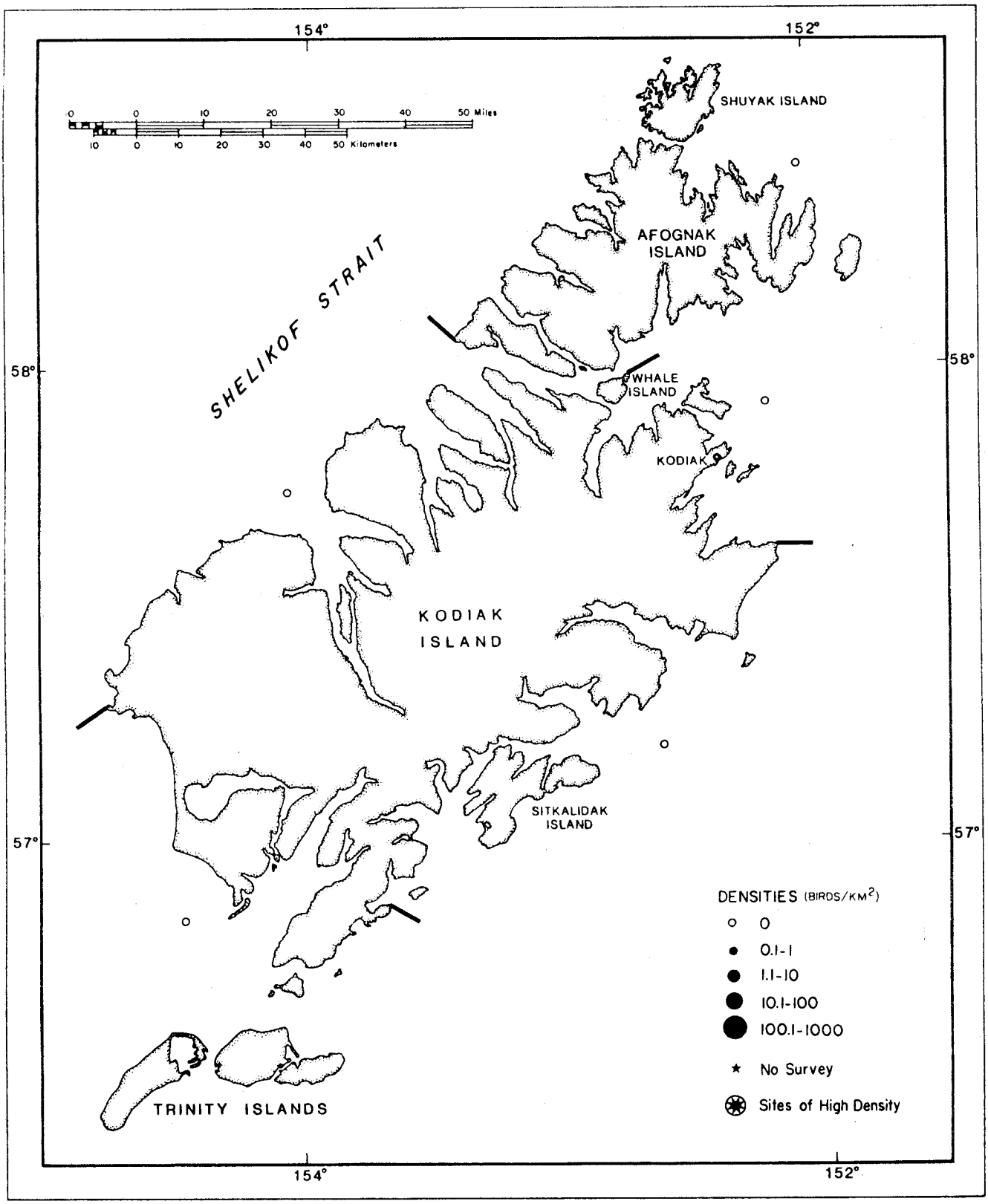


Fig. 38. Tubenose density by section in Kodiak archipelago during winter as determined by aerial survey. No tubenoses were sighted.

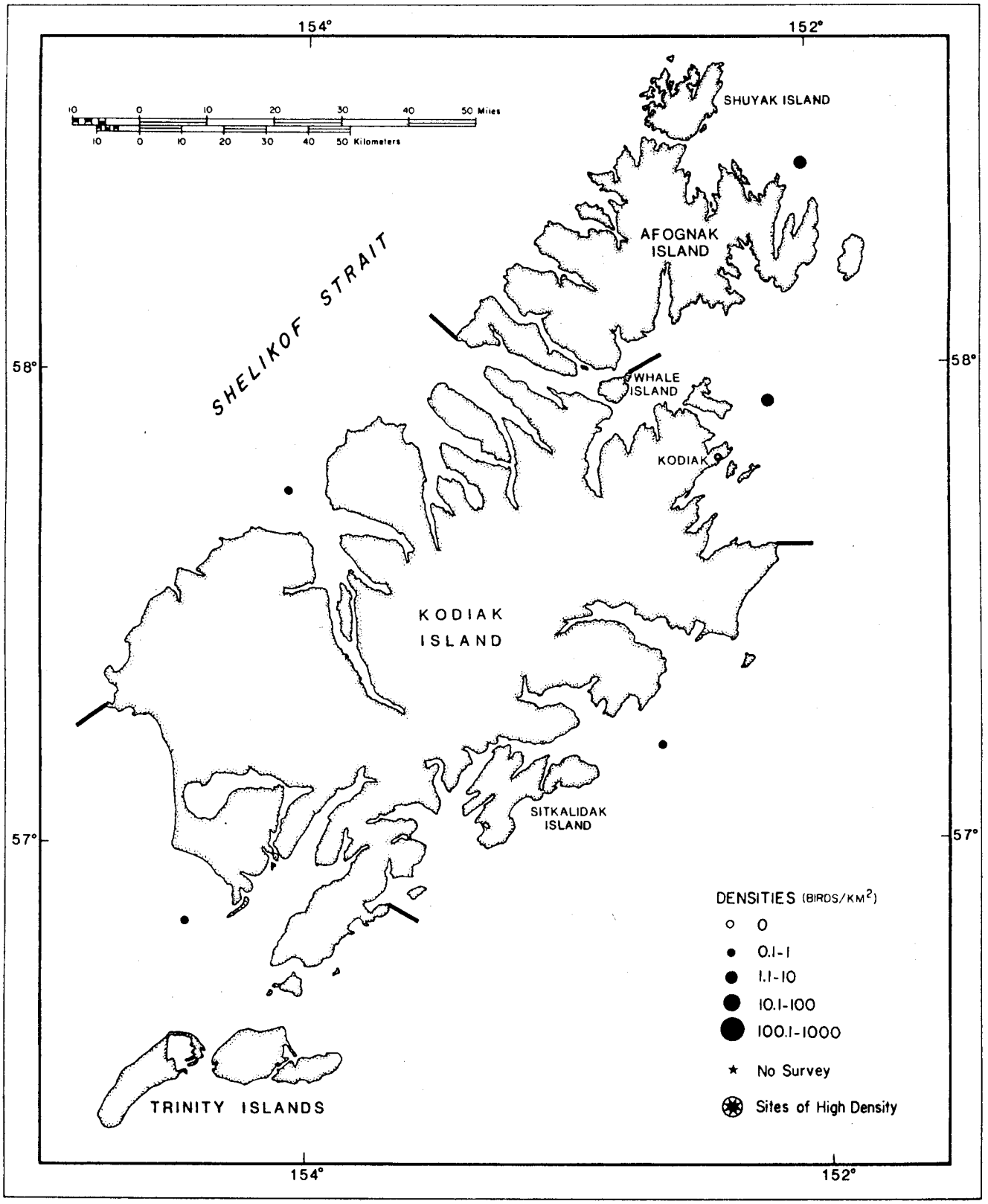


Fig. 39. Cormorant density by section in Kodiak archipelago during winter as determined by aerial survey.

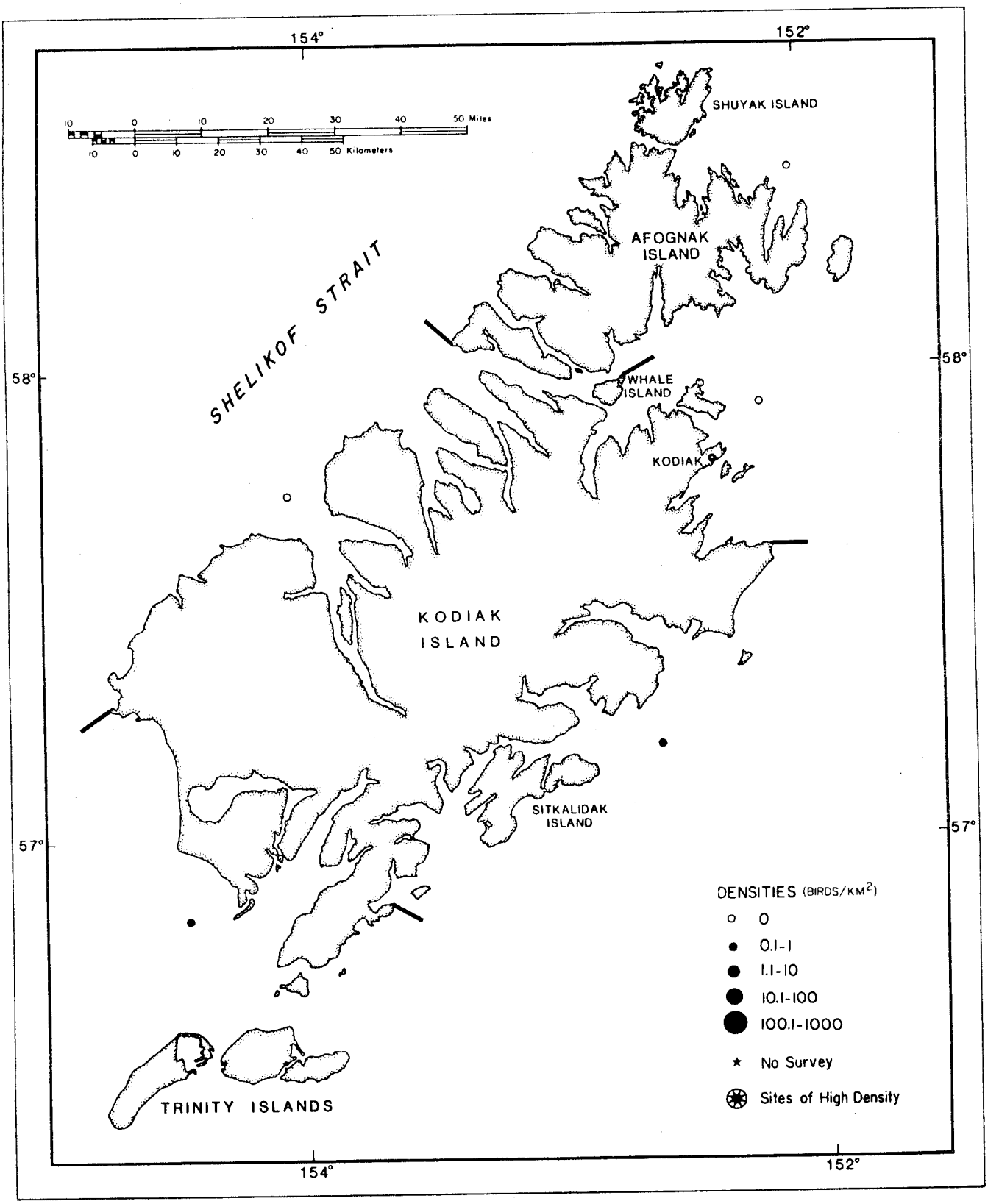


Fig. 40. Goose and swan density by section in Kodiak archipelago during winter as determined by aerial survey.

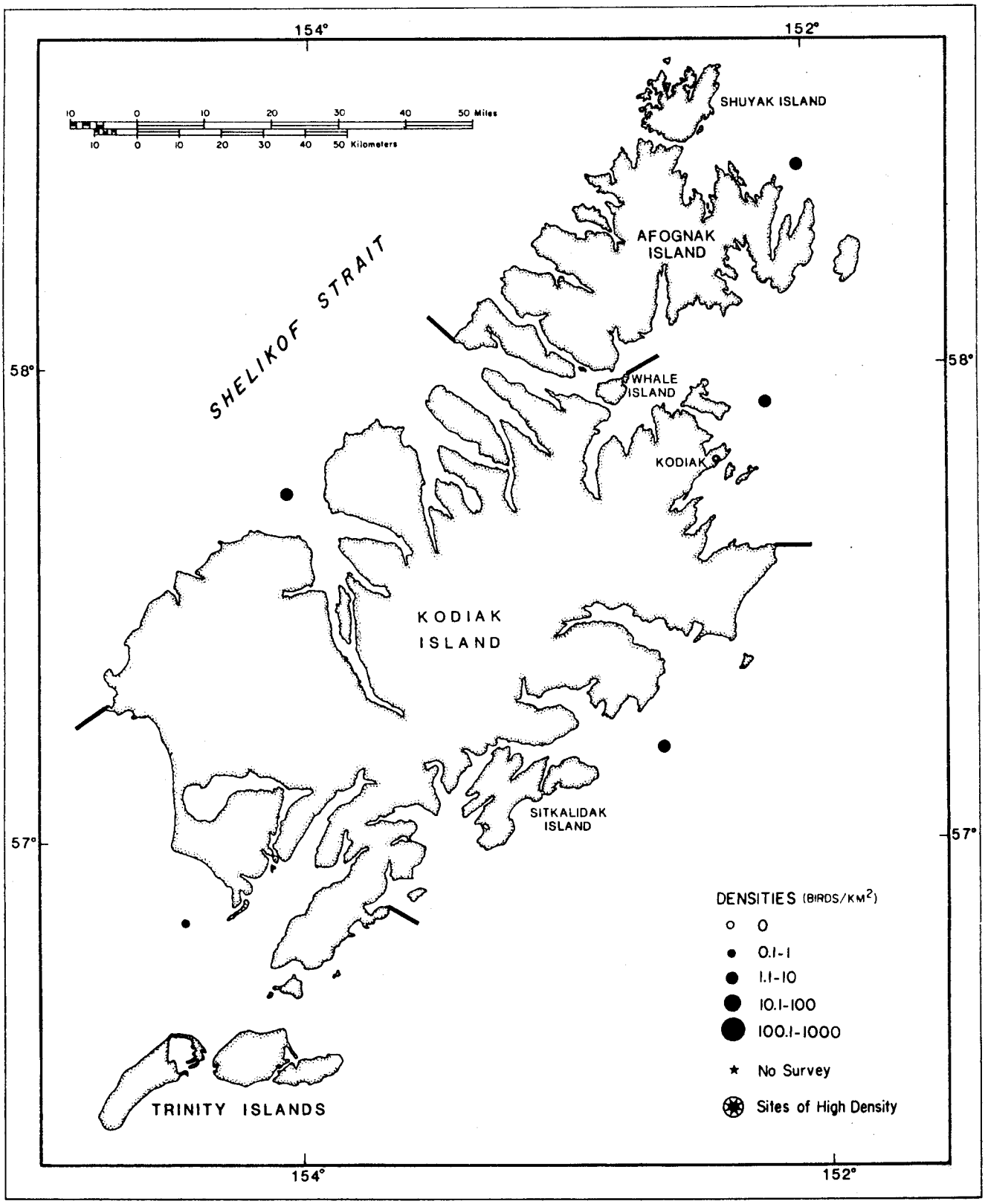


Fig. 41. Dabbling duck density by section in Kodiak archipelago during winter as determined by aerial survey.

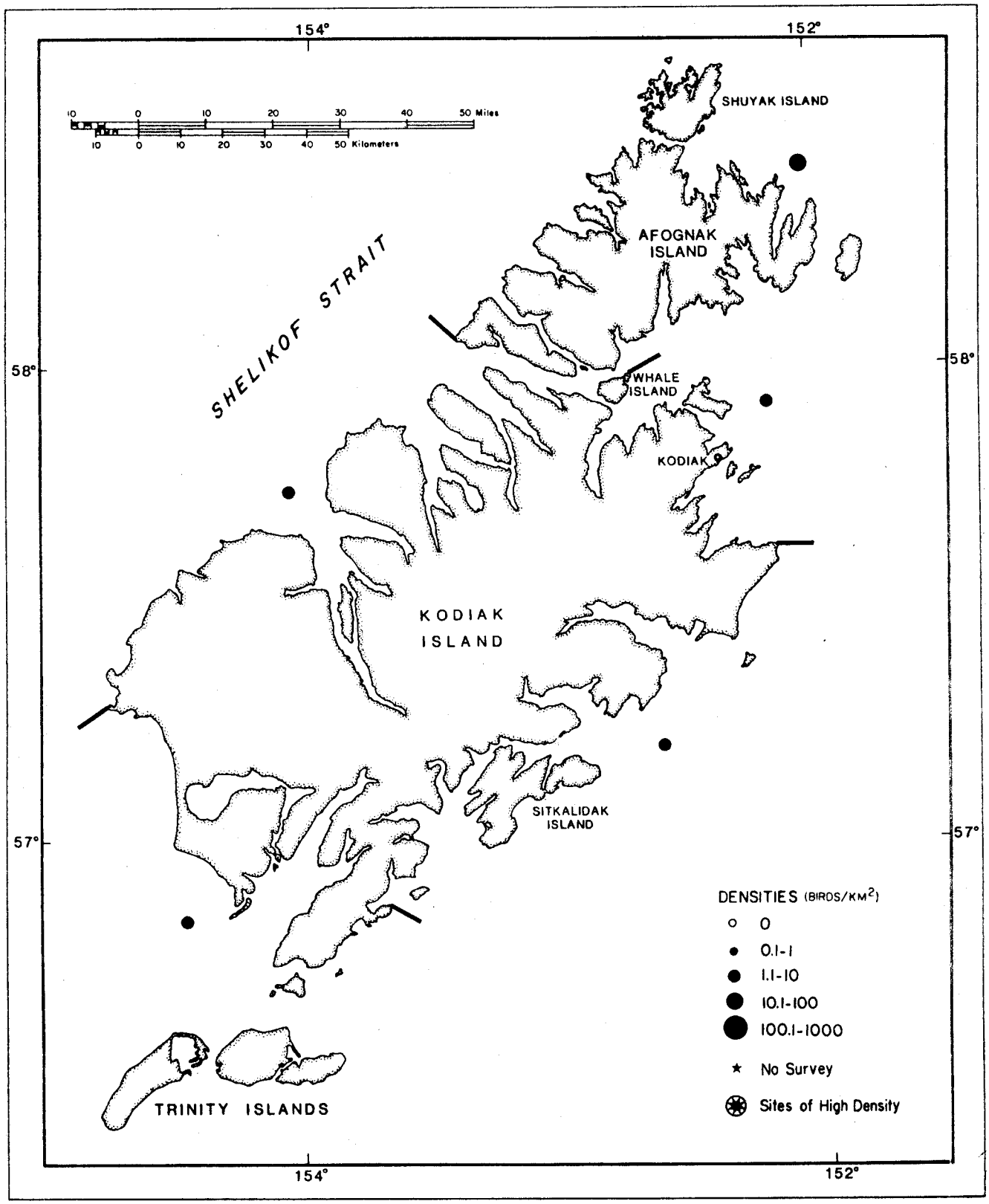


Fig. 42. Diving duck density by section in Kodiak archipelago during winter as determined by aerial survey.

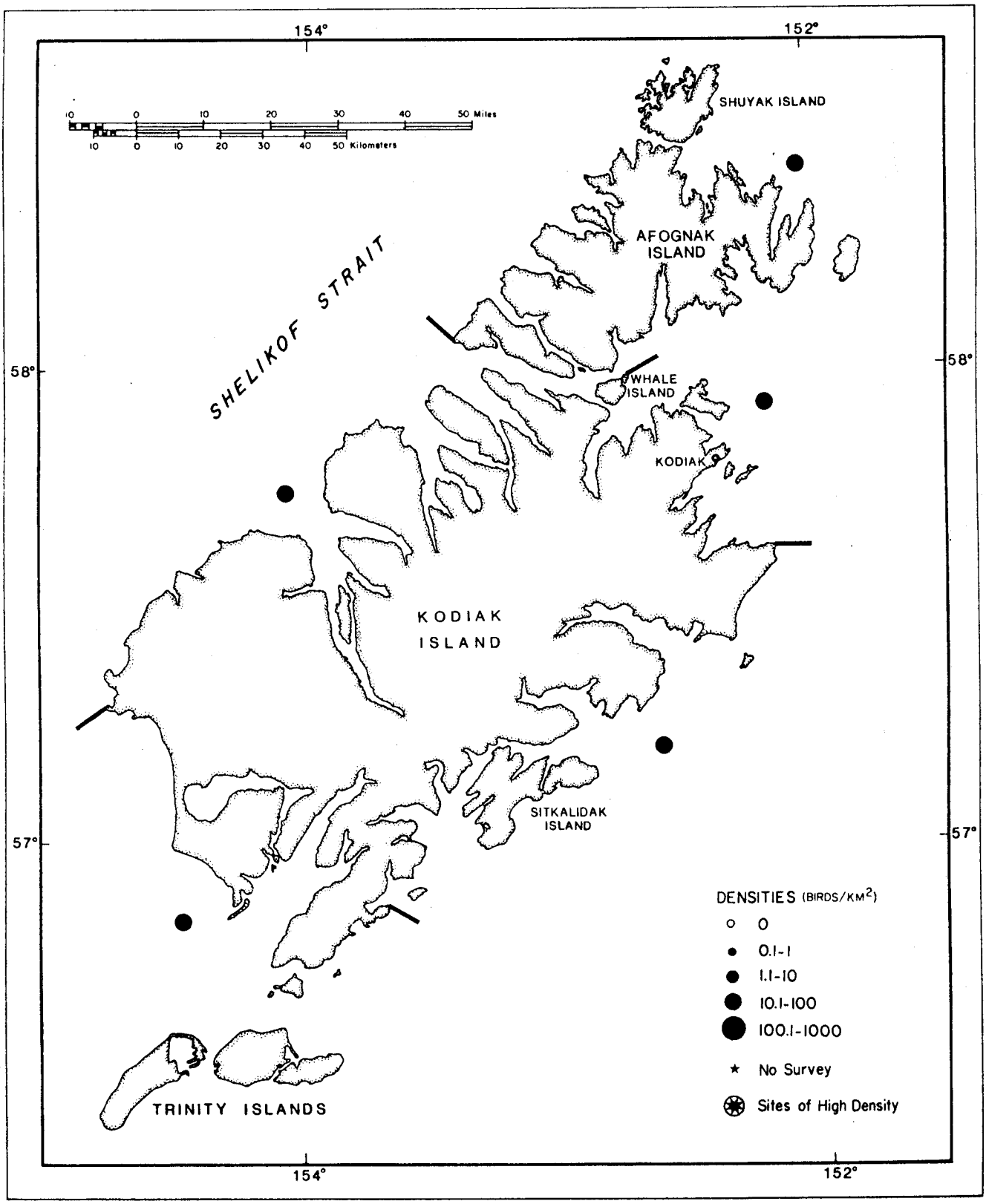


Fig. 43. Sea duck density by section in Kodiak archipelago during winter as determined by aerial survey.

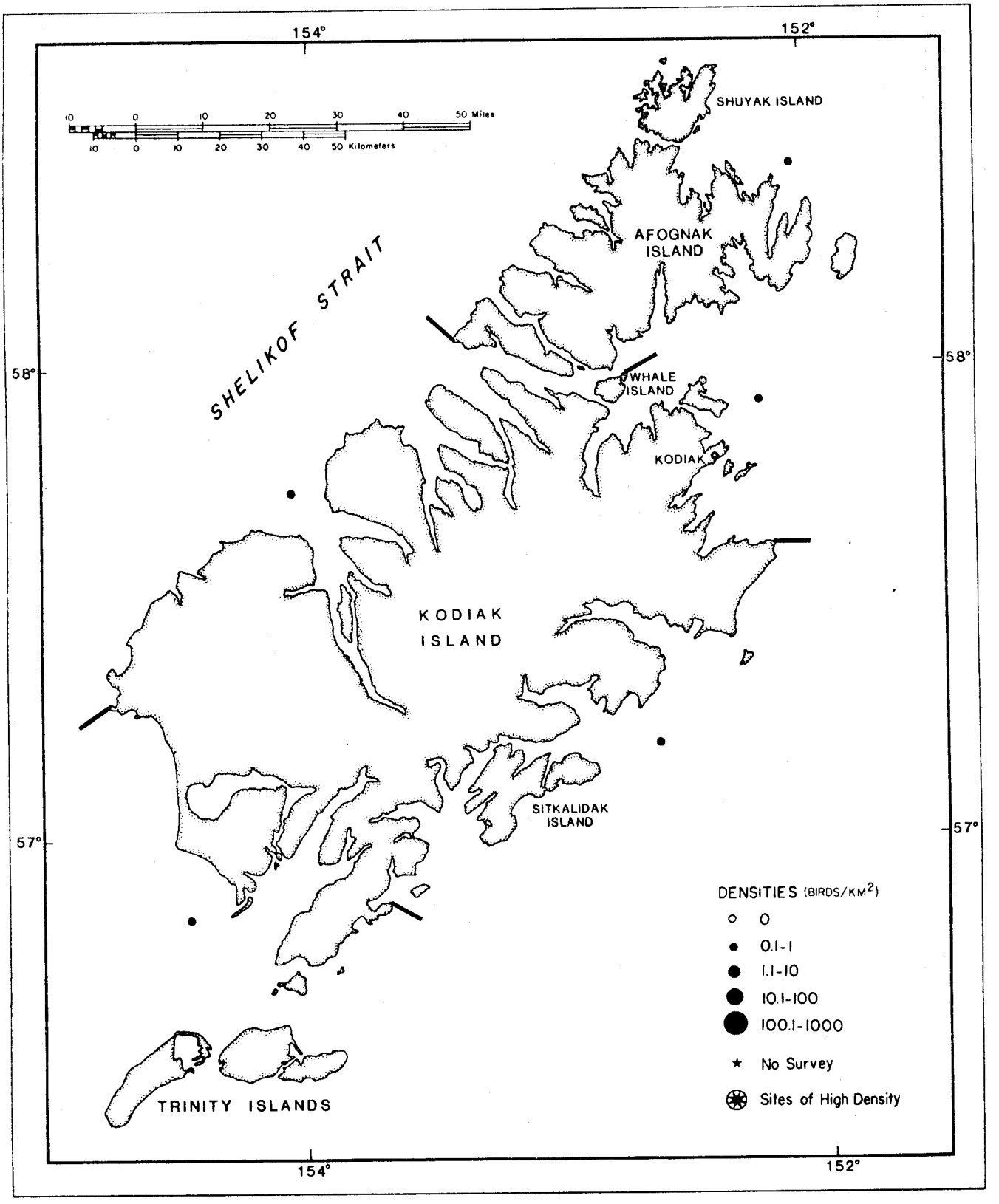


Fig. 44. Merganser density by section in Kodiak archipelago during winter as determined by aerial survey.

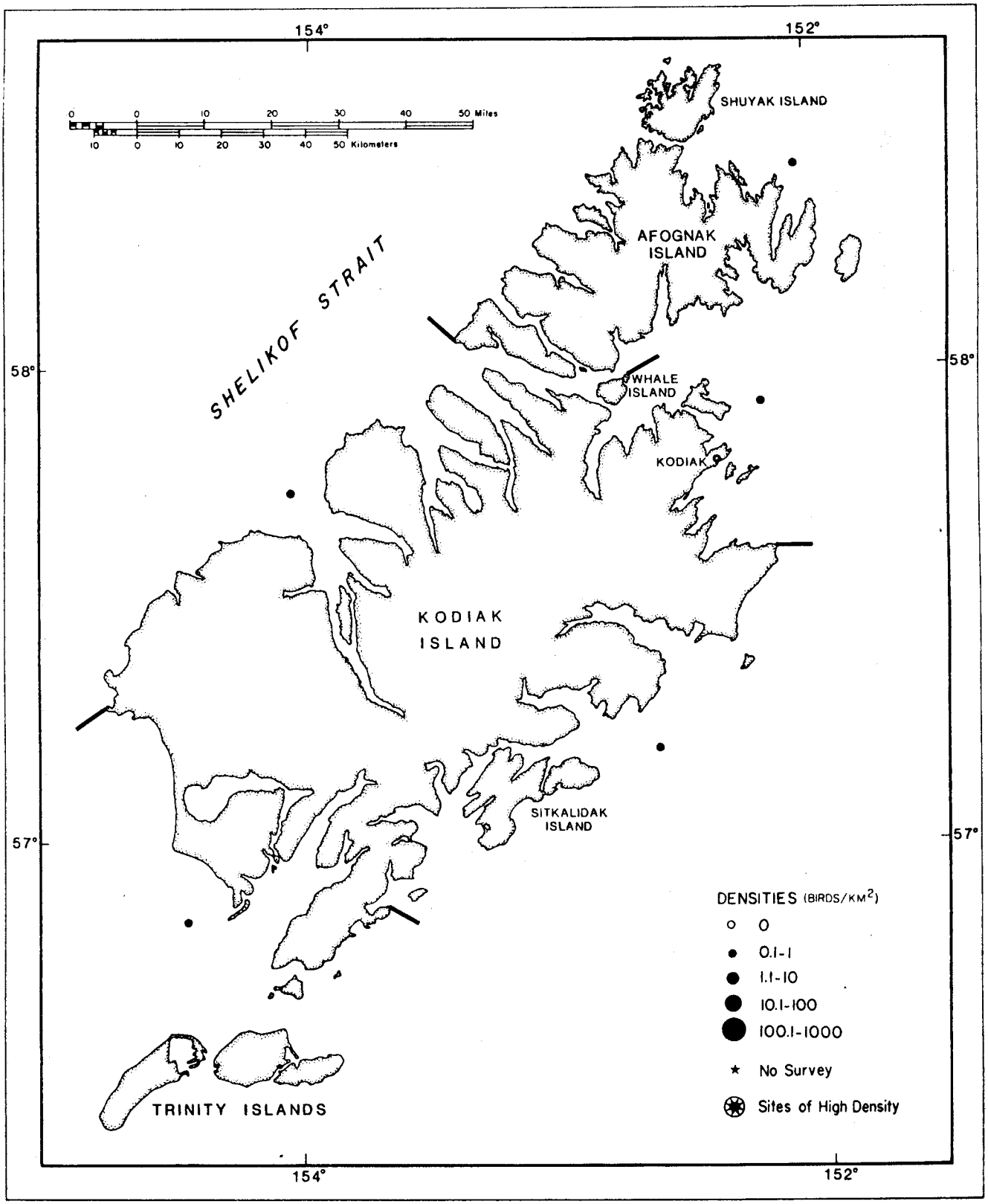


Fig. 45. Raptor density by section in Kodiak archipelago during winter as determined by aerial survey.

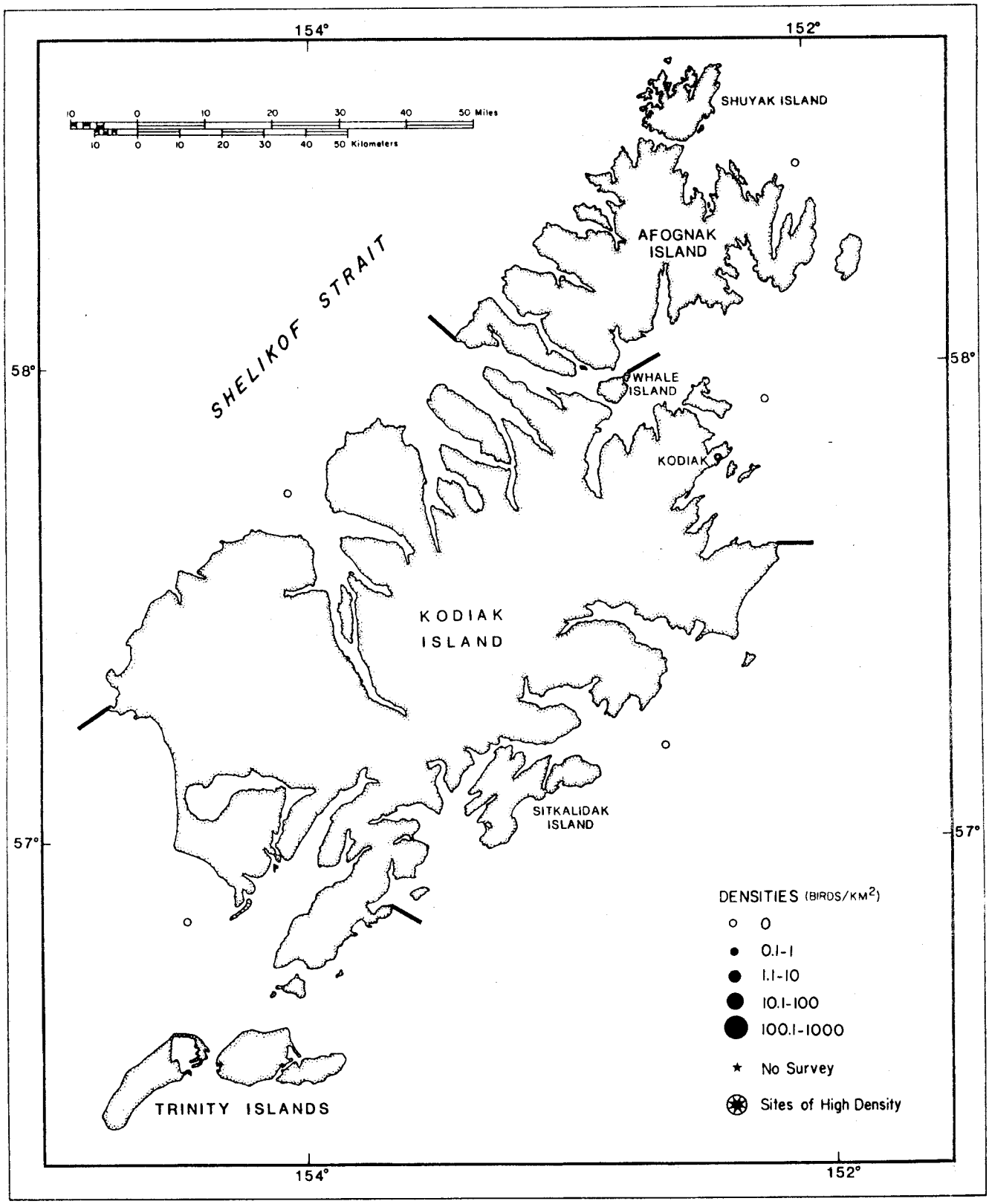


Fig. 46. Crane density by section in Kodiak archipelago during winter as determined by aerial survey. No cranes were sighted.

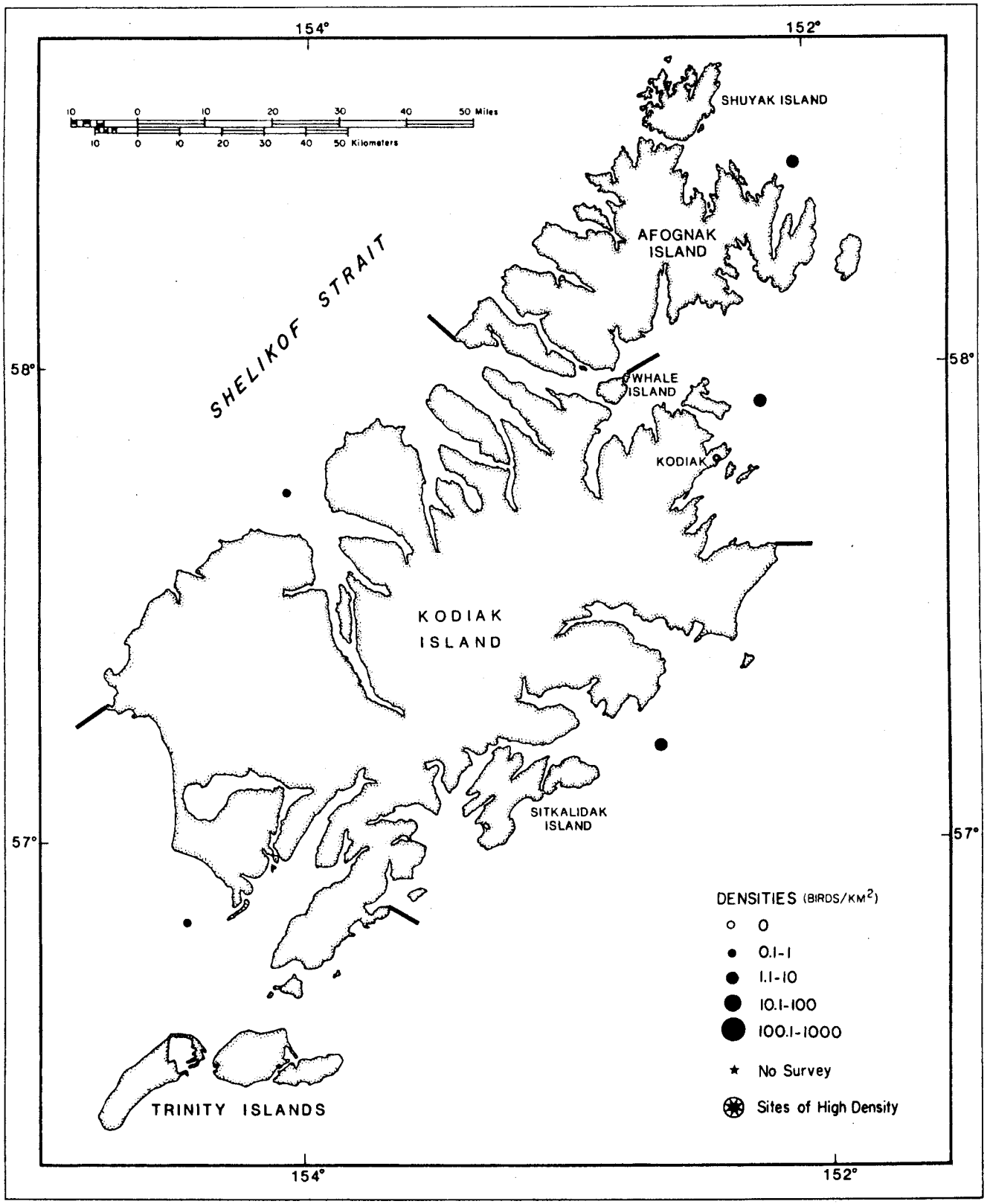


Fig. 47. Shorebird density by section in Kodiak archipelago during winter as determined by aerial survey.

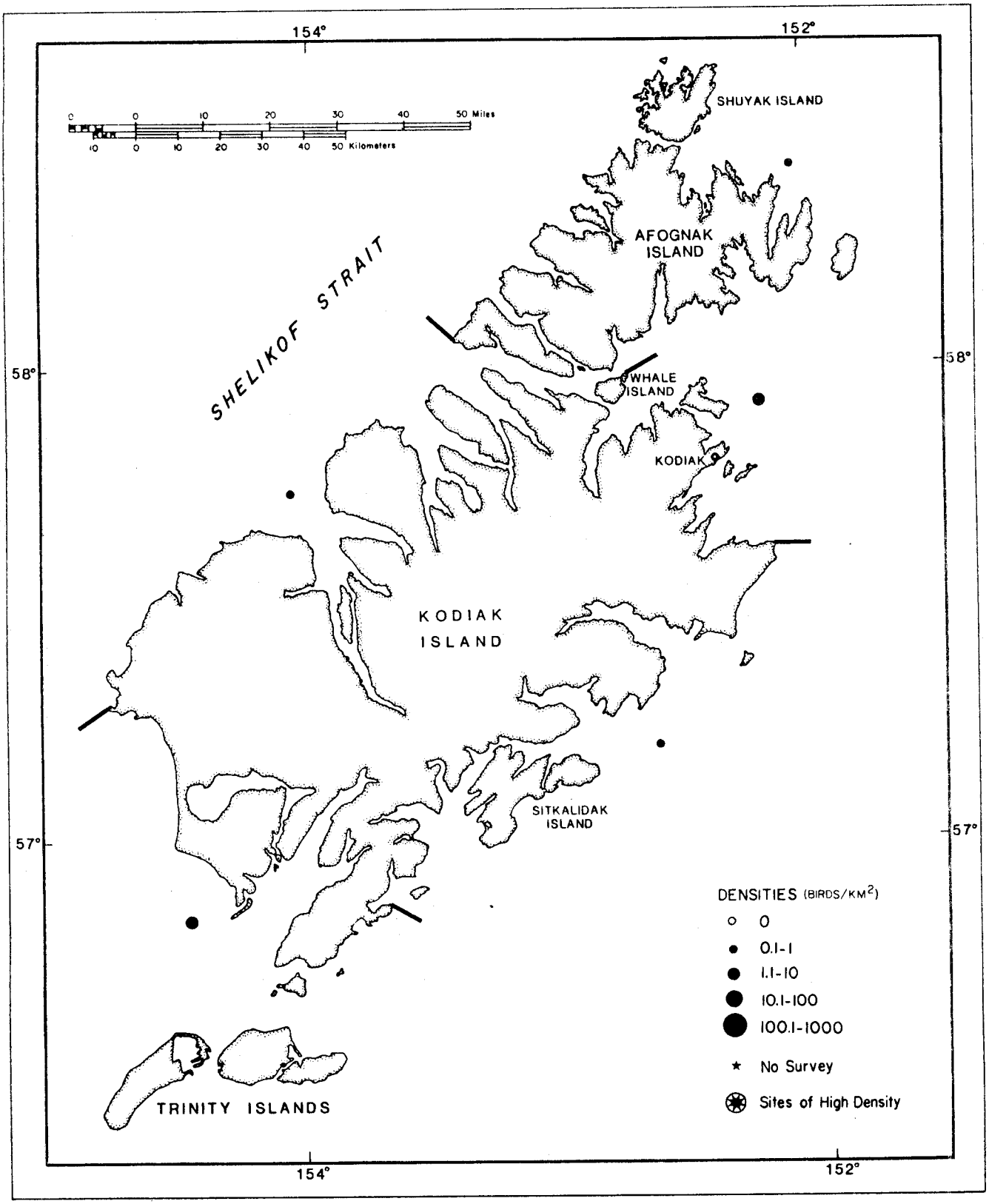


Fig. 48. Gull and jaeger density by section in Kodiak archipelago during winter as determined by aerial survey.

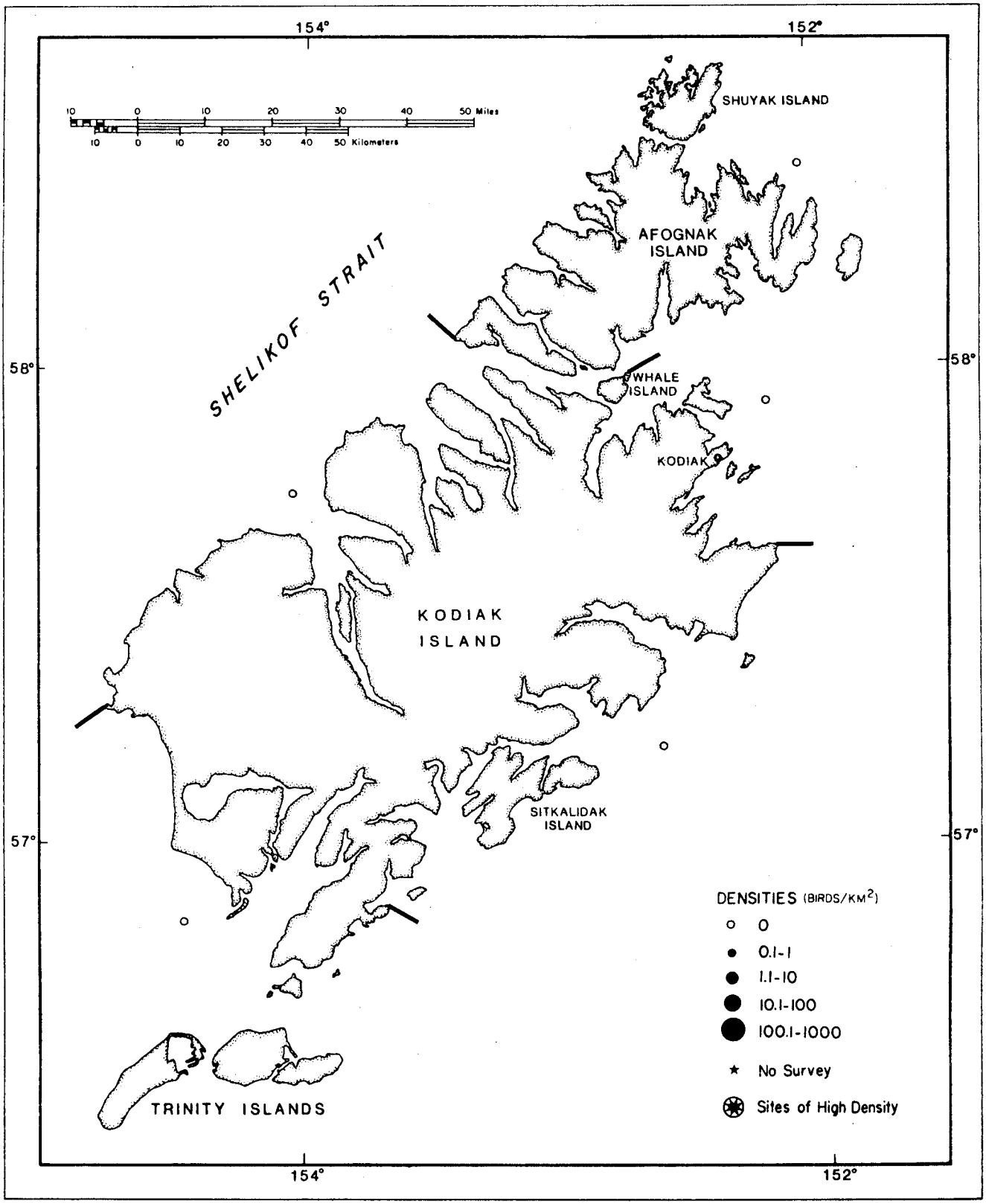


Fig. 49. Tern density by section in Kodiak archipelago during winter as determined by aerial survey. No terns were sighted.

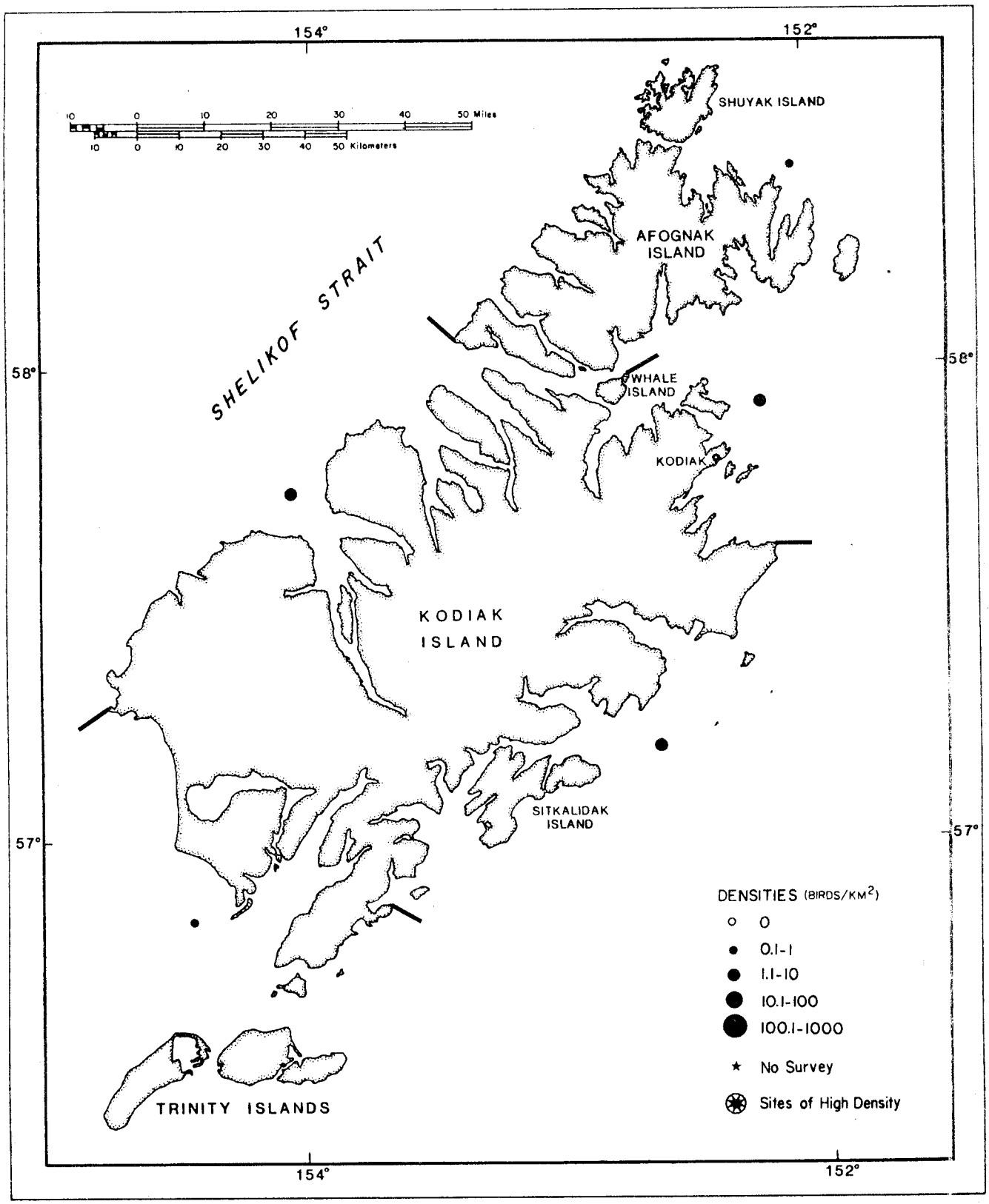


Fig. 50. Alcid density by section in Kodiak archipelago during winter as determined by aerial survey.

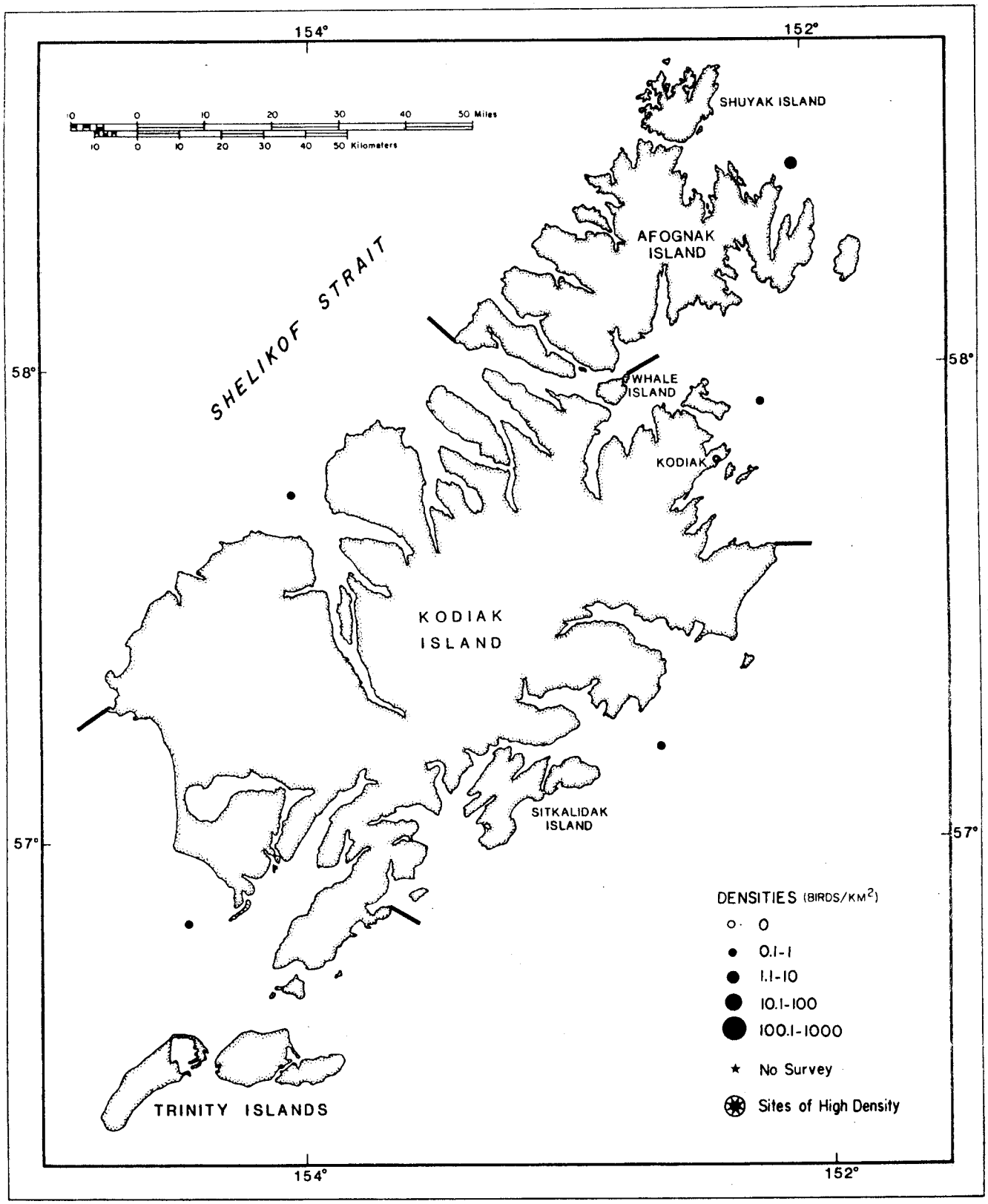


Fig. 51. Corvid density by section in Kodiak archipelago during winter as determined by aerial survey.

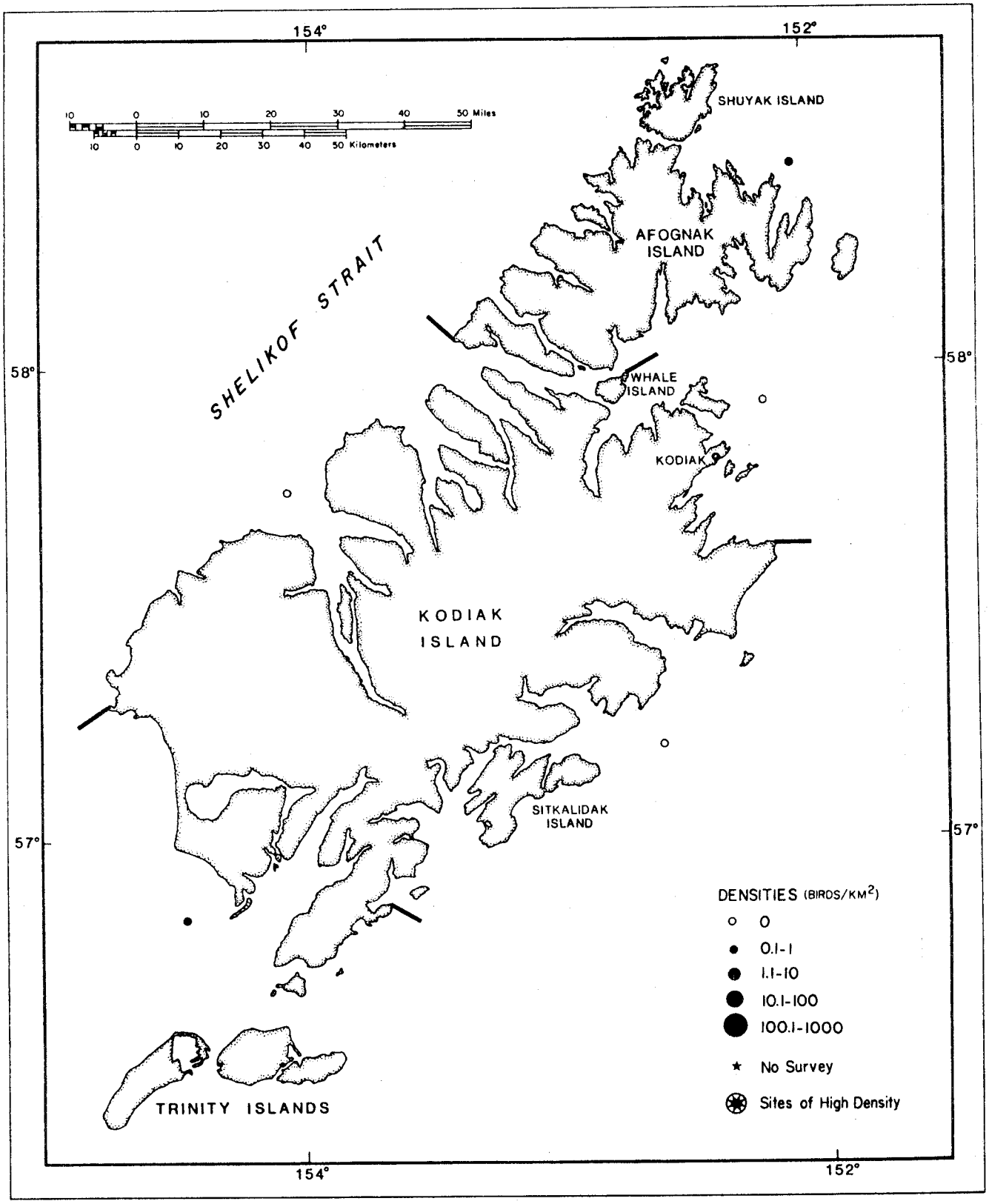


Fig. 52. Passerine (other than corvid) density by section in Kodiak archipelago during winter as determined by aerial survey.

Highest densities of diving ducks were recorded in the Afognak/Shuyak section (14 birds/km^2 and divers were least abundant in the Shelikof and southern sections (both 2 birds/km^2). Over 90 percent of the divers in the Afognak, Shelikof and southern sections were goldeneyes. The remainder in those three sections were Bufflehead. In Section 2, the Chiniak area, 50 percent of the divers were scaup, 47 percent goldeneye and 3 percent Bufflehead. Diving ducks in Section 4 consisted of 60 percent goldeneyes, 35 percent Buffleheads and 5 percent scaups. Overall, 76 percent of the diving ducks were goldeneyes, 13 percent scaups and 11 percent Buffleheads.

Ninety-nine percent of identified dabbling ducks were mallards. Dabblers reached highest densities (8 birds/km^2) in Section 3 on stream deltas at heads of bays and in coastal lagoons. They were least abundant on the southern portion of Kodiak. Gadwalls, Pintails and American Wigeons were all identified, but occurred in small numbers.

Alcids, the next most dense species group (3 birds/km^2), were found in greatest abundance on the eastern side of Kodiak, particularly in Kiliuda and Ugak Bays. There, large rafts of murres were observed both in and out of count units. Murres comprised 83 percent of all alcids observed. One alcid/km^2 was recorded for the Afognak section and only a trace was recorded for the southern end.

Chiniak Bay was the area of densest wintering gull populations (4 birds/km^2), and the southern end of Kodiak was next with three gulls/km^2. The three other sections had only one bird/km^2. Of identified gulls, 76 percent were Glaucous-winged and 24 percent Mew Gulls.

Shorebird densities were consistantly moderate (1 or 2 birds/km^2) in all but the southern section where only a trace was found. Twenty percent of the shorebirds were Black Oystercatchers, and the remainder were unidentified small and medium shorebirds. Rock Sandpipers were identified in small numbers and likely comprised most of the unidentified shorebirds.

Cormorants and corvids were the only other groups with a density greater than one bird/km^2) and Section 1 had the greatest corvid densities (2 birds/km^2). Ninety-five percent of the corvids were Northwestern Crows, and the remainder were Black-billed Magpies (*Pica pica*) (3%) and Common Ravens (1%). Loons, mergansers and raptors were observed in all sections but in only trace amounts. Emperor Geese (*Philacte canagica*) were recorded only in Sections 4 and 5, and only five grebes were observed.

Section 2, Chiniak/Kizhuyak Bays, had the highest bird densities of the five sections with 67 birds/km^2. Forty-eight birds/km^2 were found in Section 4, the eastern side, and 40 birds/km^2 were observed in Section 1, Afognak/Shuyak Islands. The western side had 28 birds/km^2, and the southern side had the lowest density - 20 birds/km^2.

Habitat Usage - As mentioned previously, the sampling techniques required more searching for birds in open waters of bays/fjords thereby increasing numbers found in that habitat type. Habitat preferences of each species group and what species groups were found on each habitat type are shown in Figs. 53 and 54, respectively. All species groupings observed with the exception of "Other Passerines" were recorded in bay/fjord water, and 78 percent of all birds were in that habitat type. Fifty-nine percent of birds in bay water were sea ducks, 16 percent diving ducks, 11 percent alcids and 7 percent dabbling ducks. All grebes, almost all alcids, 91 percent of the mergansers and diving ducks, 89 percent of the sea ducks and loons and 80 percent of the cormorants were found on bay water.

Lagoon/embayment waters were a distant second in habitats used by wintering birds on the Kodiak survey. Five percent of all birds were found in that habitat. Almost 94 percent of the birds in lagoon waters were waterfowl. Most (44%) were sea ducks, 28 percent were dabblers and 20 percent divers. However, only 5 percent of all sea ducks selected that habitat, plus 15 percent of the dabblers and 7 percent of the divers.

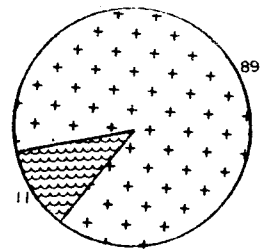
Exposed inshore water was the third most used habitat, but only about 4 percent of the birds were found there. Sea ducks and cormorants were the most abundant species groups in exposed inshore water with 85 and 9 percent of the total, respectively. The species group with the largest percentage of its total in exposed inshore water was geese. All were Emperor Geese and 17 percent were found over exposed waters. They frequently flushed from beach habitats and were flying over water when observed.

The only other habitat type on which 2 percent or more of the total birds were found was protected delta water. This habitat was frequently found at heads of bays. Ninety-one percent of the birds on protected delta water were dabblers, however, only 21 percent of the dabblers were found on the habitat. Most (52%) dabblers used bay water, 15 percent used lagoon water and 11 percent used saltmarshes.

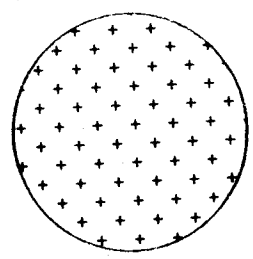
Raptors (all were assumed to be Bald Eagles) used the widest variety of habitats. They were found on 10 identified types. Most heavily used were rocky islands or pinnacles and rocky beaches in bays. Over one-fourth were on exposed habitats.

Shorebirds were the most prevalent species group on exposed habitats. Twenty-seven percent of the shorebirds were on exposed sand, gravel or rock beaches. Black Oystercathers comprised 20 percent of all shorebirds and the remainder were unidentified small and medium shorebirds except for a few Rock Sandpipers. It was likely that many of the birds were Rock Sandpipers. Shorebirds also frequently chose rocky beaches of islands in bays (19%), gravel beaches in bays (9%) and were observed flying over bay water (9%).

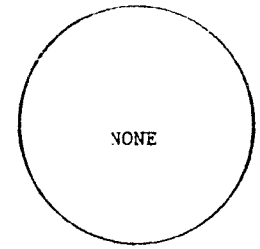
KODIAK ARCHIPELAGO, WINTER



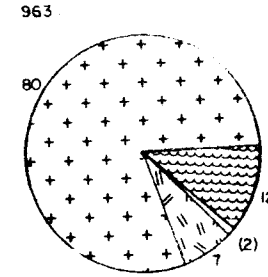
Loons



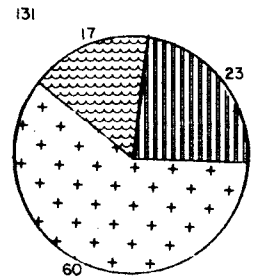
Grebes



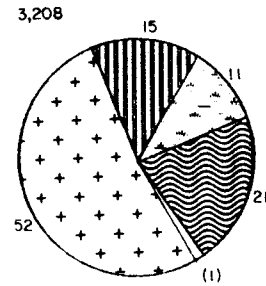
Tubenoses



Cormorants



Swans and Geese



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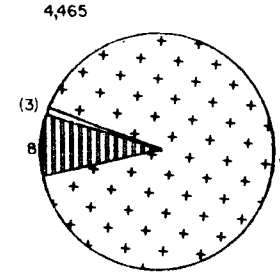
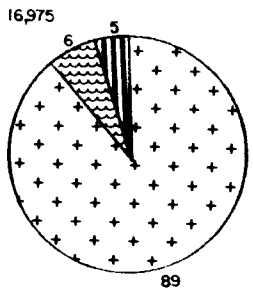
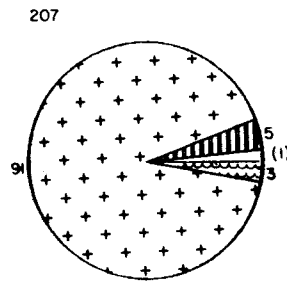


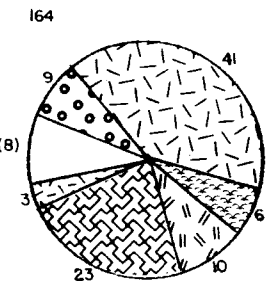
Divers



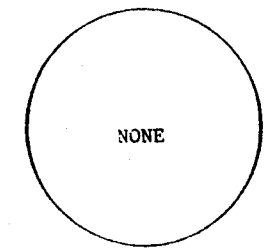
Sea Ducks



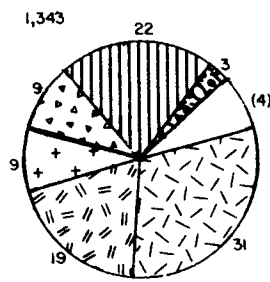
Mergansers



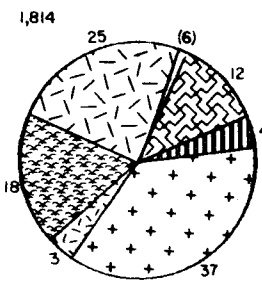
Raptors



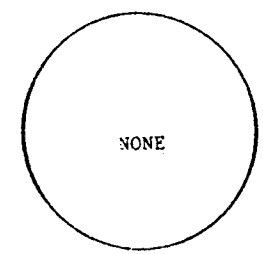
Cranes



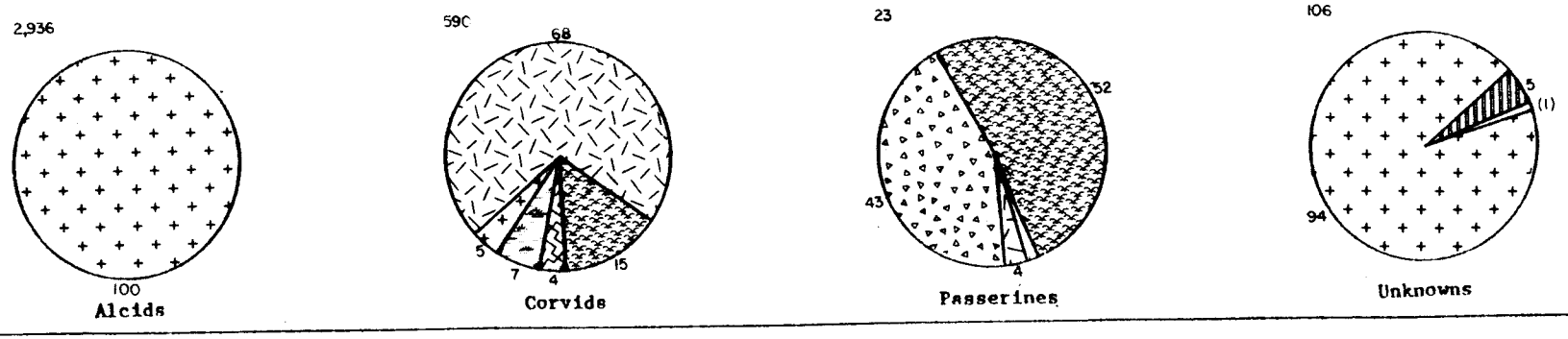
Shorebirds



Jaegers and Gulls



Terns



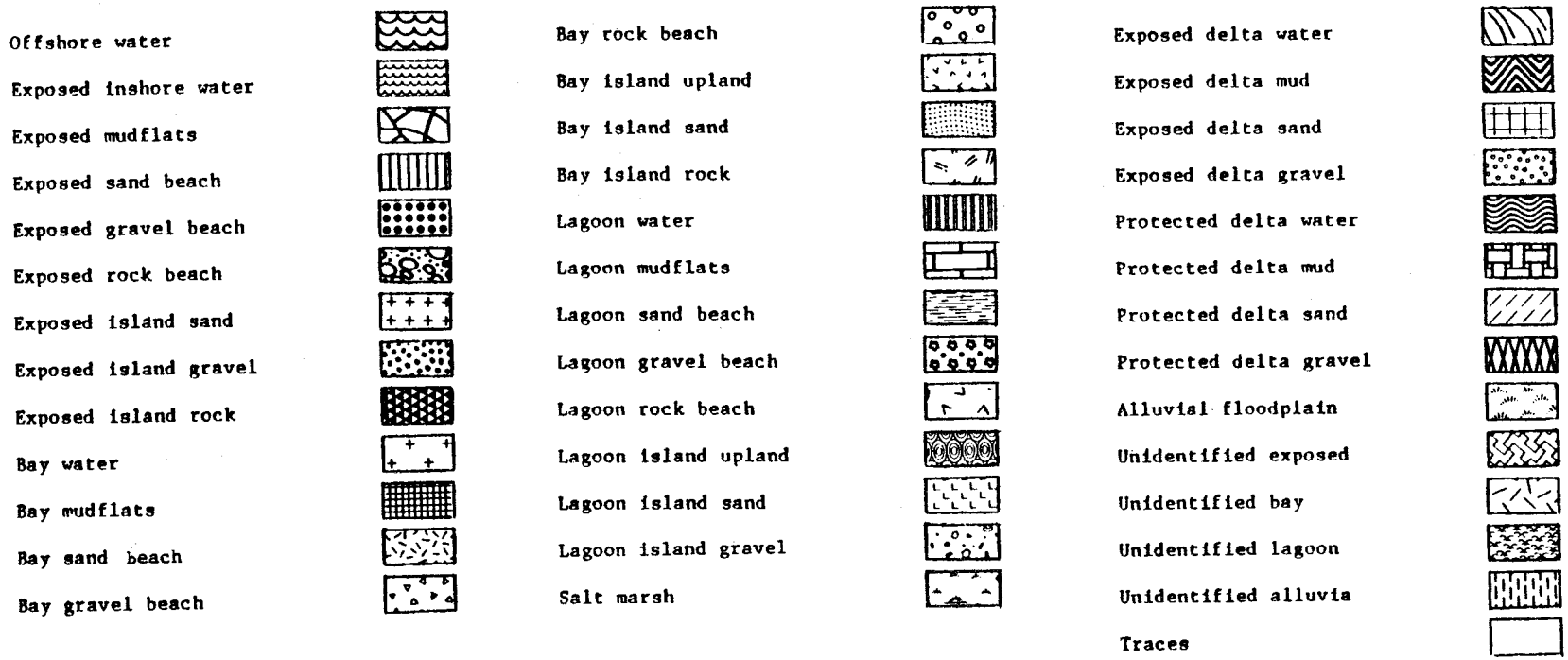
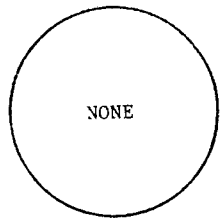
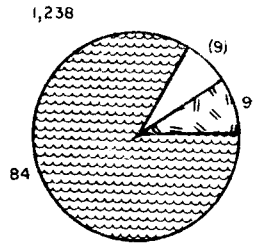


Fig. 53. Kodiak archipelago, Winter 1976. Habitat preference of marine birds as determined by aerial survey. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

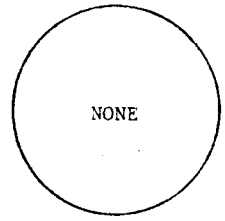
KODIAK ARCHIPELAGO, WINTER



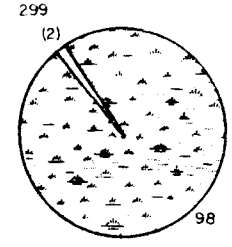
Offshore water



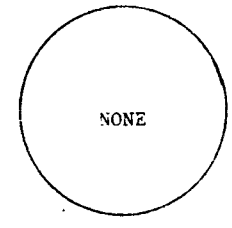
Exposed inshore water



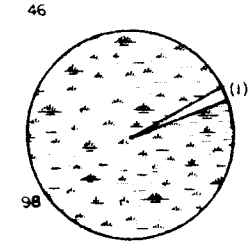
Exposed mudflats



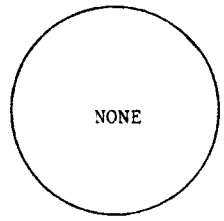
Exposed sand beach



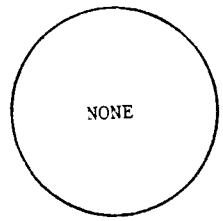
Exposed gravel beach



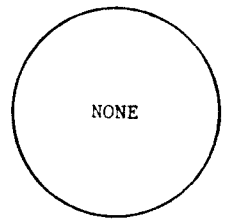
Exposed rock beach



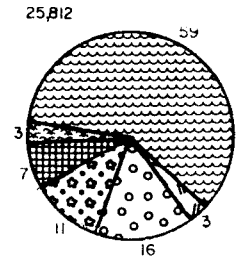
Exposed island sand



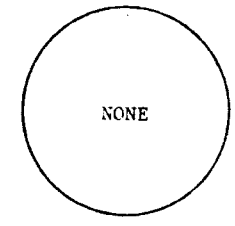
Exposed island gravel



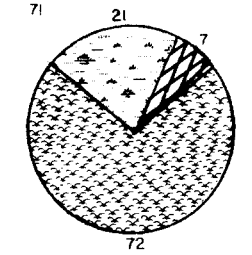
Exposed island rock



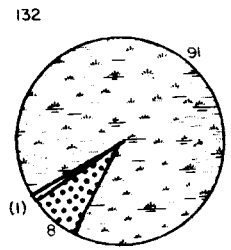
Bay water



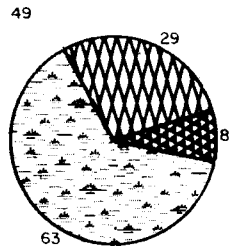
Bay mudflats



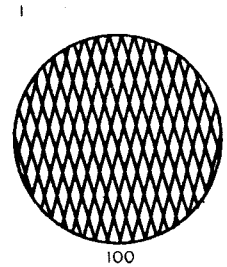
Bay sand beach



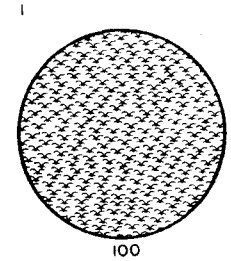
Bay gravel beach



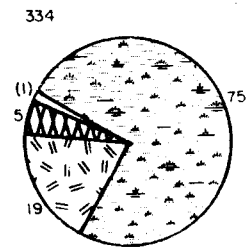
Bay rock beach



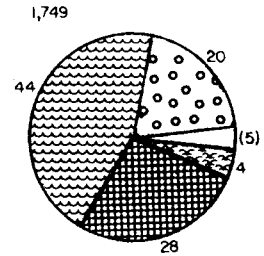
Bay island upland



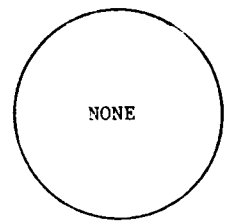
Bay island sand



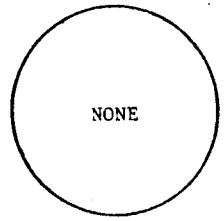
Bay island rock



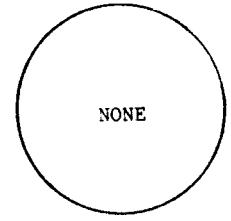
Lagoon water



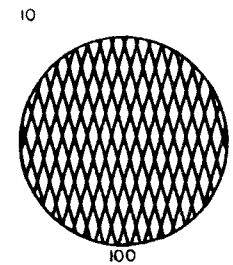
Lagoon mudflats



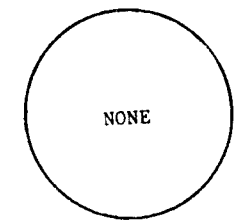
Lagoon sand beach



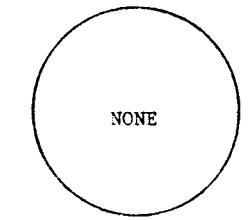
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

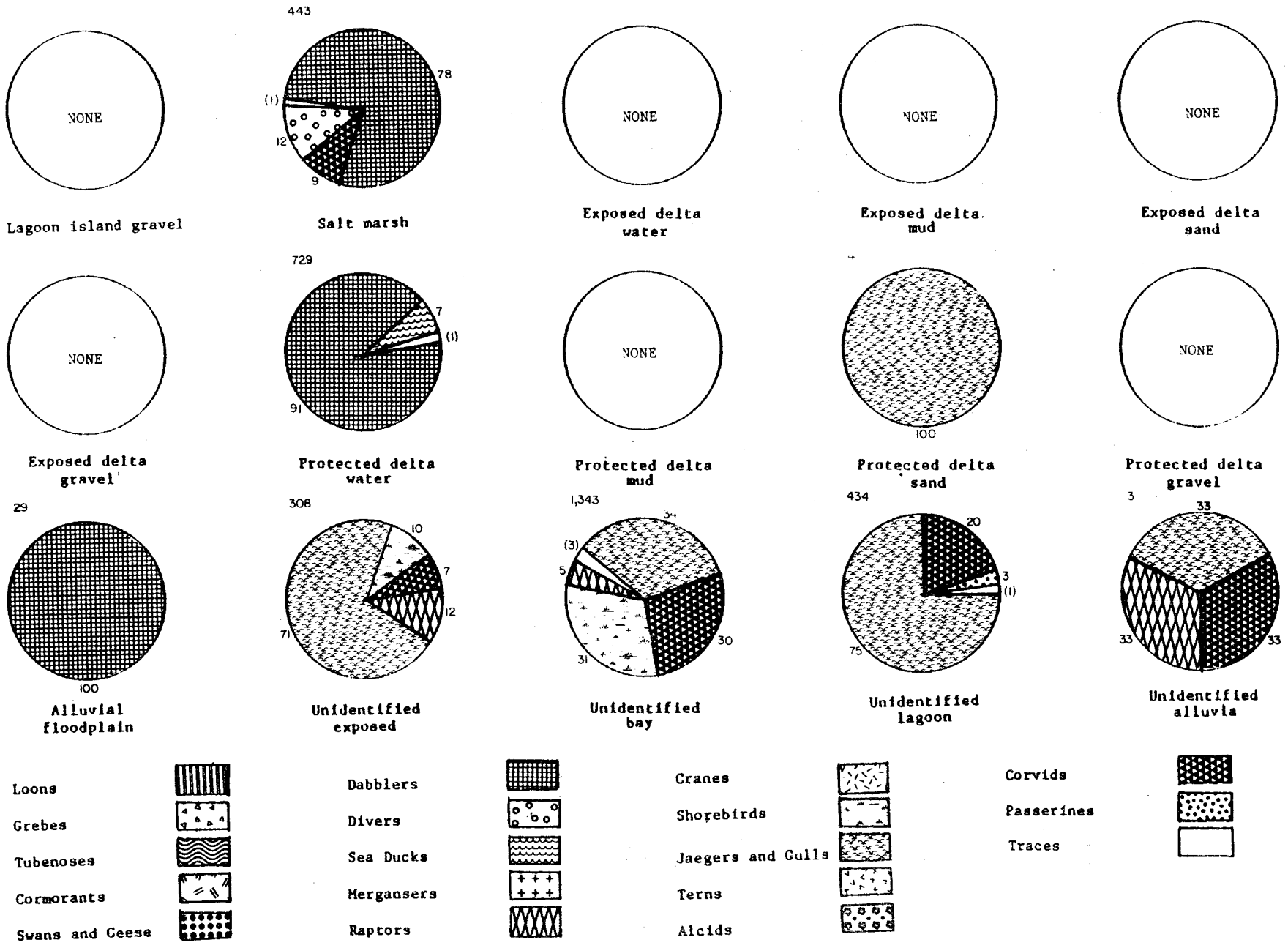


Fig. 54. Kodiak archipelago, Winter 1976. Marine bird usage of habitats as determined by aerial survey. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

Sixty-two percent of the gulls were recorded in protected bays and fjords either on water or on various coastal substrates. Another 22 percent were found on lagoon or embayment habitats. Only 13 percent used exposed coastal areas. Many gulls flock to the city of Kodiak in winter when crab processing is underway, but in this survey the Kodiak area was not surveyed.

Because corvids were frequently flying when observed, habitat types were often not recorded for them. Almost three-fourths of the corvids were associated with bay/fjord habitats, 15 percent with lagoons and 7 percent with salt marshes.

For the entire Kodiak survey, a minimum of 37 bird species were found on 16 habitat types.

LOWER COOK INLET

Survey data are more complete for Lower Cook Inlet than for other regions in the study area. In 1976, in conjunction with the Marine and Coastal Habitat Management Section, Alaska Department of Fish and Game, we conducted bird surveys in all four seasons. We flew the entire coastline in each survey and also conducted eight pelagic transects (Fig. 55). In addition, we flew a pelagic survey of Kamishak and outer Kachemak Bays in conjunction with an ADFG marine mammal survey team.

In 1978, field studies were confined to the Lower Cook Inlet region and we completed four spring coastal, one summer coastal, one fall coastal/pelagic and two winter coastal/pelagic surveys (Figs. 56 and 57). These surveys, combined with past information, provide a suitable data base for predicting potential impacts to birds by oil or other development in the region.

The coastline was subdivided into 17 physiographic sections for logical depiction of bird densities (Fig. 58). To summarize bird densities in offshore waters, we used five regions which were termed "natural regions" in the Lower Cook Inlet OCSEAP Synthesis Report (Fig. 58).

SPRING

Shoreline Density - Bird densities by shoreline section for total birds and for each species group are depicted in Figs. 59-76. Lower Cook Inlet had the highest overall bird density in spring when 192 birds/km^2 were recorded along the coast (Table 7). Over 50 percent of the birds were shorebirds and gulls at densities of 53 and 52 birds/km^2, respectively. The five waterfowl groups made up most of the remainder: 38 sea ducks/km^2, 23 divers/km^2, 15 dabblers/km^2, 7 geese/km^2, and 1 merganser/km^2. Except for alcids with 1 bird/km^2, no other bird groups were found in anything but trace amounts.

Section 15, on the south side of Kamishak Bay, had the highest combined density (417 birds/km^2) in spring. This section also contained the highest densities of shorebirds (216 birds/km^2) and sea ducks (117

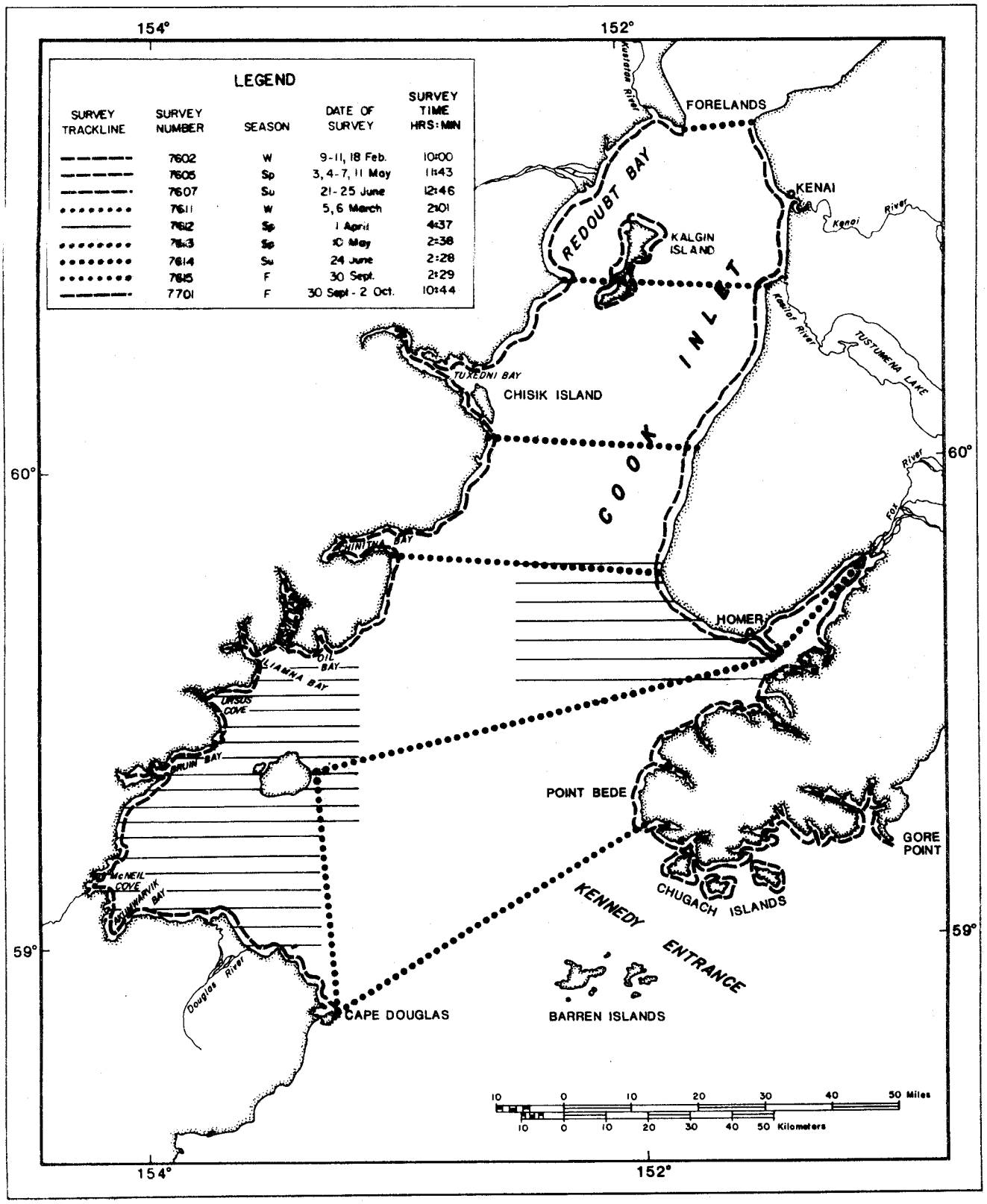


Fig. 55. Tracklines of aerial bird surveys in Lower Cook Inlet, 1976.

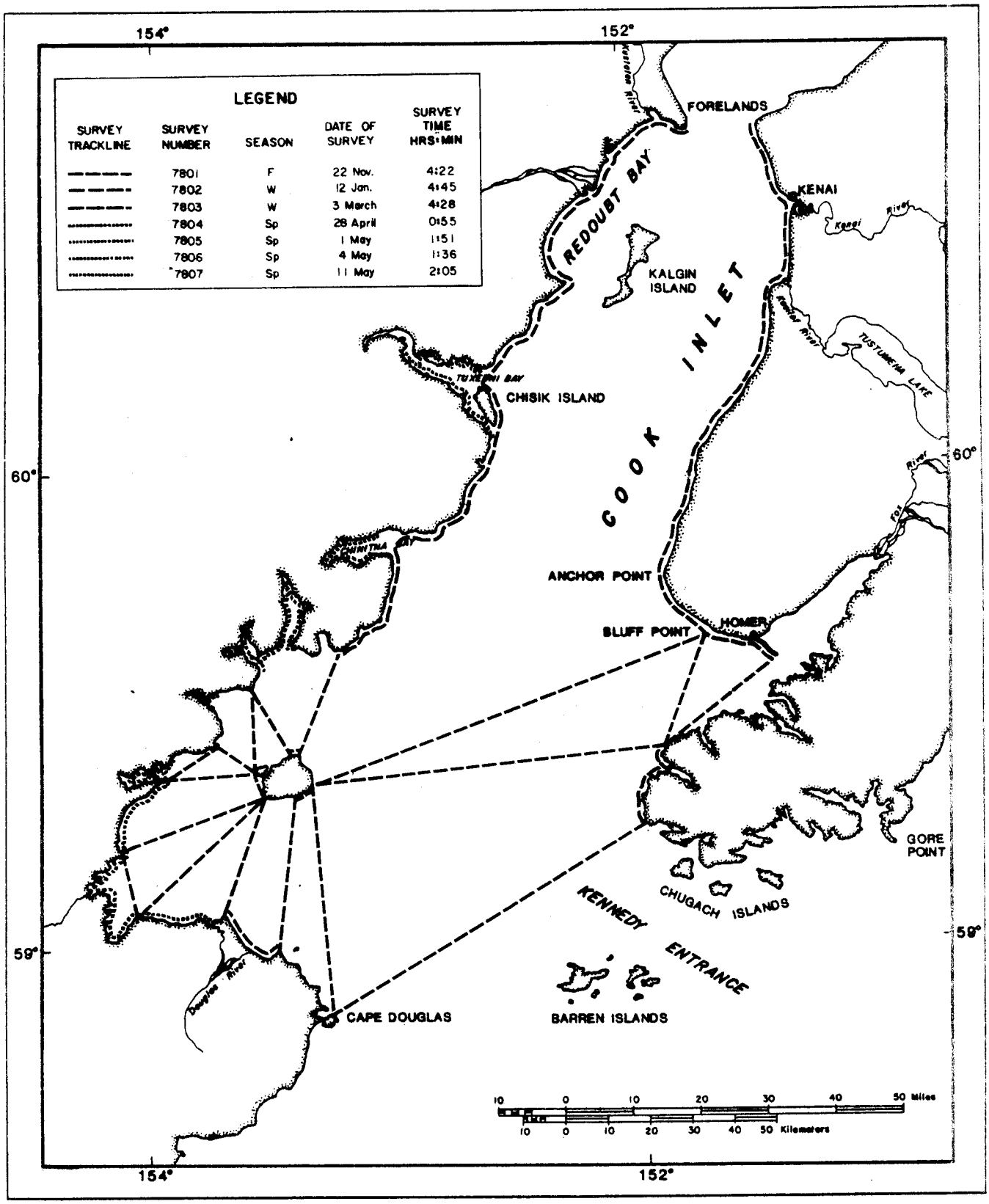


Fig. 56. Tracklines of aerial bird surveys in Lower Cook Inlet, 1977-1978.

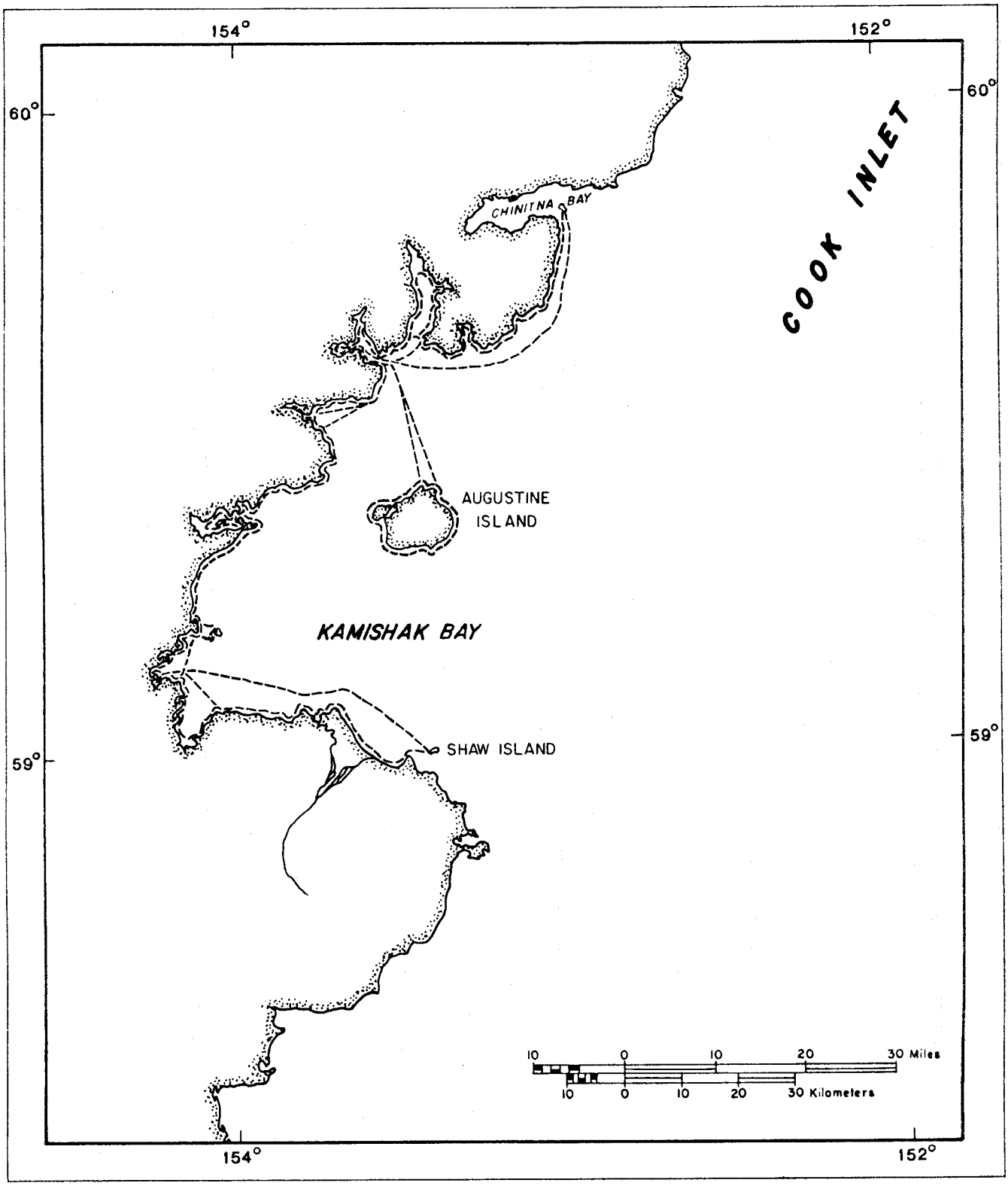


Fig. 57. Trackline of boat survey for birds in Kamishak Bay, Summer 1978. This was survey number 7808 conducted from 7 June to 16 August; total time of survey was 69 hours, 46 minutes.

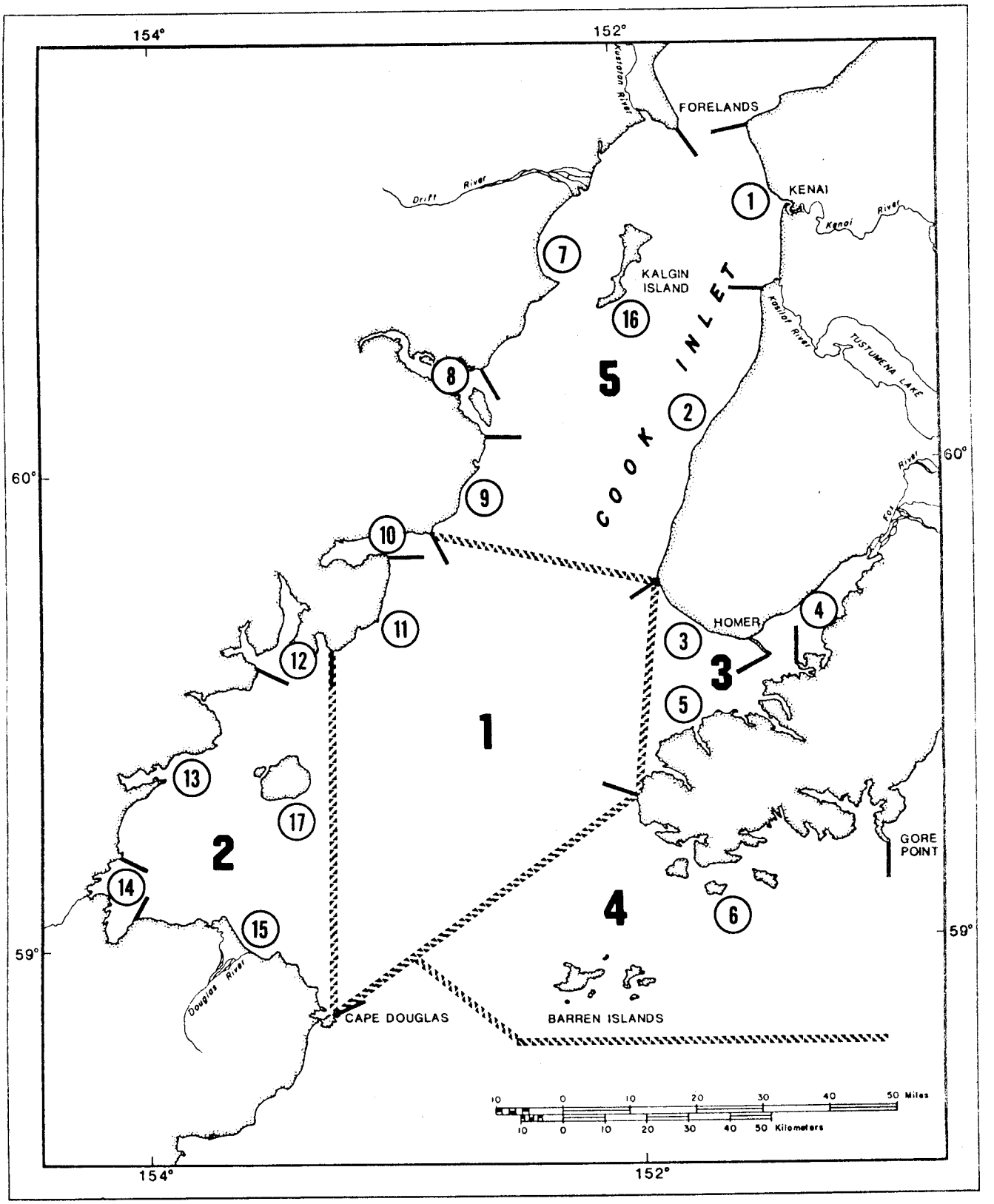


Fig. 58. Physiographic subdivision of Lower Cook Inlet for bird density analysis. Circled numbers 1-17 designate coastal survey sections, each containing several stations. Pelagic surveys were analysed within regions designated by bold numbers 1-5 and bounded by stippled lines.

Table 7. Bird density by section of coastline in Lower Cook Inlet, spring 1976, 1978. See Figure 58 for section boundaries. (T=trace).

Spring Densities (birds/km^2)

Bird Group	Section of Coastline 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Loon	T	T	1	T	T	T	T	T	T	T		T	T	T	T			T
Grebe	T	T	T	T	T	T		T		T			T	T	T	T		T
Tubenose																		0
Cormorant	T	T	1	T	2	5	T	1	T	T	1	T	3	1	1		4	T
Goose and Swan	54	1		14		T	58	T	1	1		T	2	1	12	40		7
Dabbler	39			9	1	3	40	18	3	24		9	17	13	12	84		15
Diver	3	1		49	4	4	6	50		25		36	24	27	17	4		23
Sea Duck	T	101	33	76	40	5	2	22	3	8	21	29	54	53	117	6	16	38
Merganser	T	T	T	5	2	1	T	T		2	T	T	1	1	1			1
Raptor	T			T	T	T	T	T	T	T		T	T	T	T			T
Crane	6	T										T			T	2		T
Shorebird	4			71	5	1	91	39		76		111	10	17	216	1		53
Gull and Jaeger	49	12	12	33	19	18	14	201	42	19	1	19	55	59	37	16	2	52
Tern							T											T
Alcid		1	4	1	2		T	T				T	T	T	3			1
Corvid				1	T	T		T		T		T	T	T	T			T
Other Passerine												T	T					T
Other Bird	1	4		3	1	2	2	1		T		T	T		T	T		1
TOTAL	156	120	51	262	78	39	210	332	50	155	24	206	166	173	417	151	21	192

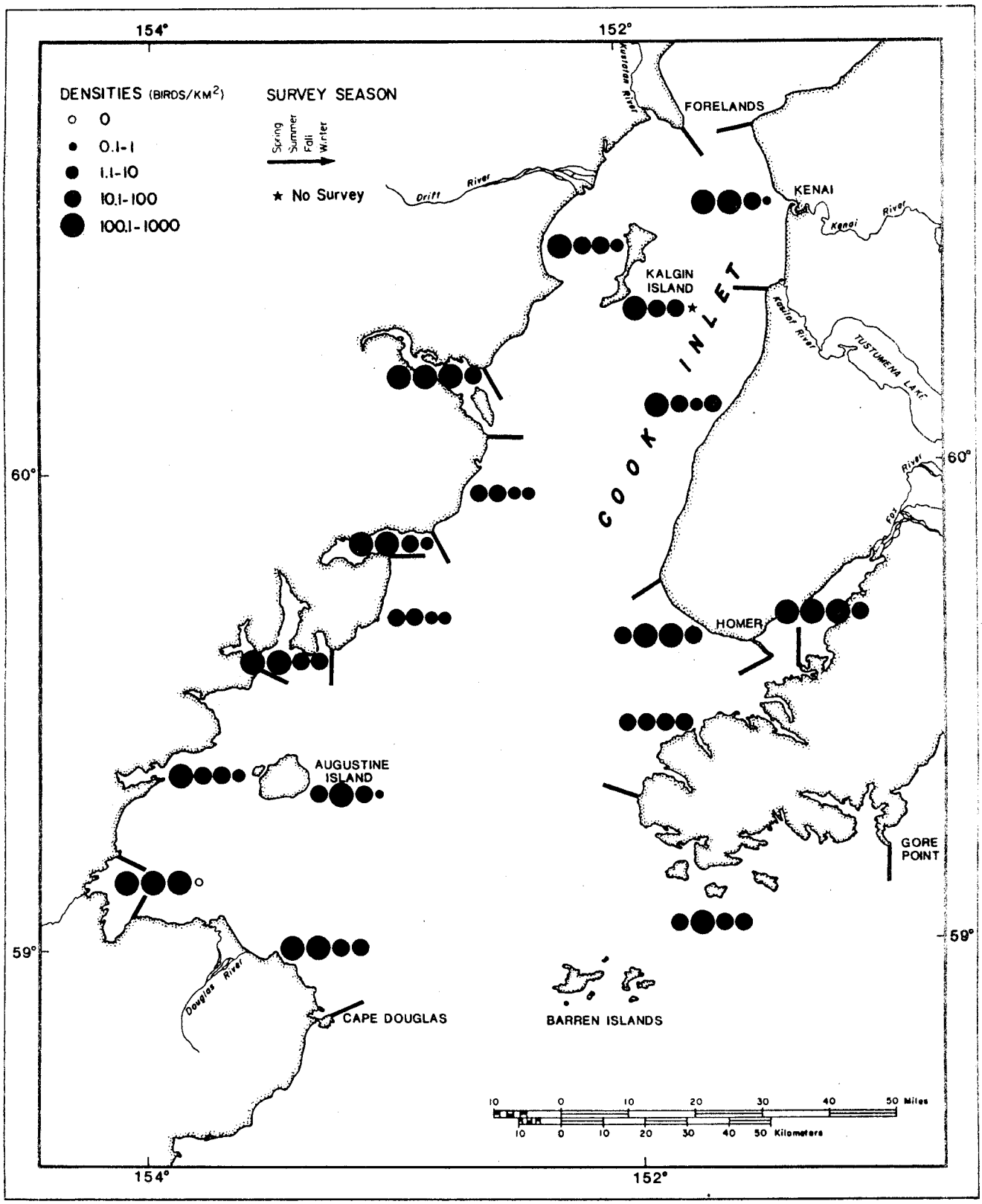


Fig. 59. Total bird density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

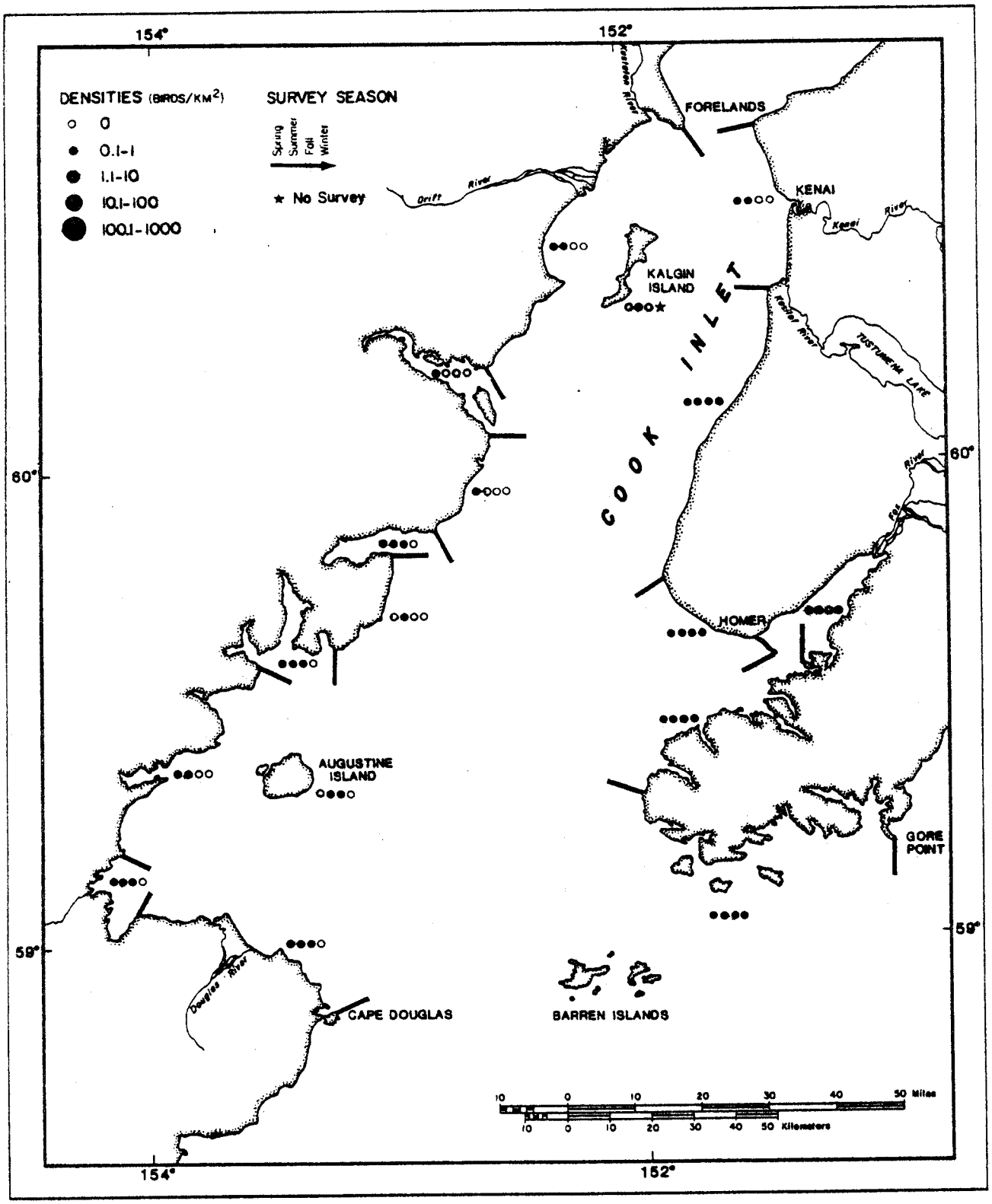


Fig. 60. Loon density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

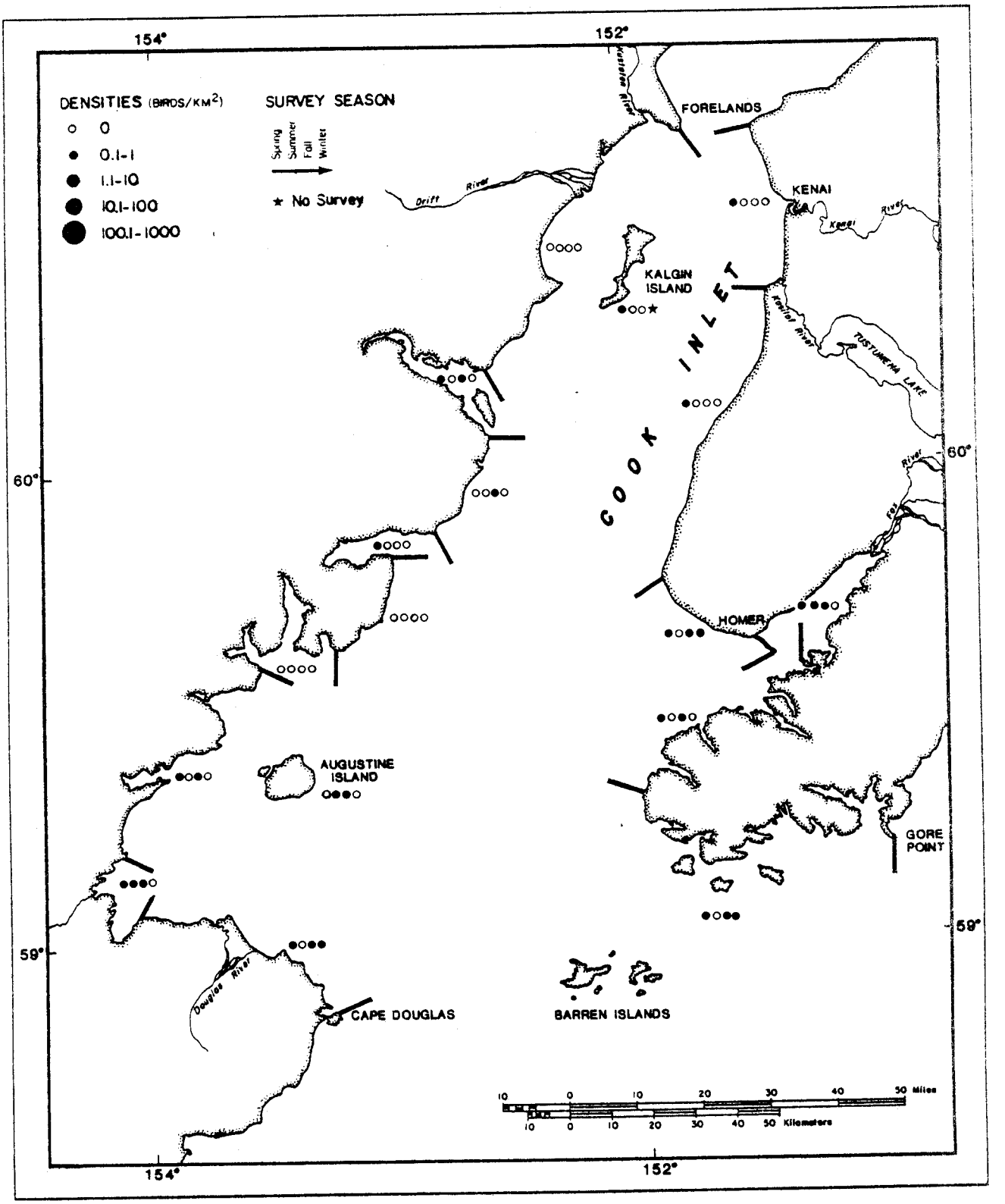


Fig. 61. Grebe density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

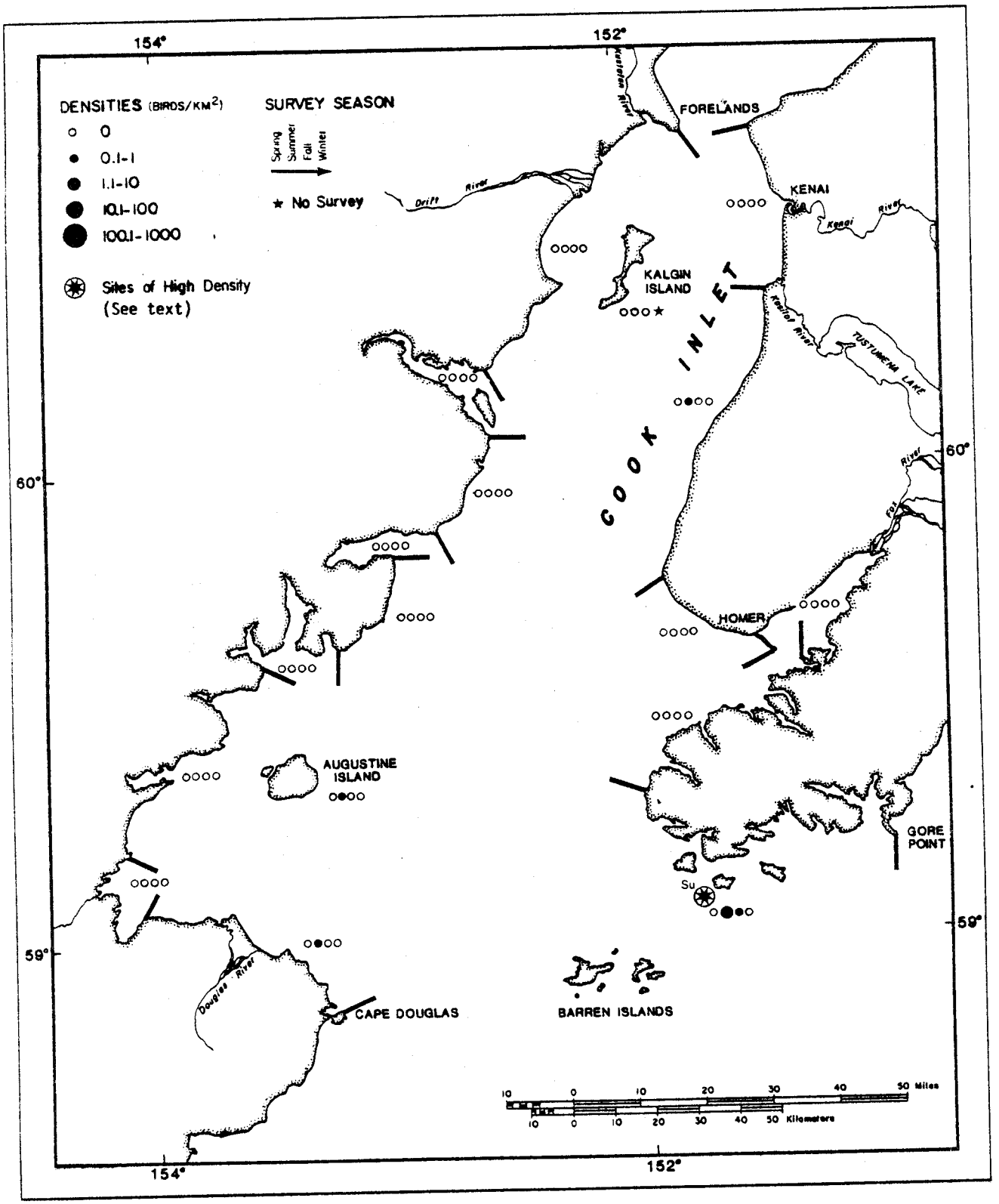


Fig. 62. Tubenose density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

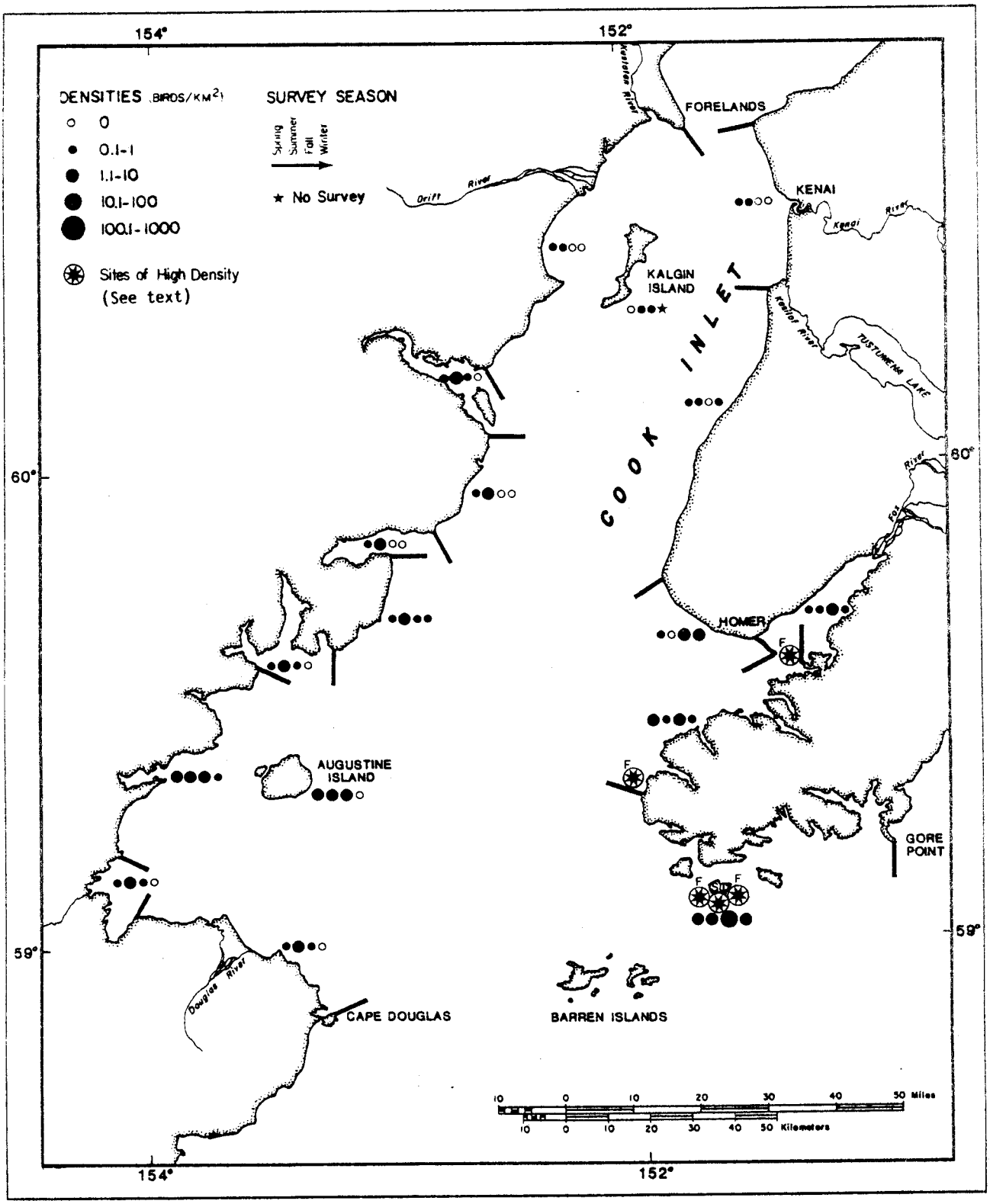


Fig. 63. Cormorant density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

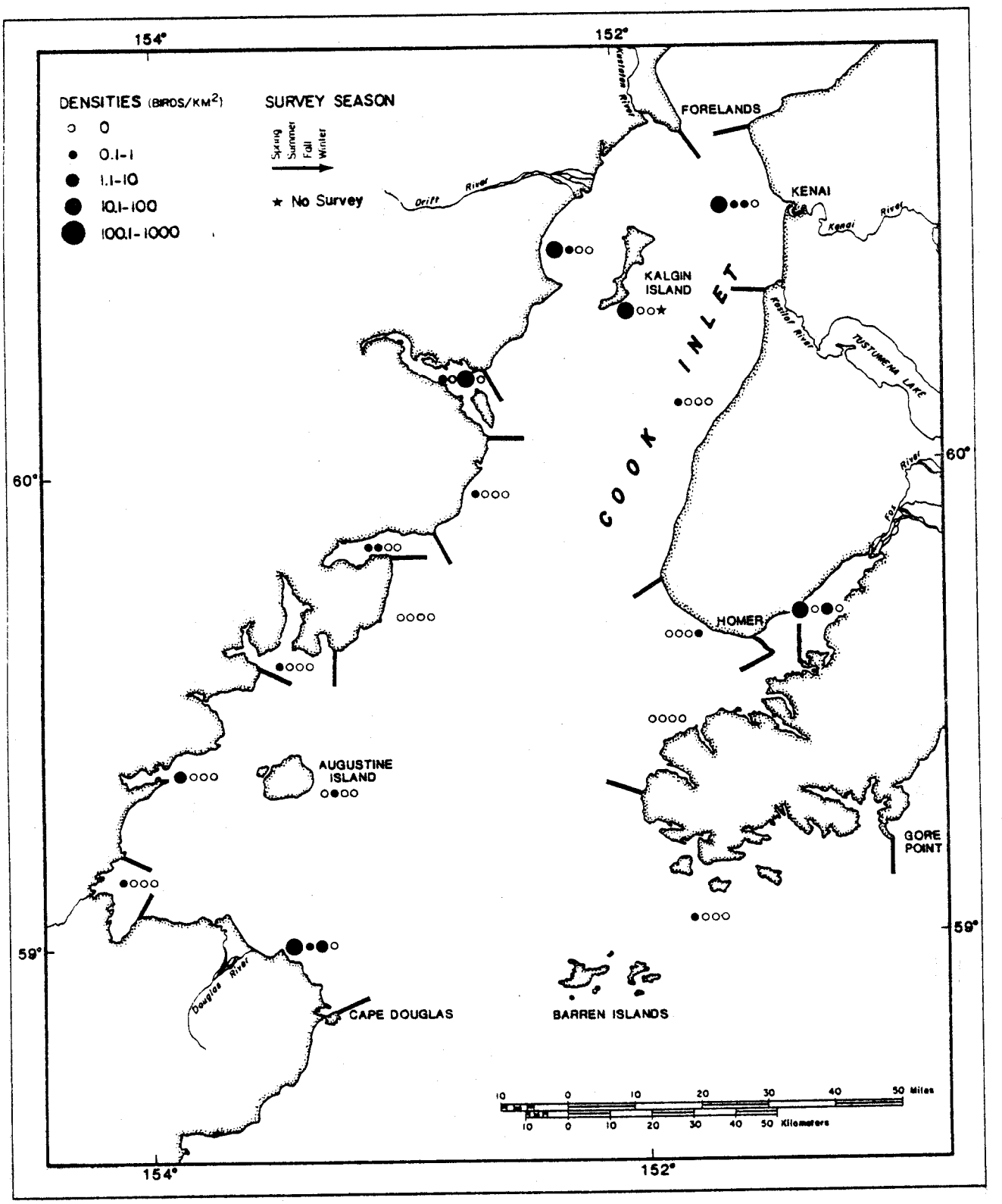


Fig. 64. Goose and swan density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

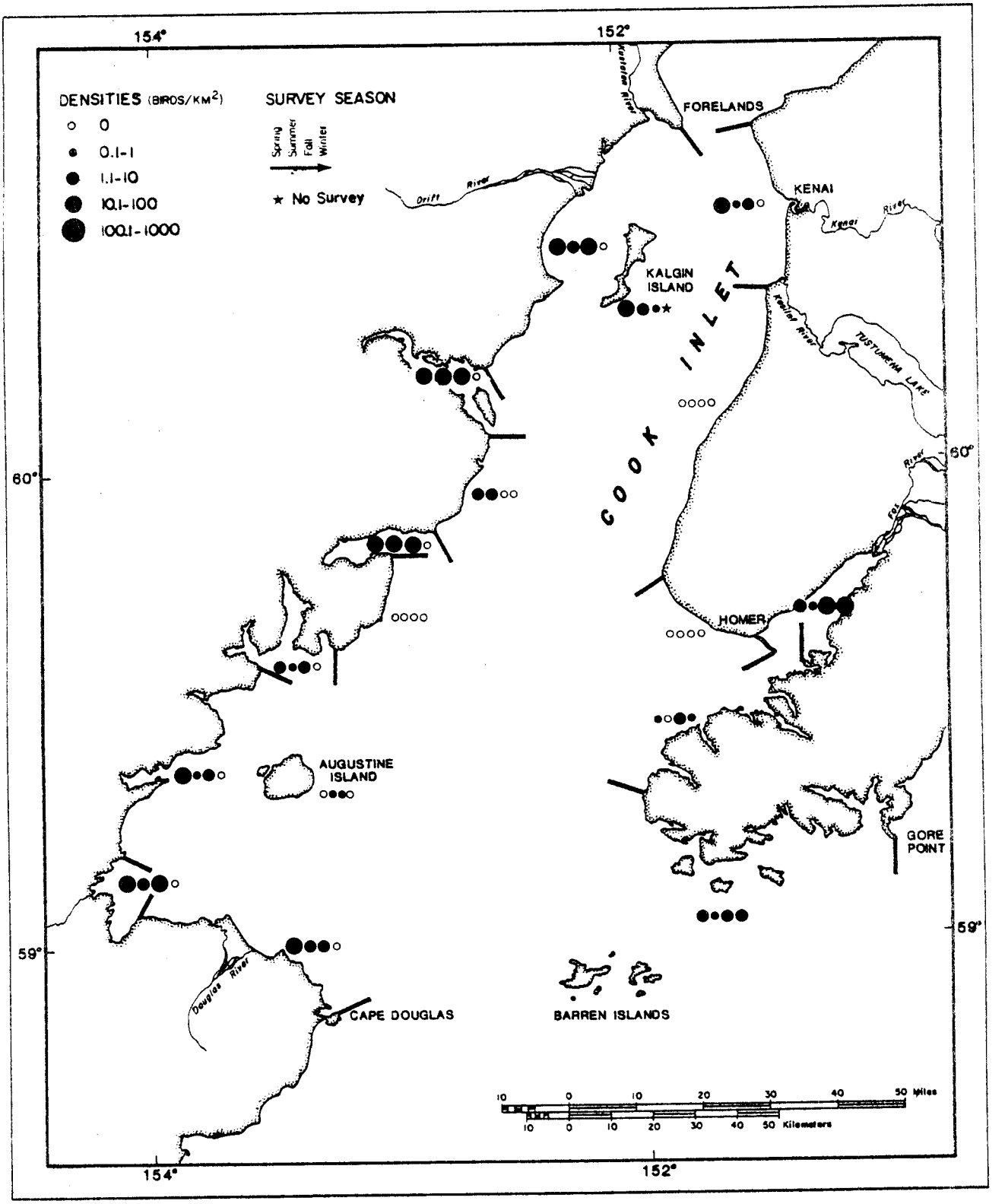


Fig. 65. Dabbling duck density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

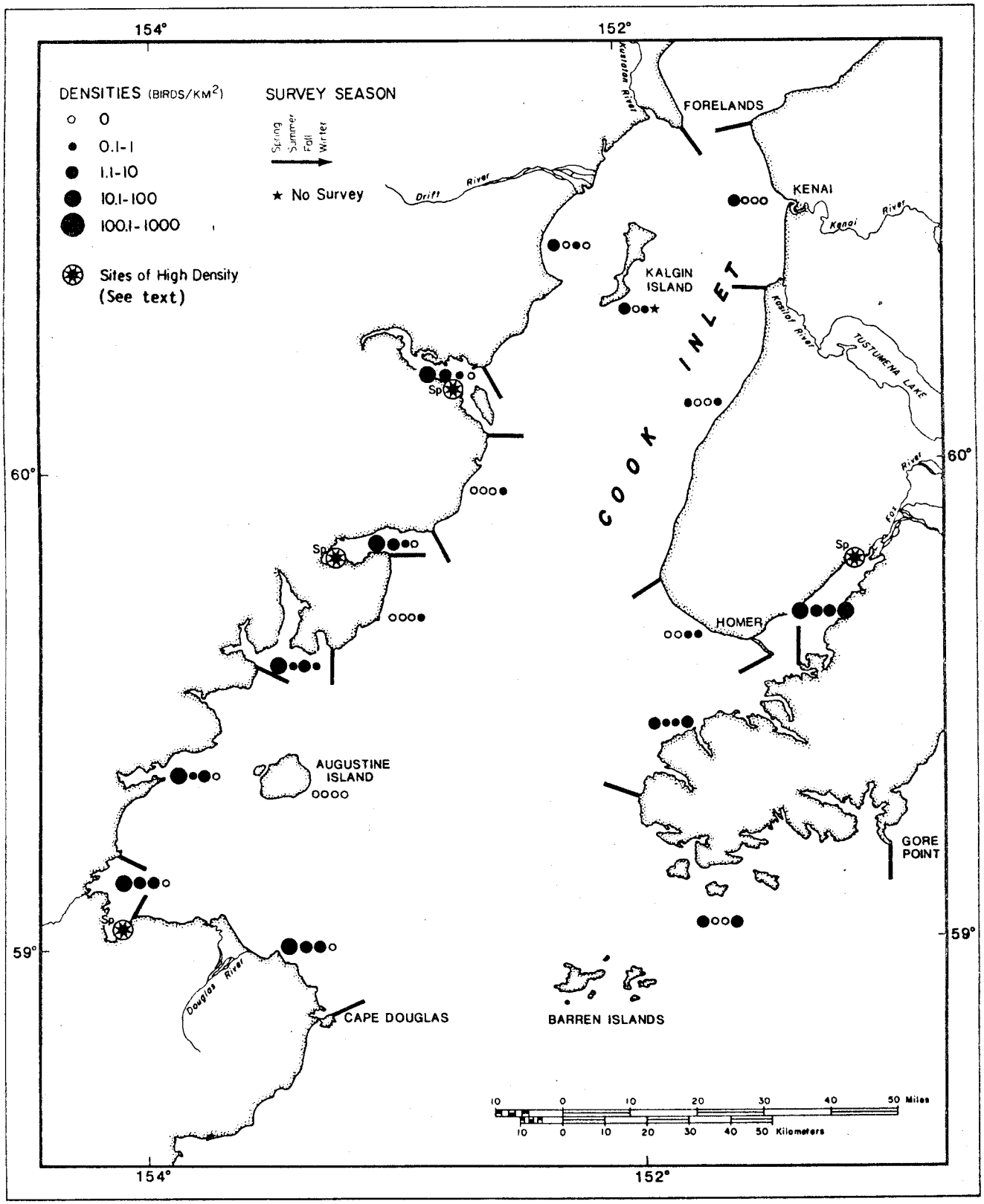


Fig. 66. Diving duck density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

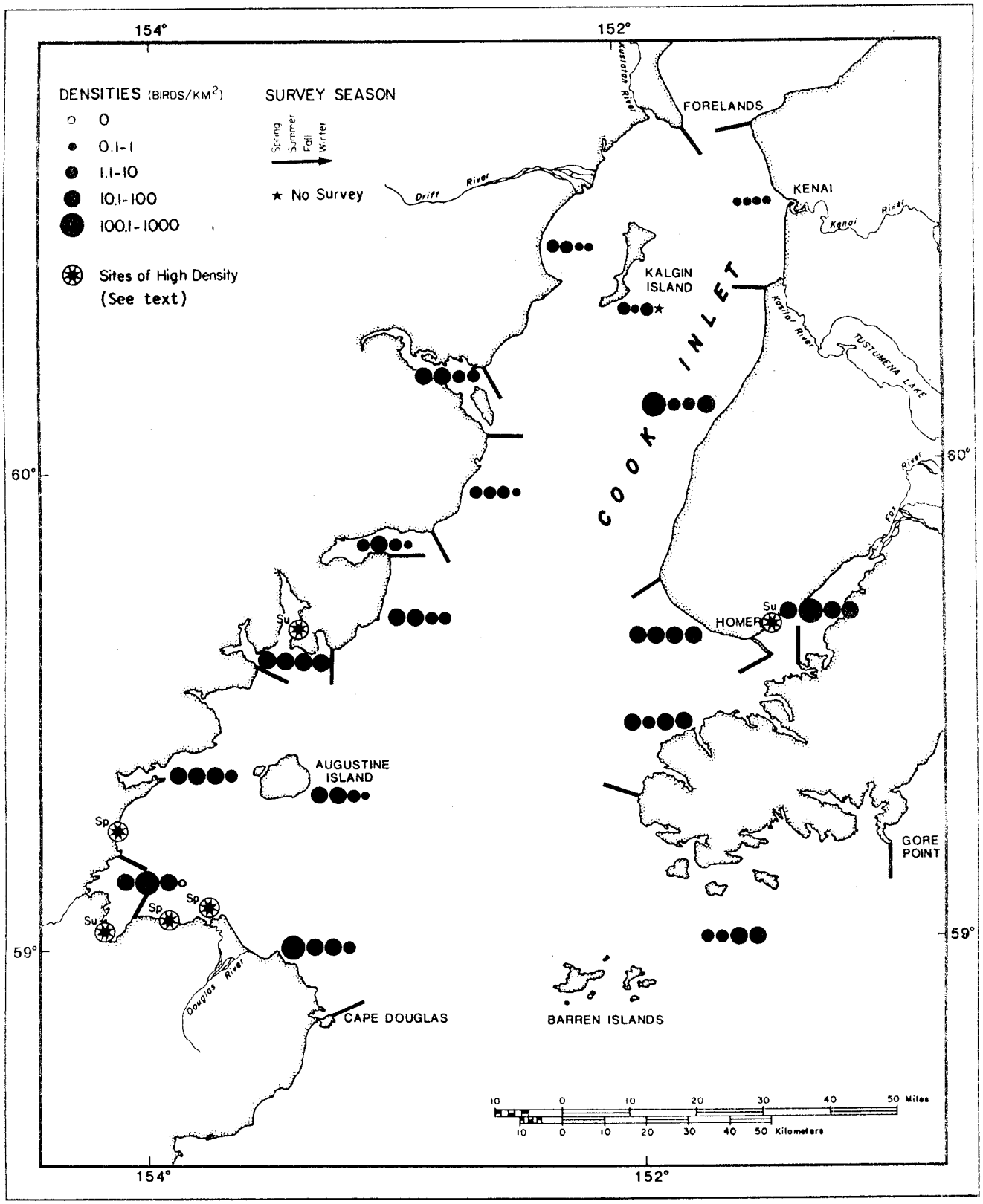


Fig. 67. Sea duck density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

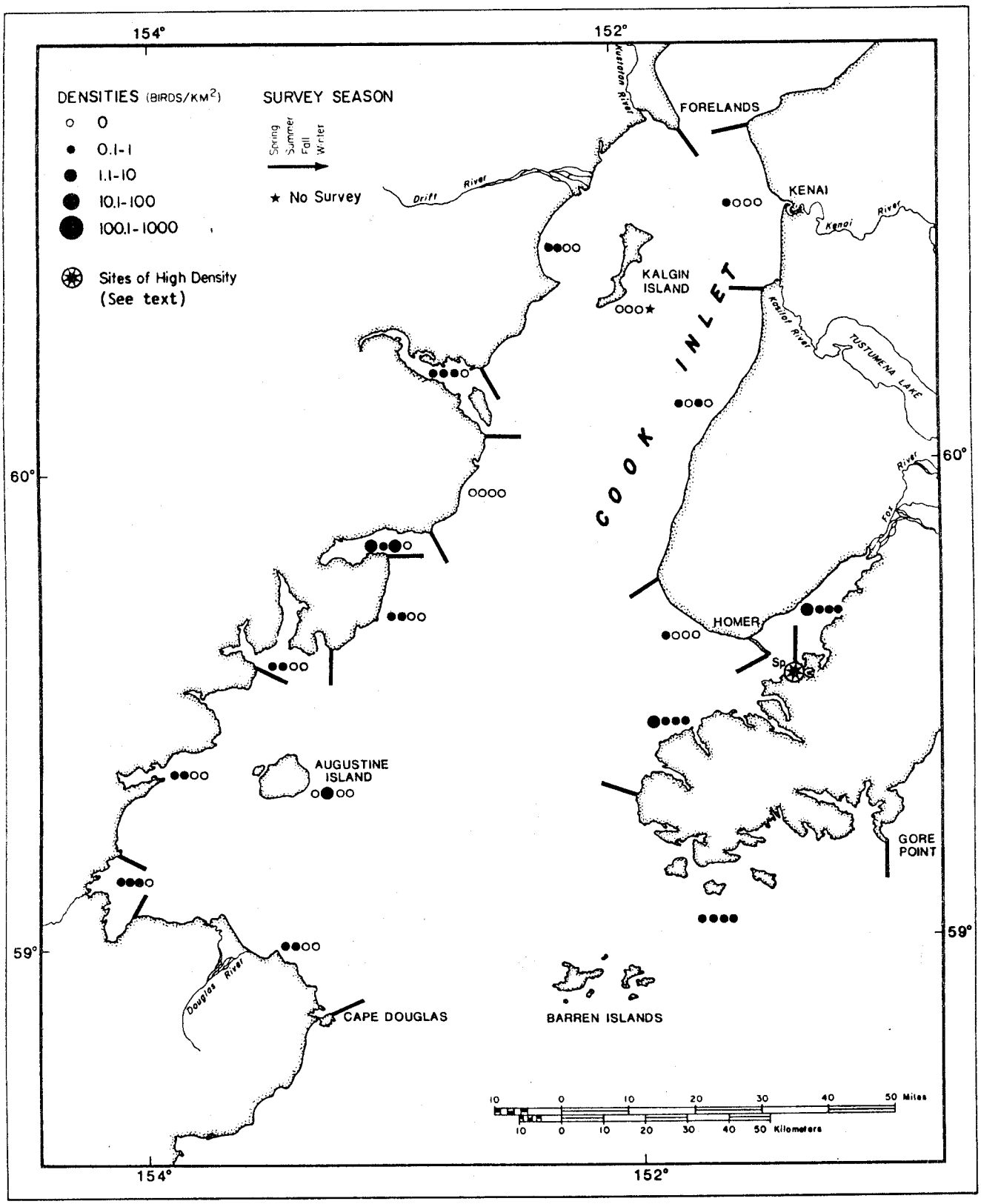


Fig. 68. Merganser density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

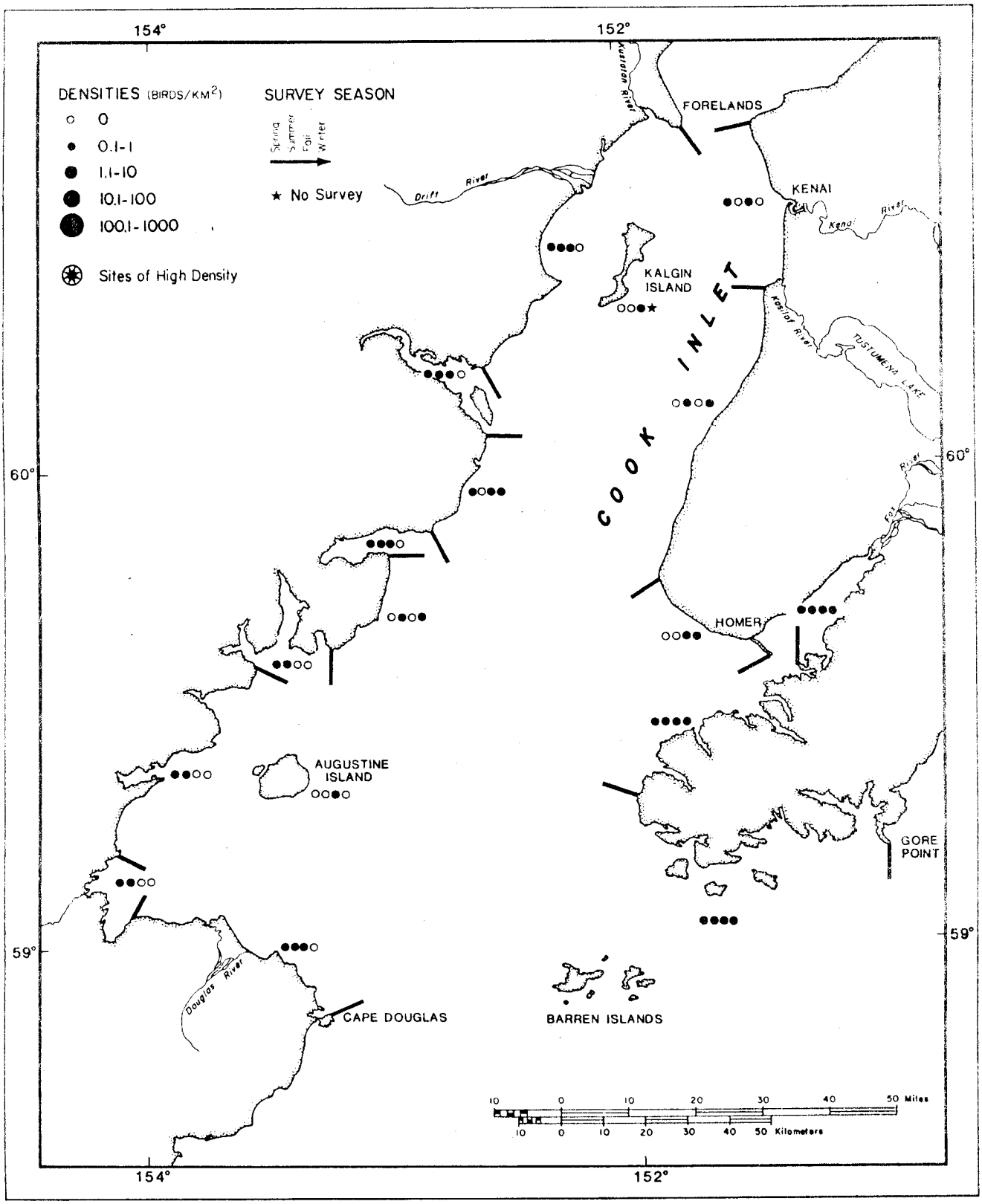


Fig. 69. Raptor density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

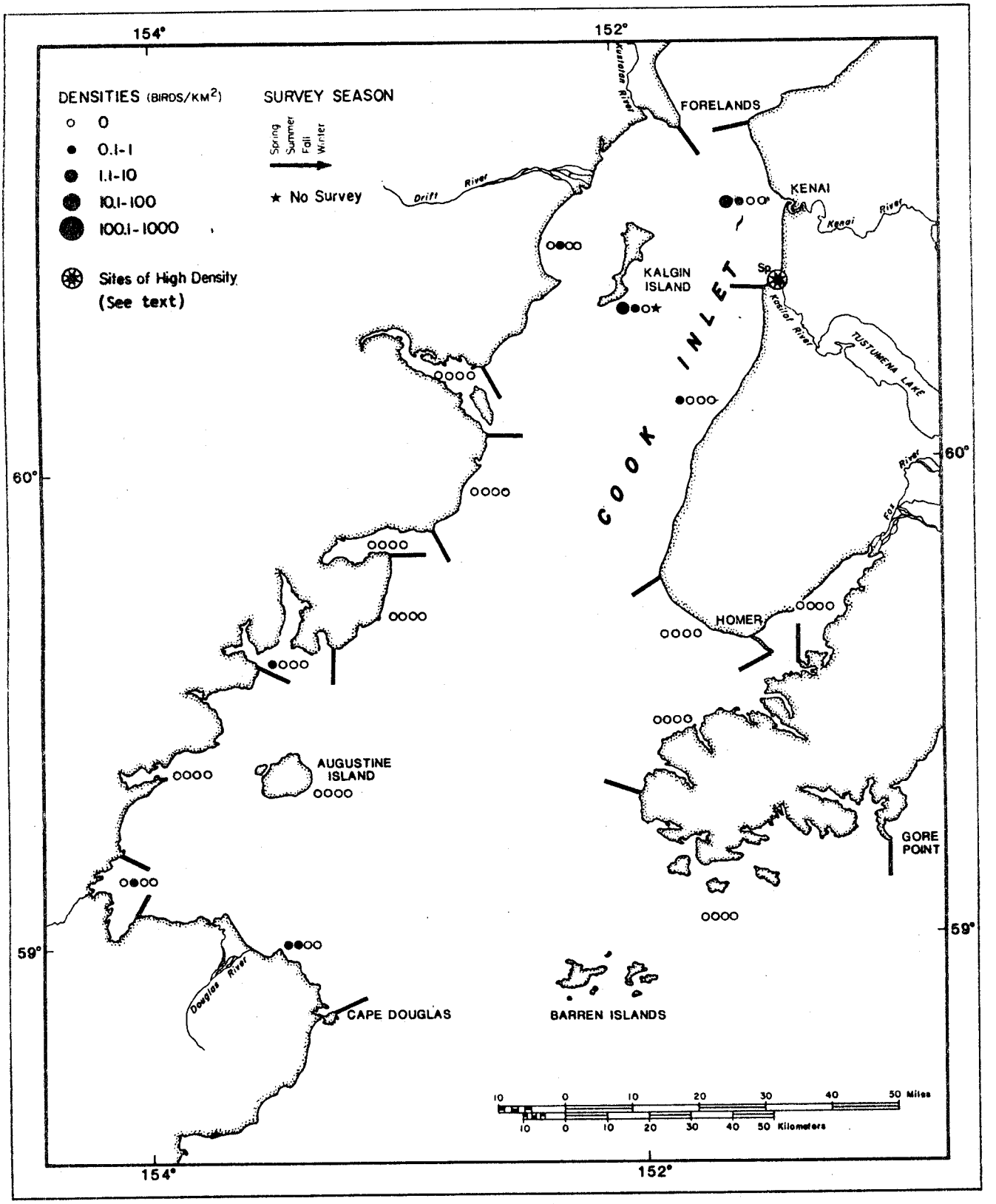


Fig. 70. Crane density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

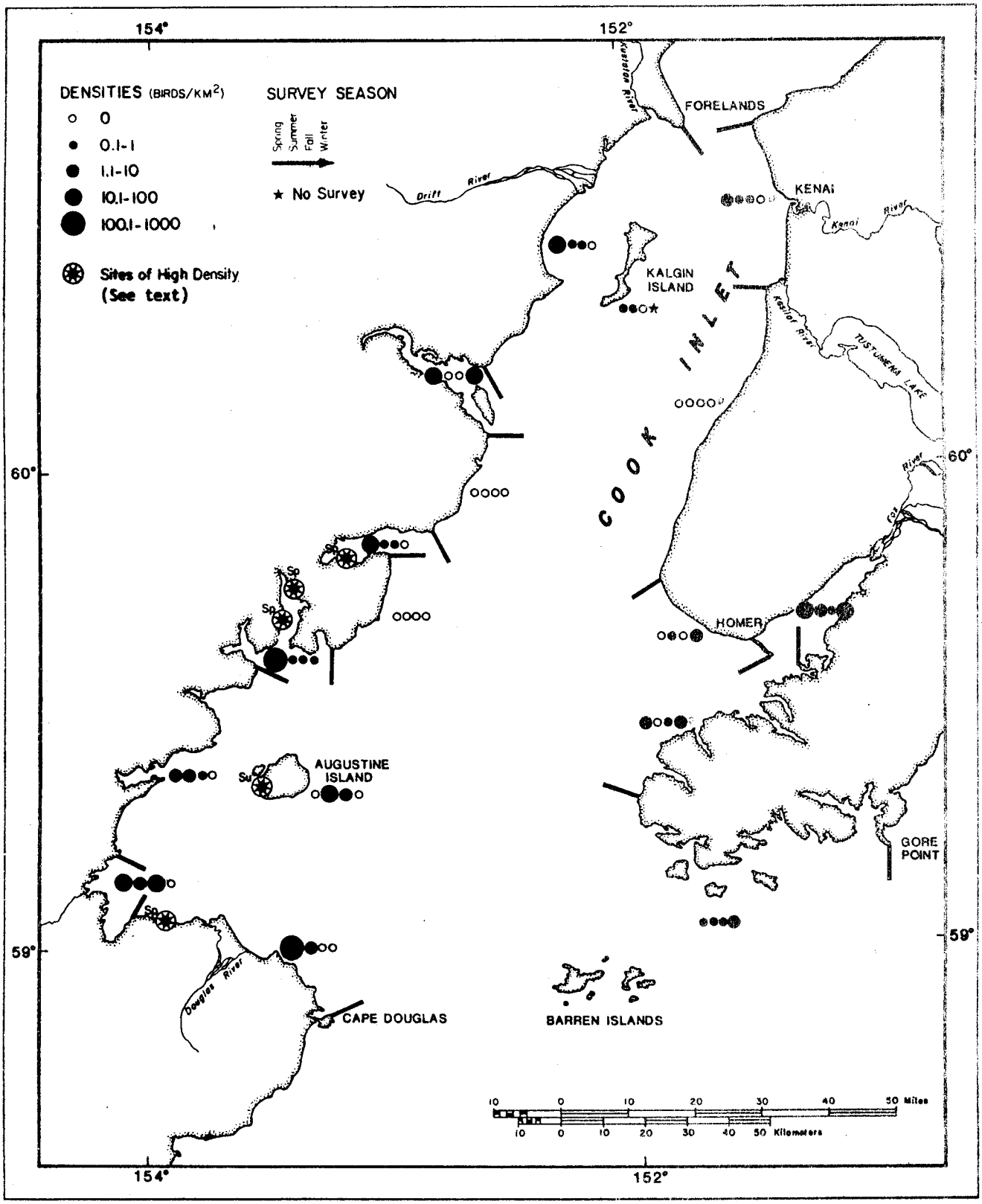


Fig. 71. Shorebird density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

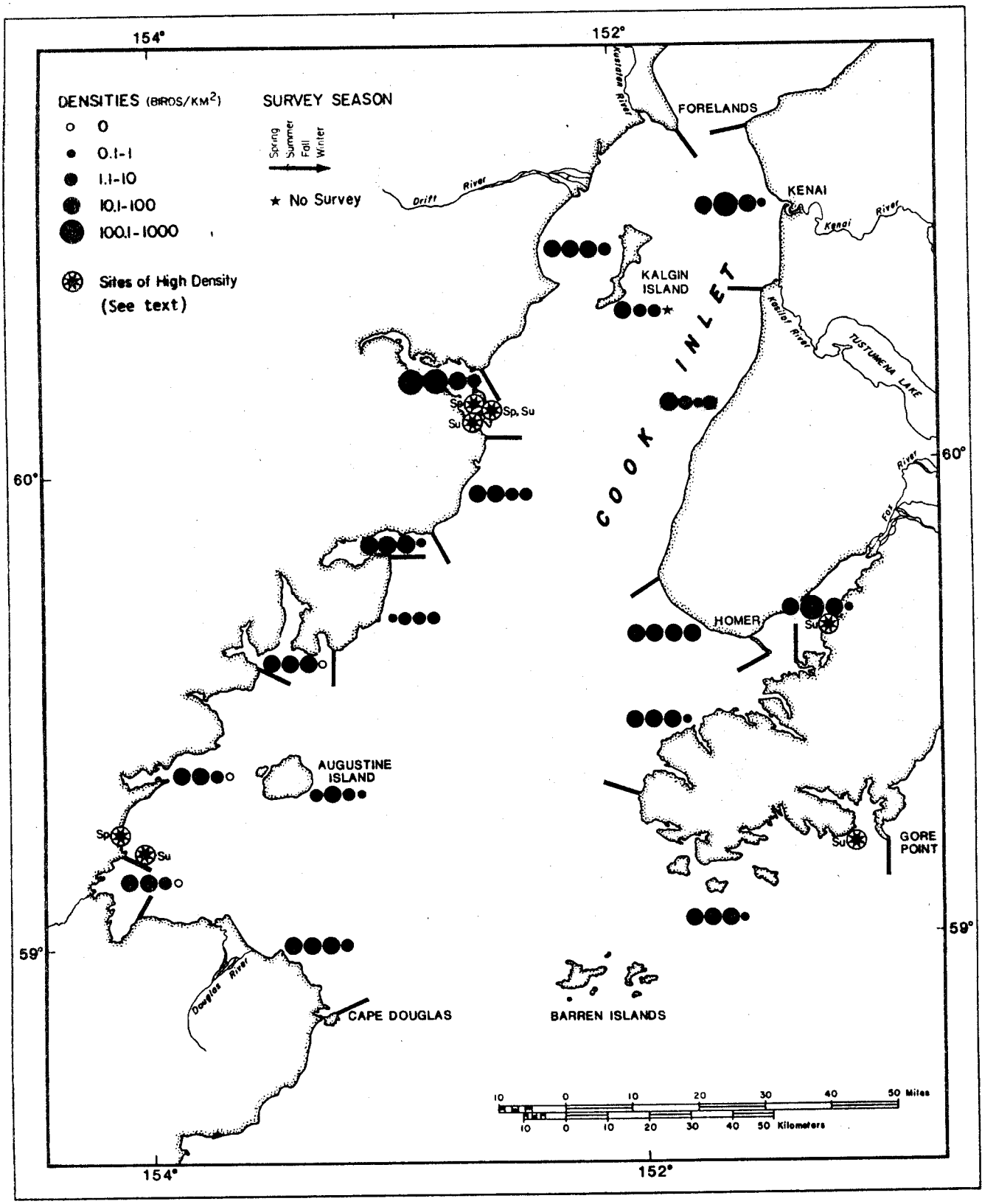


Fig. 72. Gull and jaeger density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

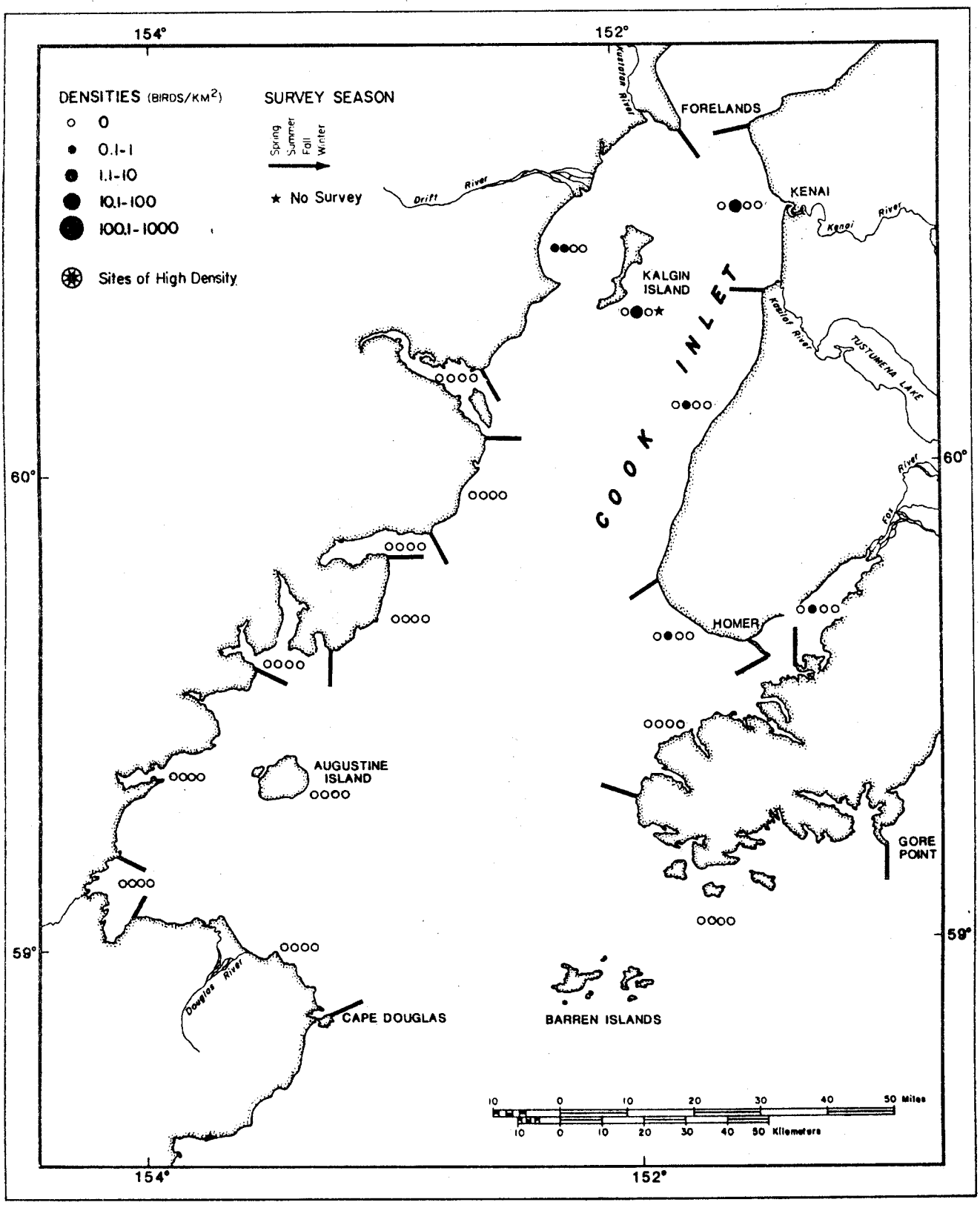


Fig. 73. Tern density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

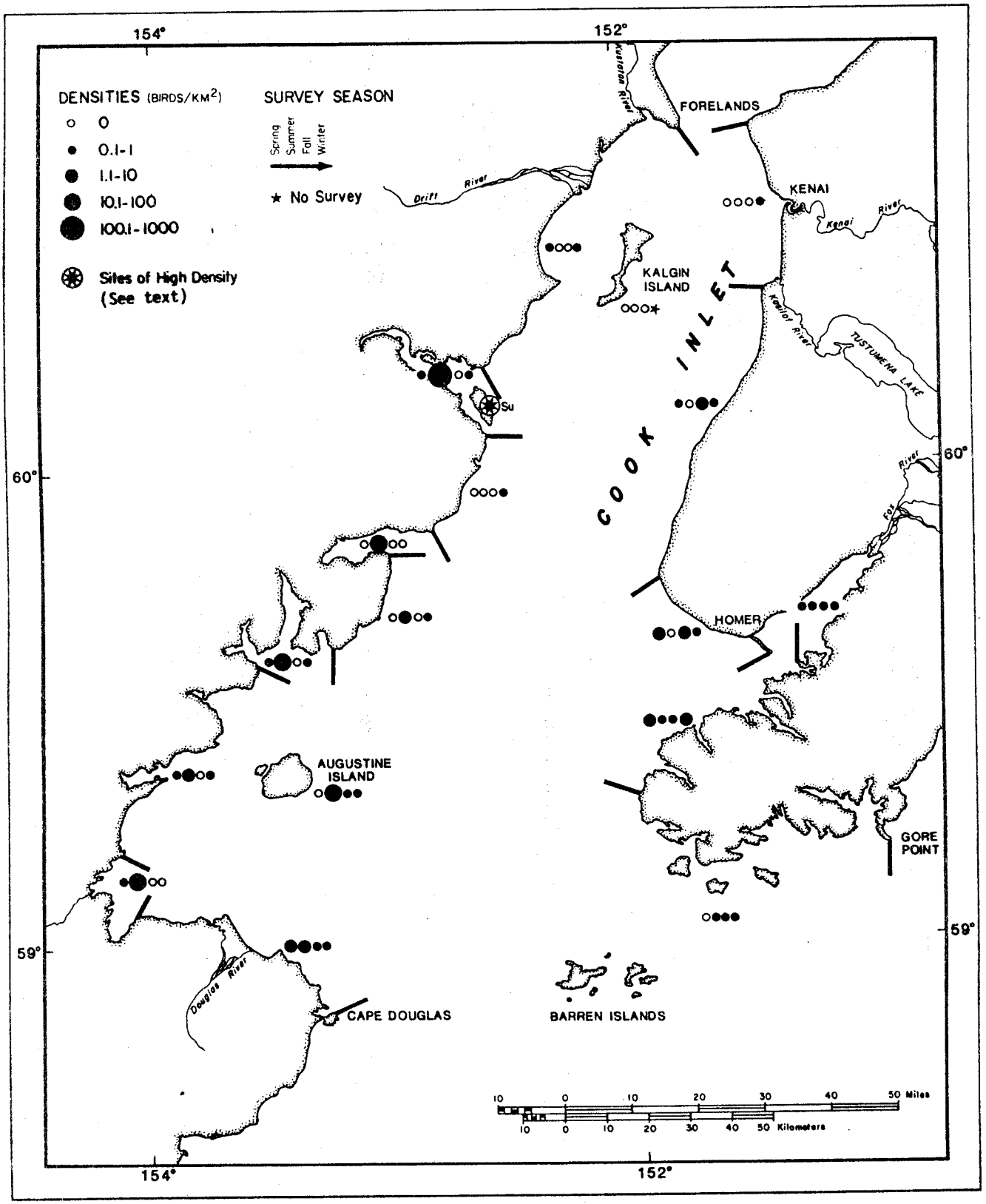


Fig. 74. Alcid density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

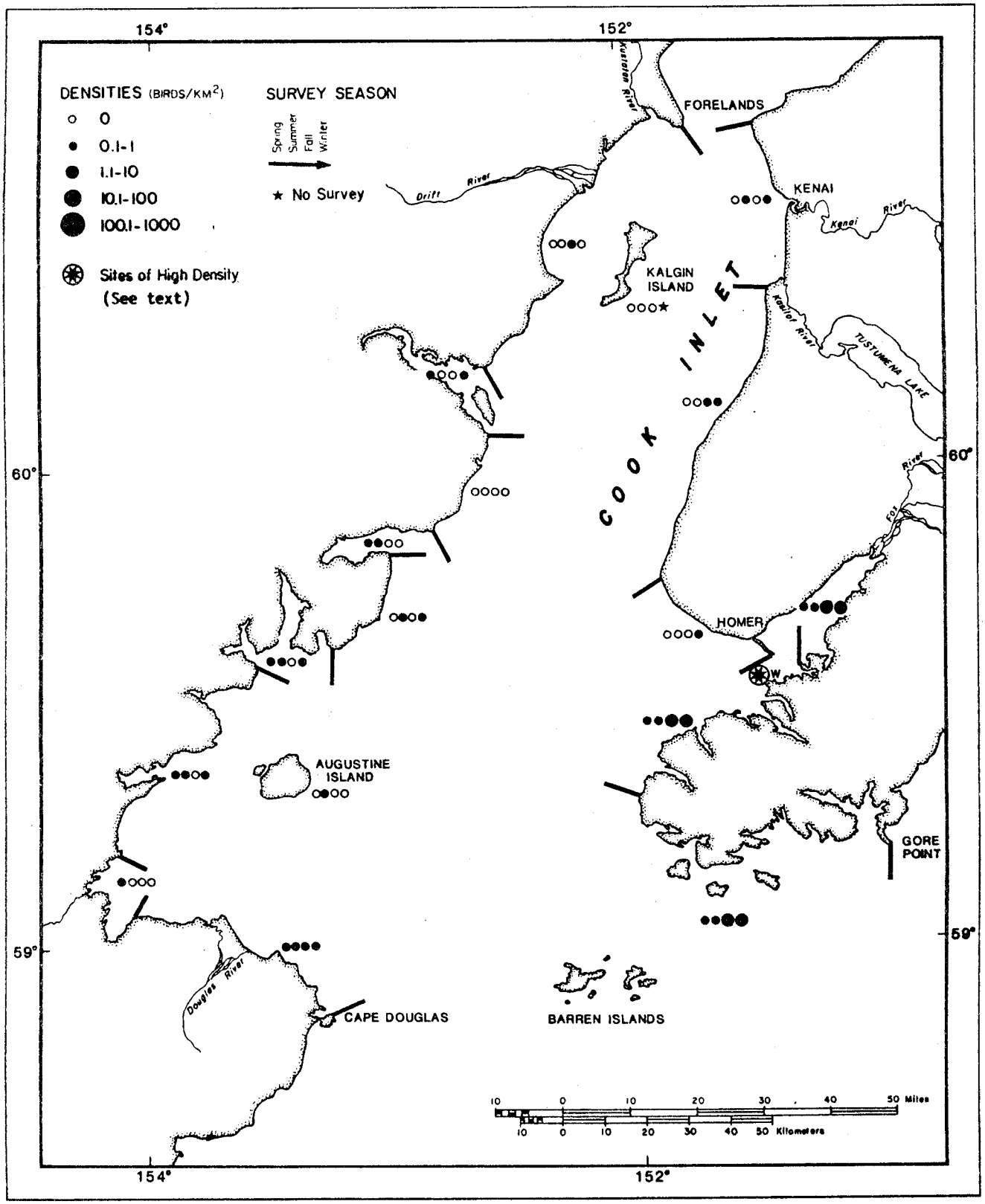


Fig. 75. Corvid density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

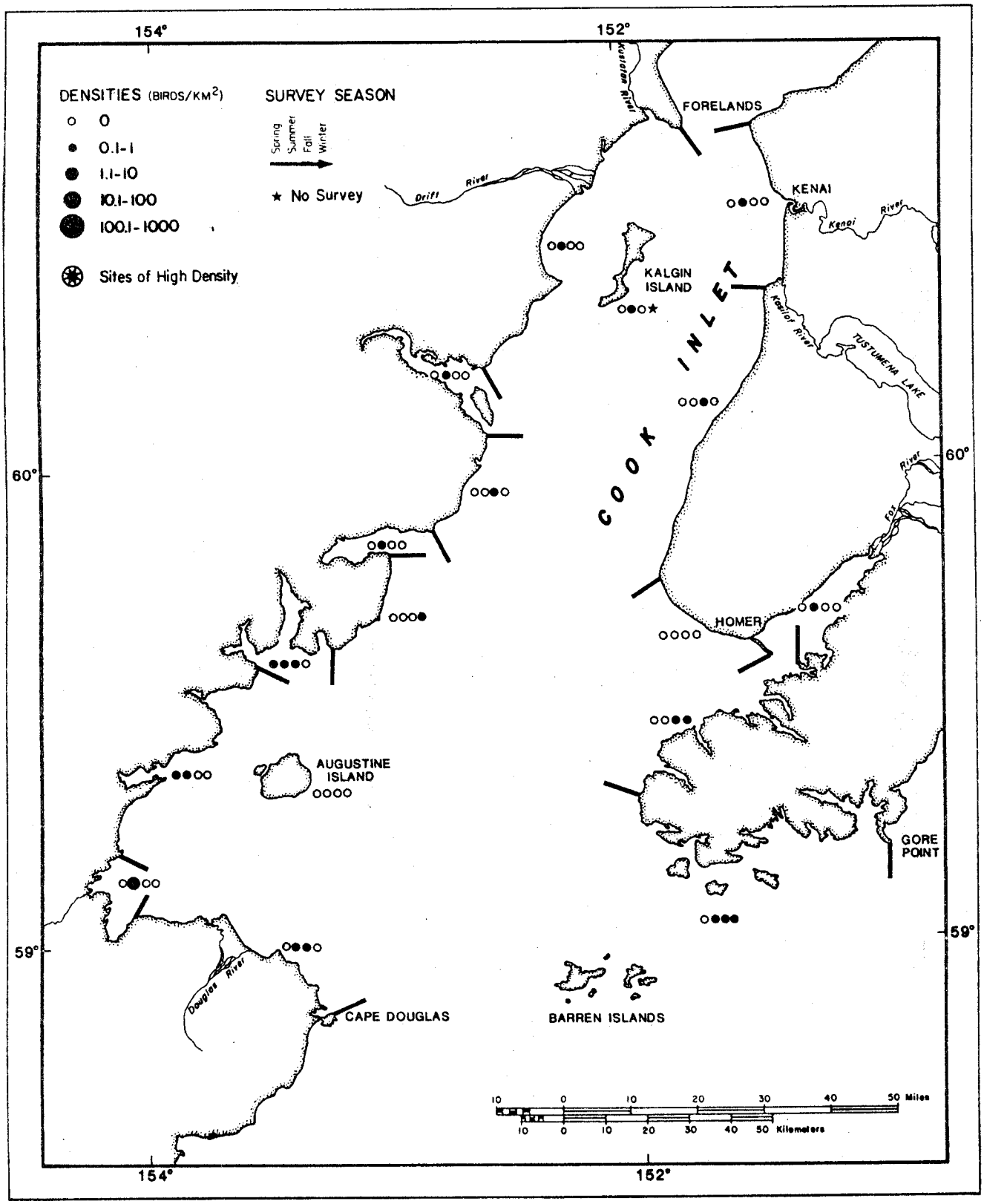


Fig. 76. Passerine (other than corvid) density by coastal survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

birds/km^2). A flock of over 10,000 shorebirds staged at the mouth of an unnamed stream on the western portion of Section 15. Sea ducks (largely scoters) in large rafts fed in shallow waters west of the mouth of the Douglas River.

Tuxedni Bay, Section 8, had the next densest bird populations at 332 birds/km^2. Highest densities of gulls (201 birds/km^2) and diving ducks (50 birds/km^2) were found in this section. Black-legged Kittiwakes from a large colony on Chisik Island contributed most to the high gull density. Many kittiwakes roosted on nearby mudflats and beaches or rafted on the water. They were counted there rather than on the colony site itself. Most diving ducks observed were scaup which lined the waters' edge and fed in shallow water over mudflats throughout most of Tuxedni Bay.

Other sections with over 200 birds/km^2 included Section 4, the inner part of Kachemak Bay with 262 birds/km^2; Section 7, the Redoubt Bay area, with 210 birds/km^2; and Section 12, the Iniskin-Iliamna Bay area with 206 birds/km^2. Kachemak Bay had a variety of bird groups with moderate densities that when summed together gave the high overall density. Sea ducks were densest with 76 birds/km^2 followed by shorebirds (71 birds/km^2), divers (49 birds/km^2) and gulls (33 birds/km^2). Mergansers reached their highest overall density in Kachemak Bay (95 birds/km^2) as did corvids (1 bird/km^2). The large concentration of mergansers was observed in China Poot Bay. Redoubt Bay, with a combination of delta mudflats and sedge/grass meadows, provided suitable habitat for staging shorebirds (91 birds/km^2), geese (58 birds/km^2) and dabbling ducks (40 birds/km^2). Because of its extensive mudflats, Iniskin Bay is another important staging area for shorebirds and diving ducks in Lower Cook Inlet. It had 11 shorebirds/km^2 and 36 divers/km^2 feeding on intertidal or subtidal habitats.

Loons and Grebes were seen in most sections but never in densities exceeding 1 bird/km^2. There were no spring sightings of tubenoses on nearshore surveys.

Cormorants were never abundant but reached highest densities in Sections 6 (Chugach Islands vicinity) and 17 (Augustine Island) with 5 and 4 birds/km^2, respectively. Geese and dabblers were relatively abundant in Redoubt Bay and at the mouths of Kenai and Kasilof Rivers (54 geese and 39 dabbling ducks/km^2) and at Swamp Creek on Kalgin Island (40 geese and 84 ducks/km^2). High densities of divers were observed in Akumwarvik Bay of Section 14. The area north of Anchor Point to about Ninilchik had high densities of sea ducks. North of Ninilchik in Section 2, densities rapidly decreased. Also, a large raft of scoters and eiders (188 birds/km^2) was observed at Chenik Head in Section 13.

Raptors were scattered throughout the Inlet but never in dense concentrations. Most Sandhill Cranes were observed at the mouths of the Kenai and Kasilof Rivers (6 birds/km^2) and on Kalgin Island. Additional shorebird concentrations were noticed in Chinitna Bay where a large intertidal mudflat was located. High densities of gulls, not associated directly

with colonies, were in Sections 13 and 14 on the western shore of Kamishak Bay where 55 and 59 gulls/km^2, respectively, were found. The largest concentration was at Chenik Head at the dividing line between the two sections where 777 gulls/km^2 were recorded. Few terns and alcids had arrived by the time of the spring surveys.

Pelagic Density - Bird densities in offshore waters of the five "natural" regions of Lower Cook Inlet are represented in Figs. 77-94. In offshore waters 15 birds/km^2 were observed in spring (Table 8). This region, including outer and inner Kachemak Bay, had the highest density (32 birds/km^2). Fewest birds were observed in the northern region around Kalgin Island. Most of the birds seen in these offshore waters were sea ducks. A mean of 11 sea ducks/km^2 was recorded for all regions. Regions 2 and 3 were highest with 15 and 24 sea ducks/km^2, respectively. Alcids and gulls had the next highest densities overall with only 2 birds/km^2 each. Regions 3 and 4 had the most alcids (7 and 8 birds/km^2, respectively). Other bird groups were only observed in trace amounts. Cormorants were seen in all but the northern region. Tubenoses were recorded only for the Kennedy Entrance area of Regions 1 and 4 when shearwaters began arriving to summer in Alaskan waters.

Habitat Usage - Habitat preferences of each species group and what species groups were found on each habitat type for spring surveys are presented in Figs. 95 and 96. The habitats in Lower Cook Inlet supporting the widest variety and greatest number of bird groups in spring were: exposed inshore water, open water of bays and fjords, mudflats of bays and fjords, open water of bays and lagoons, sedge/grass saltmarshes, protected delta water and alluvial floodplains. Both loons and grebes most frequently used exposed inshore and protected bay waters. Loons also were often found on protected delta water (16% of total). Cormorants selected exposed inshore water 31 percent of the time, bay rock beaches 25 percent of the time and 12 other identified habitats in varying amounts. Sixty-five percent of the geese were found on floodplains at river mouths. Saltmarshes and protected alluvial water were most heavily used by dabbling ducks. Most diving ducks staged on bay waters in spring and fed near intertidal mudflats. Like loons and grebes, sea ducks were observed on exposed inshore and protected bay waters. Bay waters were used by 35 percent of the mergansers while 20 percent were found on lagoon waters and 15 percent on exposed inshore waters.

Raptors used a variety of habitats, but most used protected bay and lagoon areas. Almost 80 percent of the Sandhill Cranes were observed on floodplains at the mouth of rivers. Although over 50 percent of the shorebirds were on bay mudflats, 22 percent were on exposed delta gravel, and a variety of other habitats were used in small amounts. As in other lease areas, gulls have the most ubiquitous distribution. In Lower Cook Inlet they were found on all but one habitat, but most (42% of total) were found on lagoon-type habitats. Few terns had yet arrived, and alcids preferred exposed inshore waters. Corvids (in this case mostly Northwestern Crows) used both bays and lagoons but most frequently were on gravel or mixed sand/gravel/rock beaches.

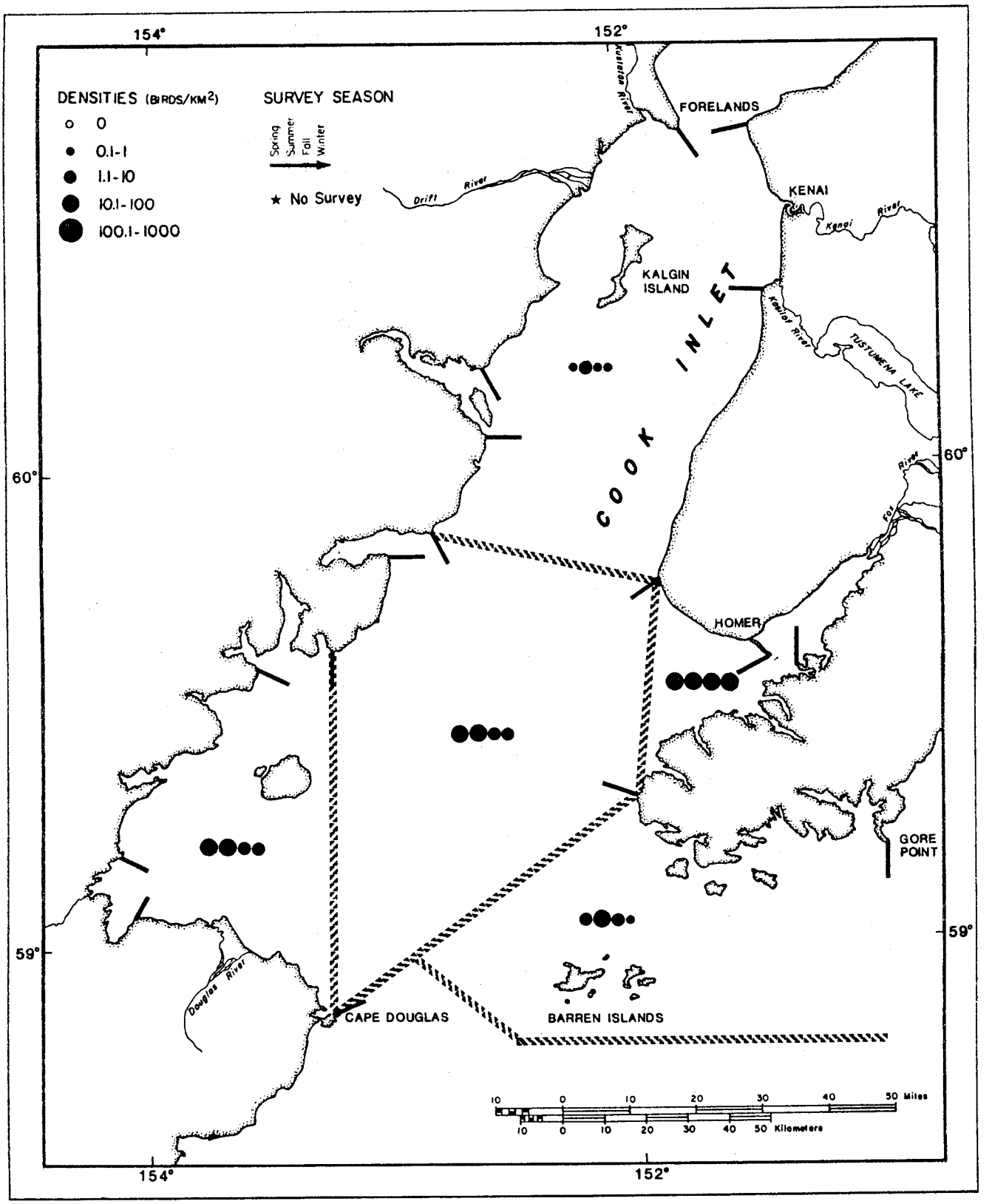


Fig. 77. Total bird density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

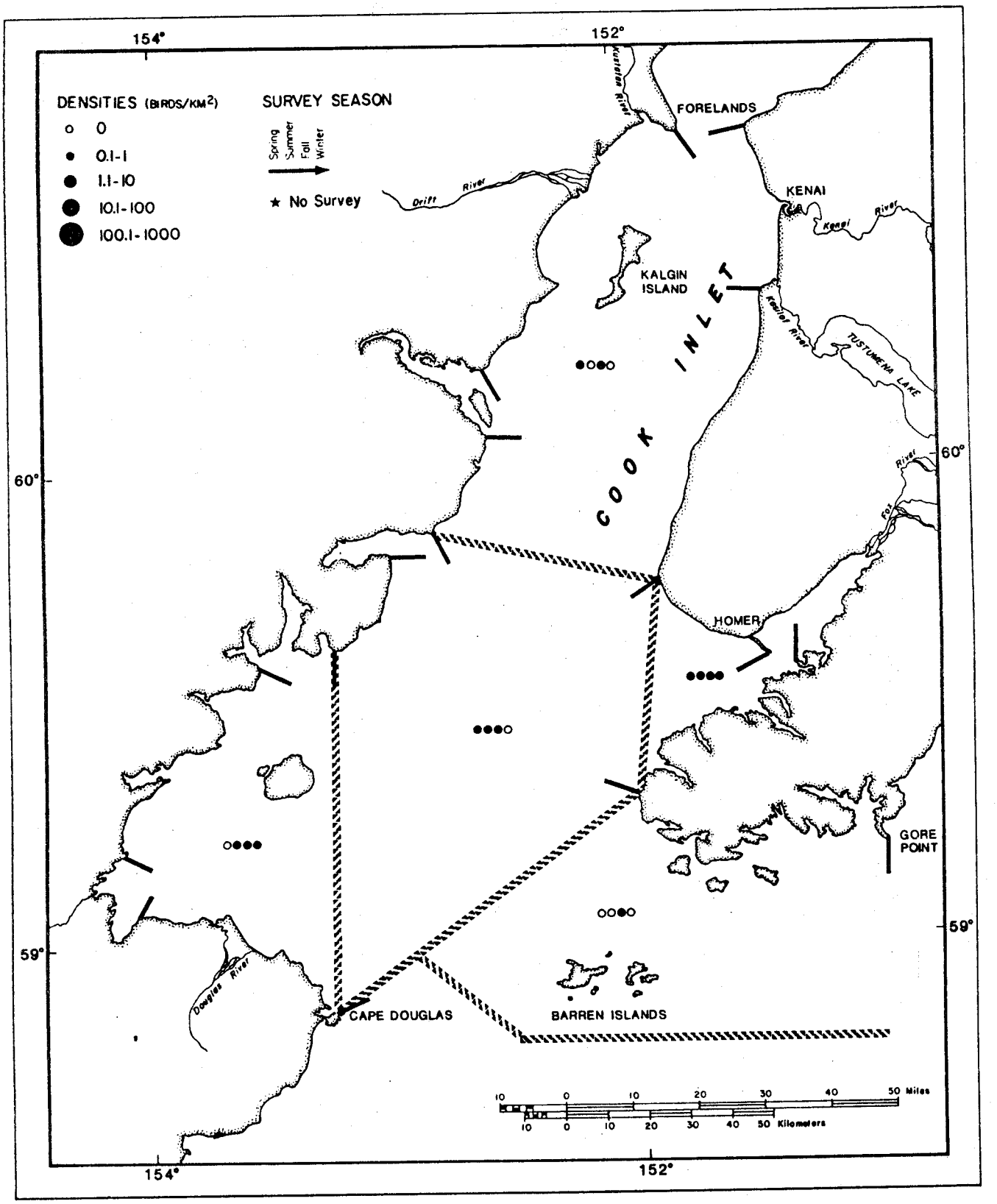


Fig. 78. Loon density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

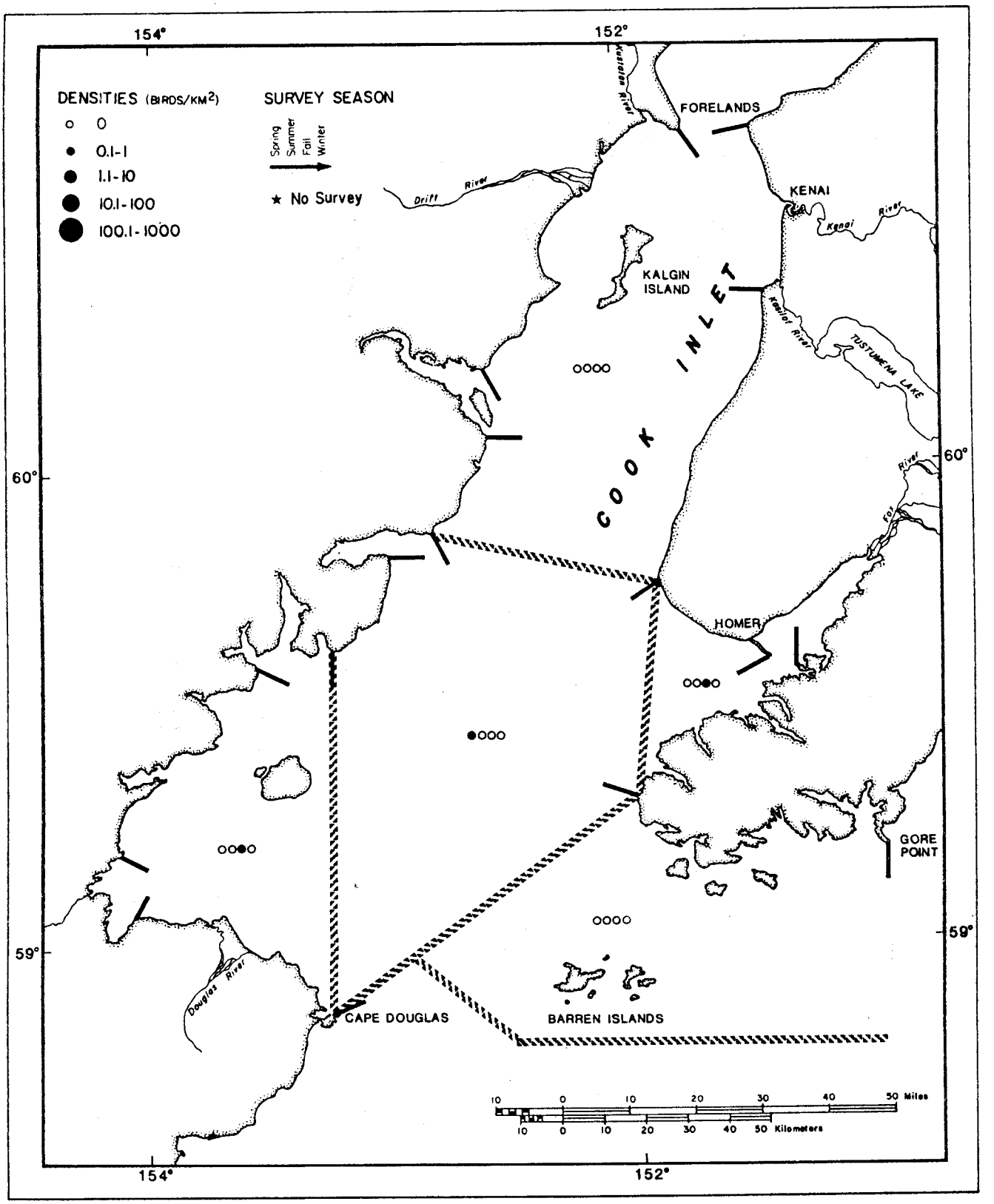


Fig. 79. Grebe density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

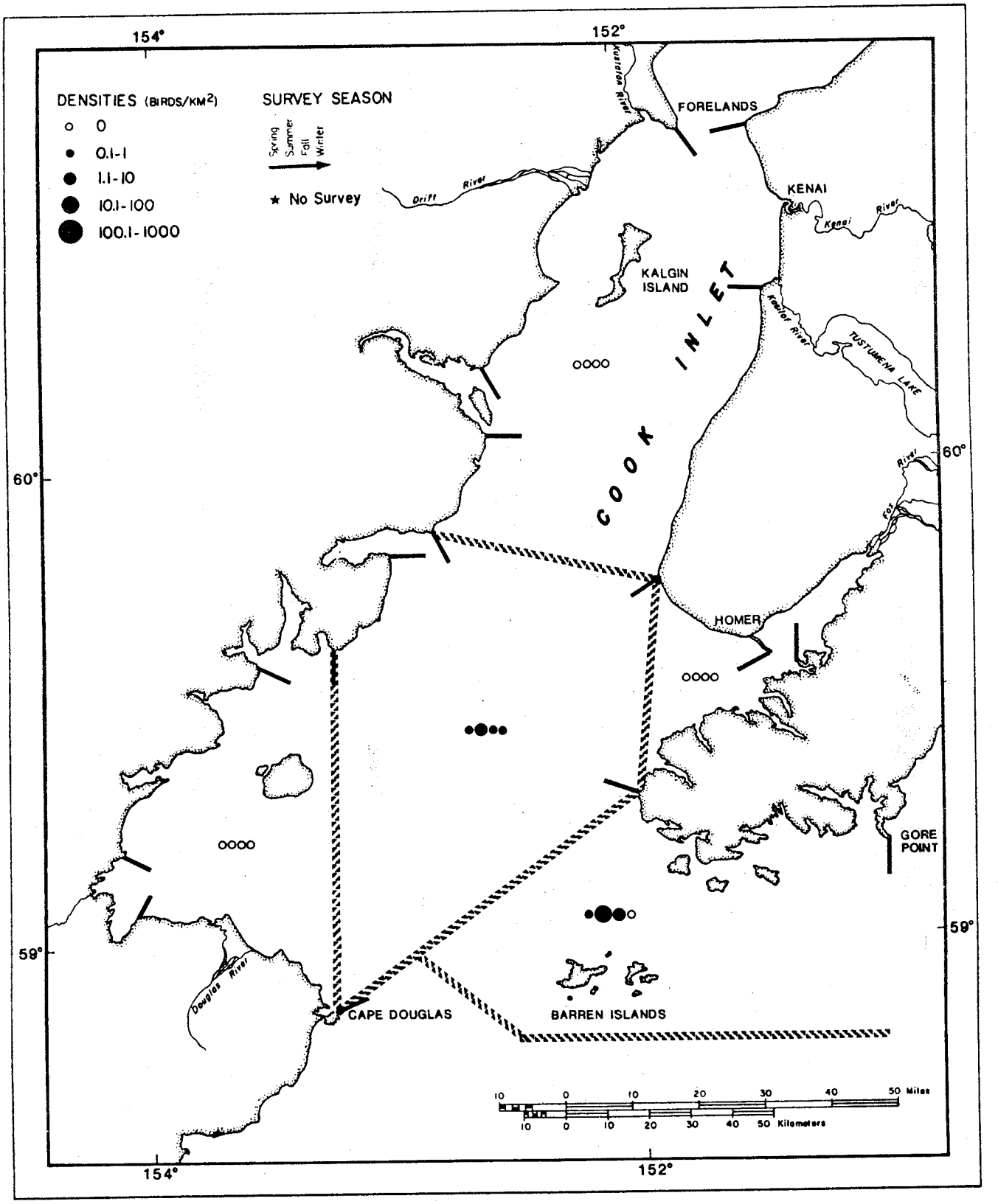


Fig. 80. Tubenose density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

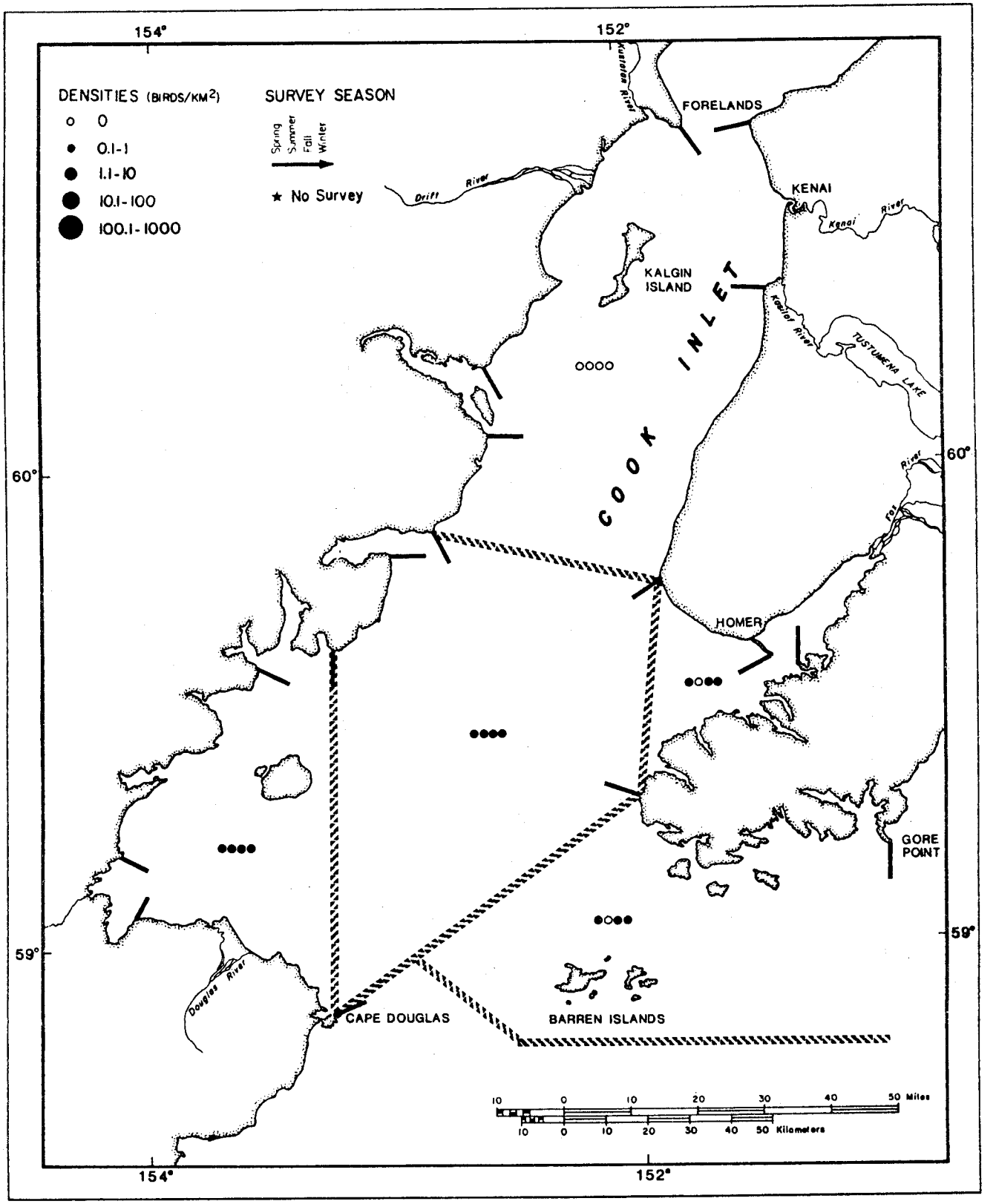


Fig. 81. Cormorant density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

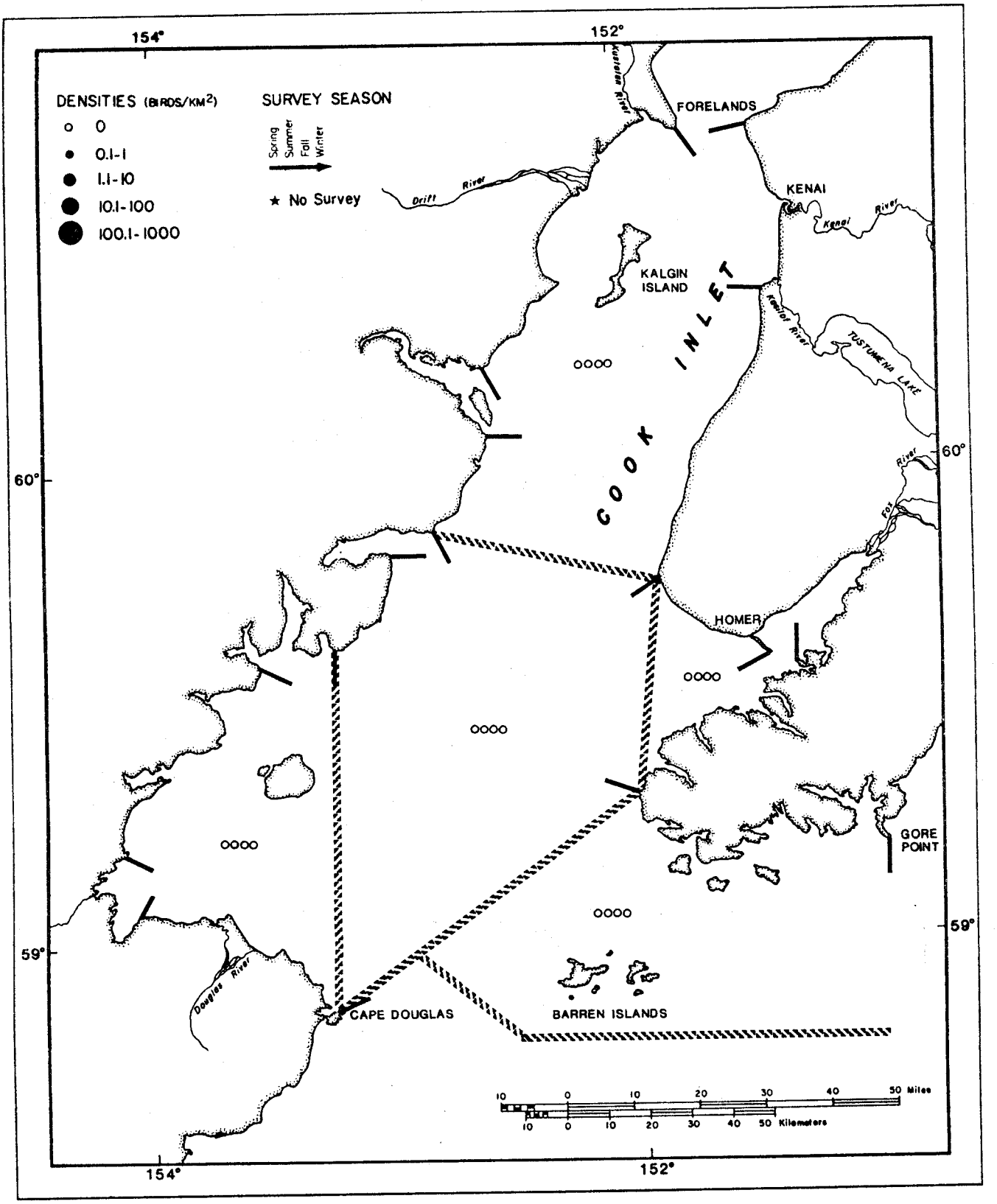


Fig. 82. Goose and swan density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. No geese or swans were sighted.

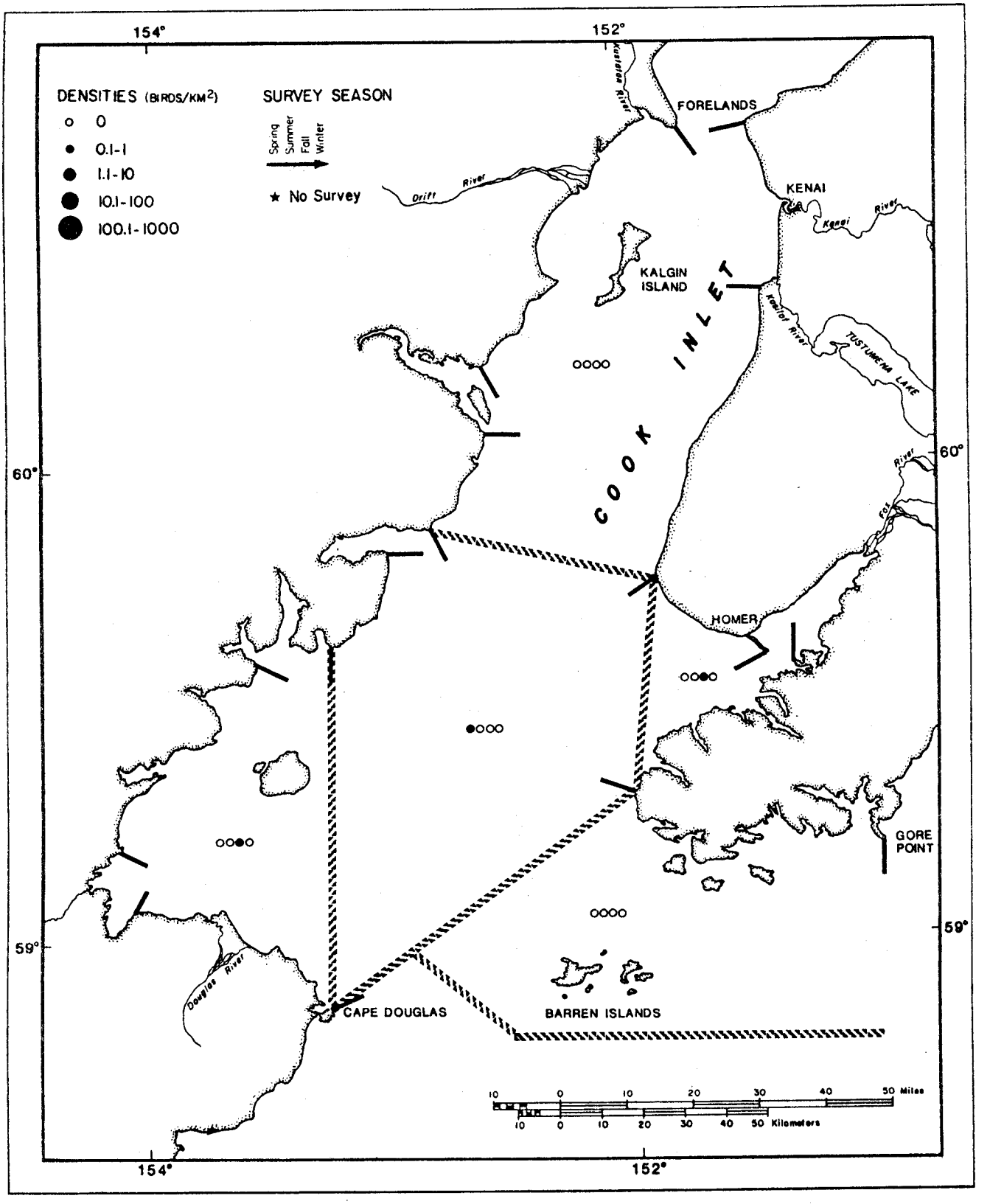


Fig. 83. Dabbling duck density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

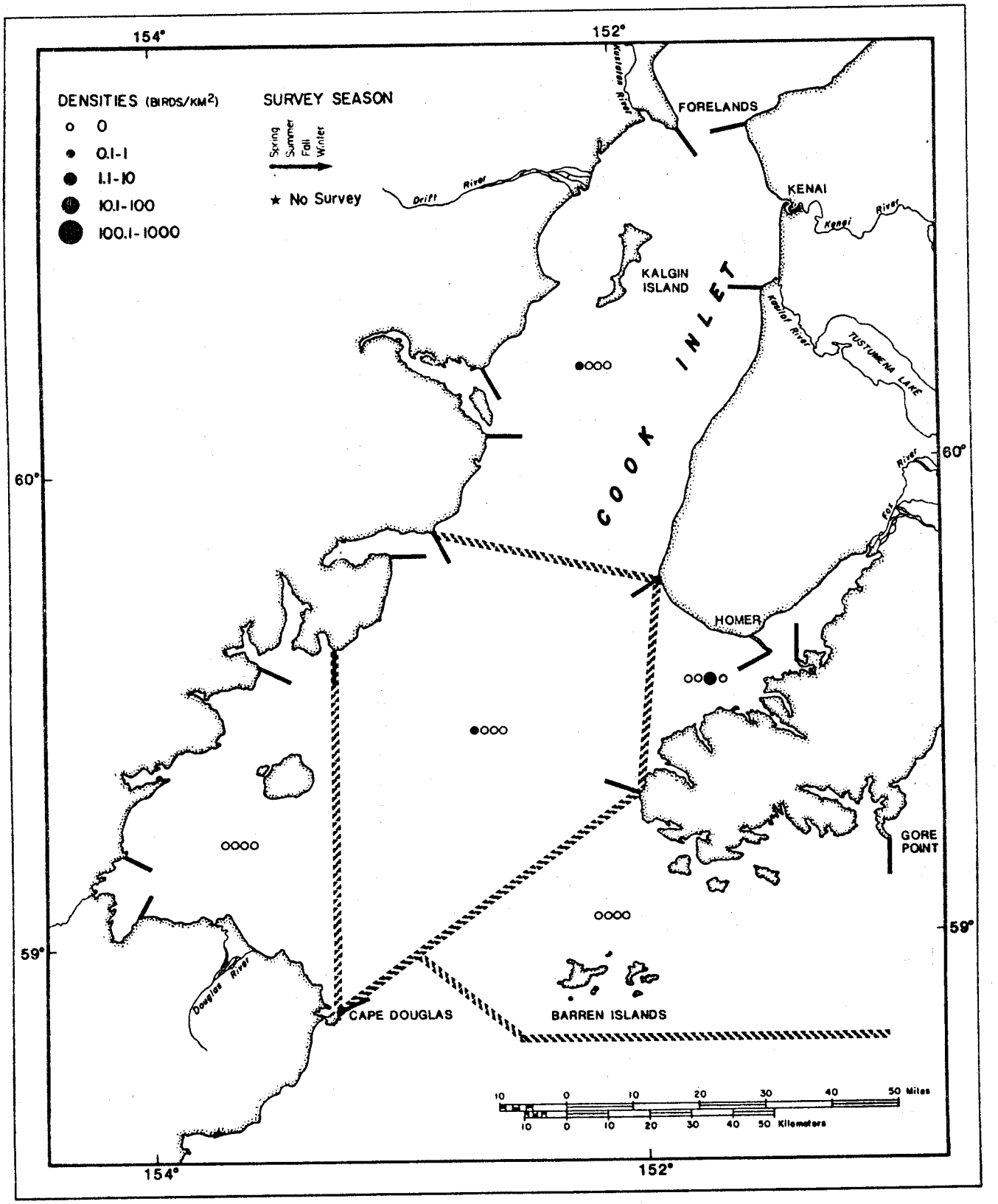


Fig. 84. Diving duck density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

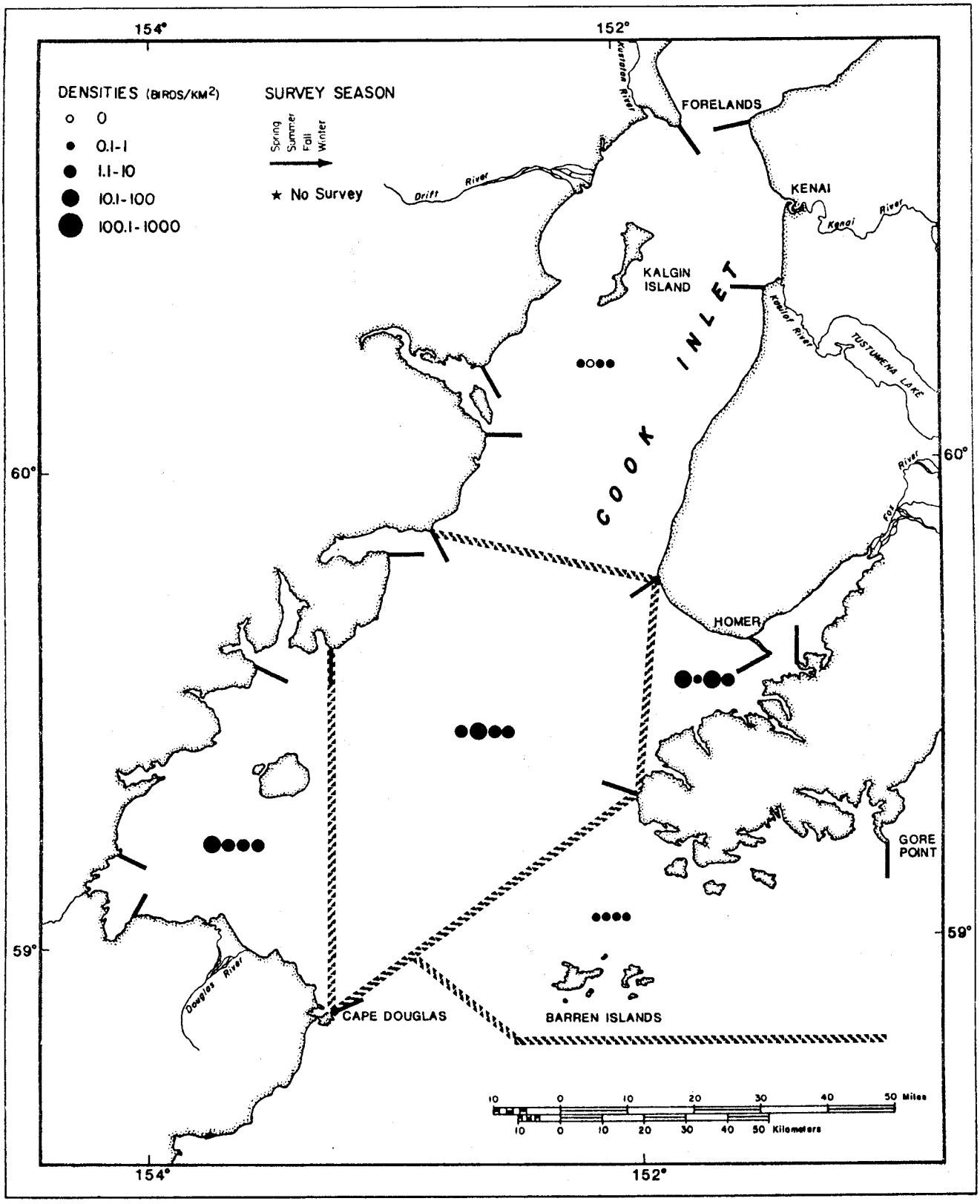


Fig. 85. Sea duck density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

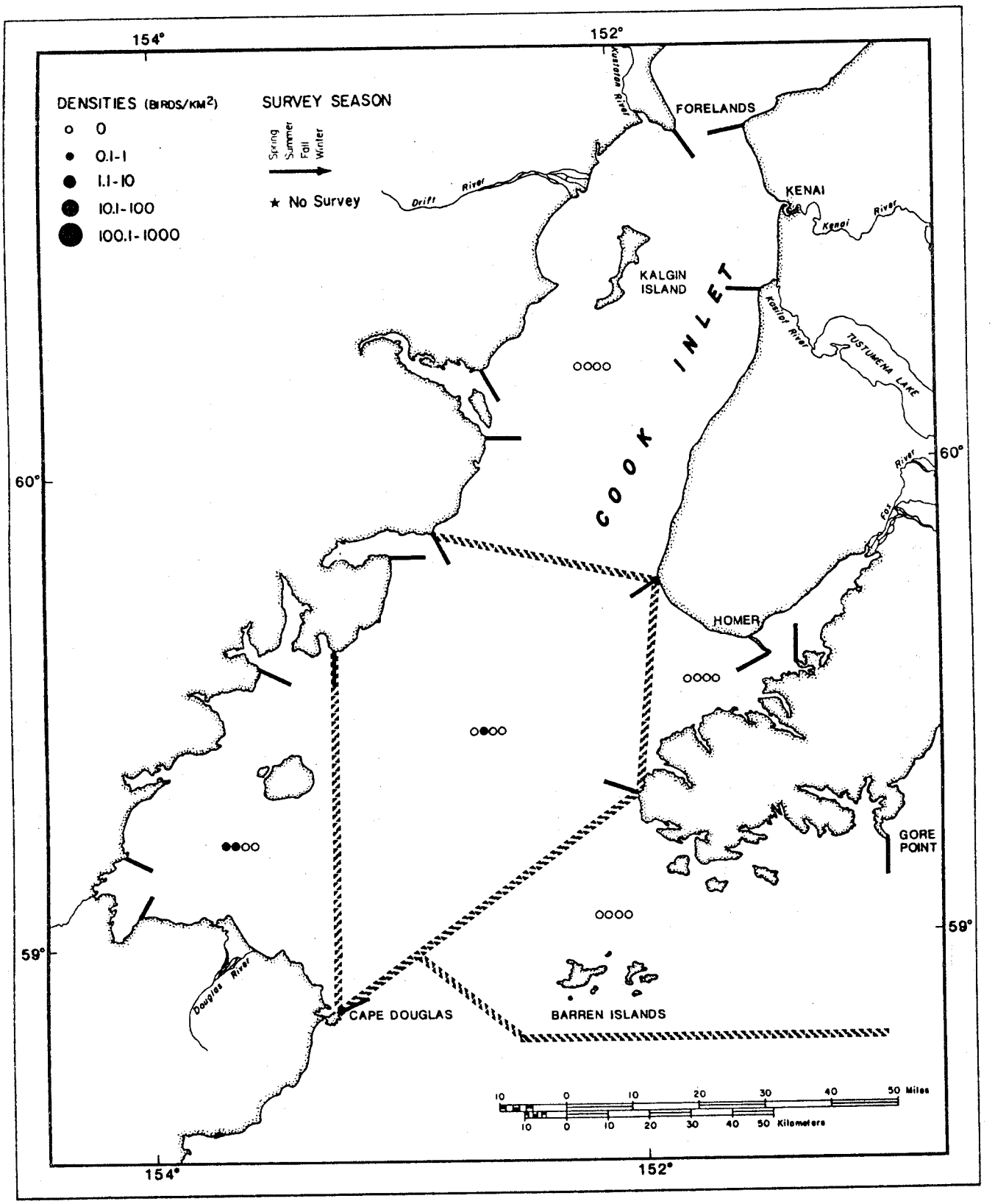


Fig. 86. Merganser density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

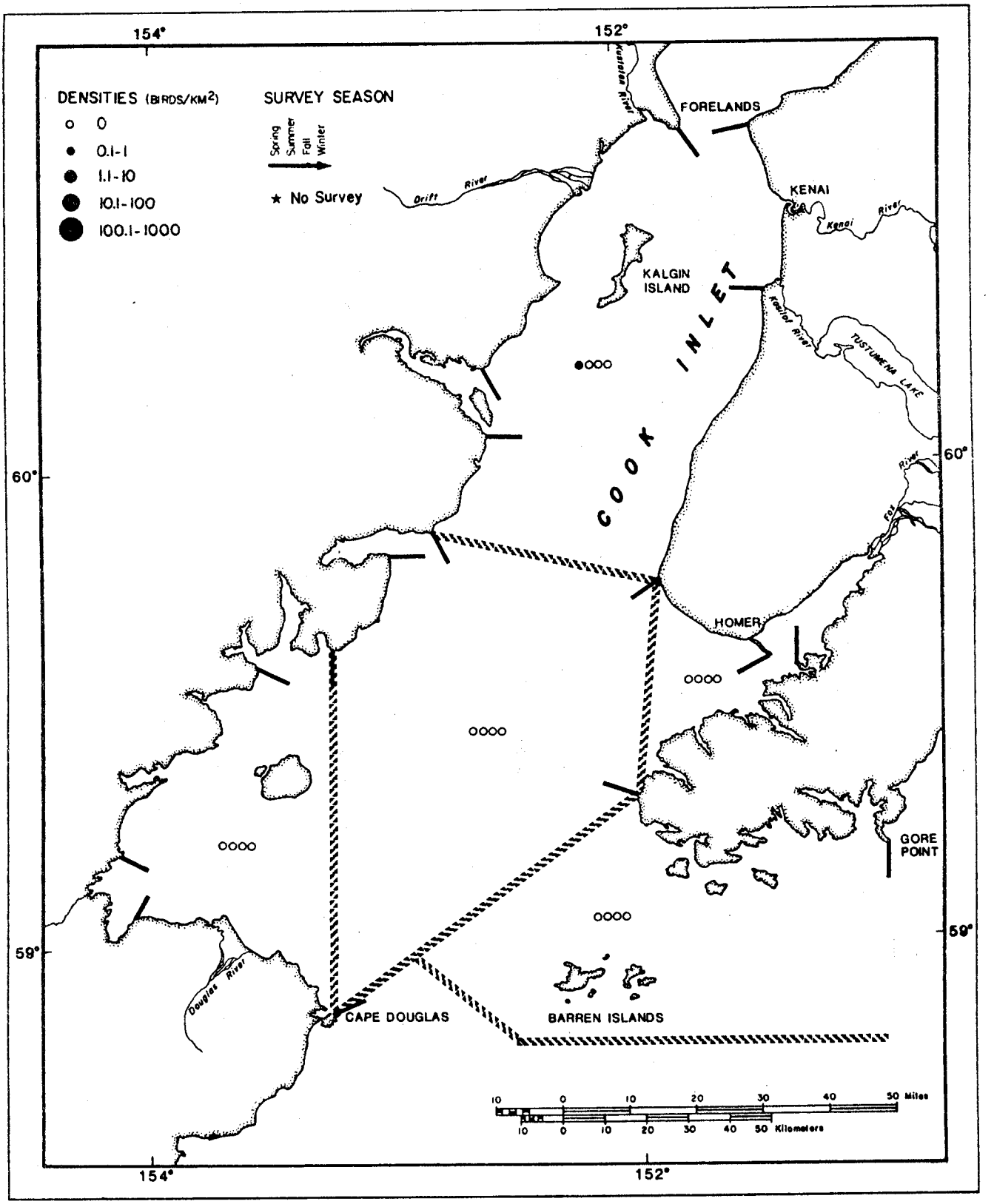


Fig. 87. Raptor density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

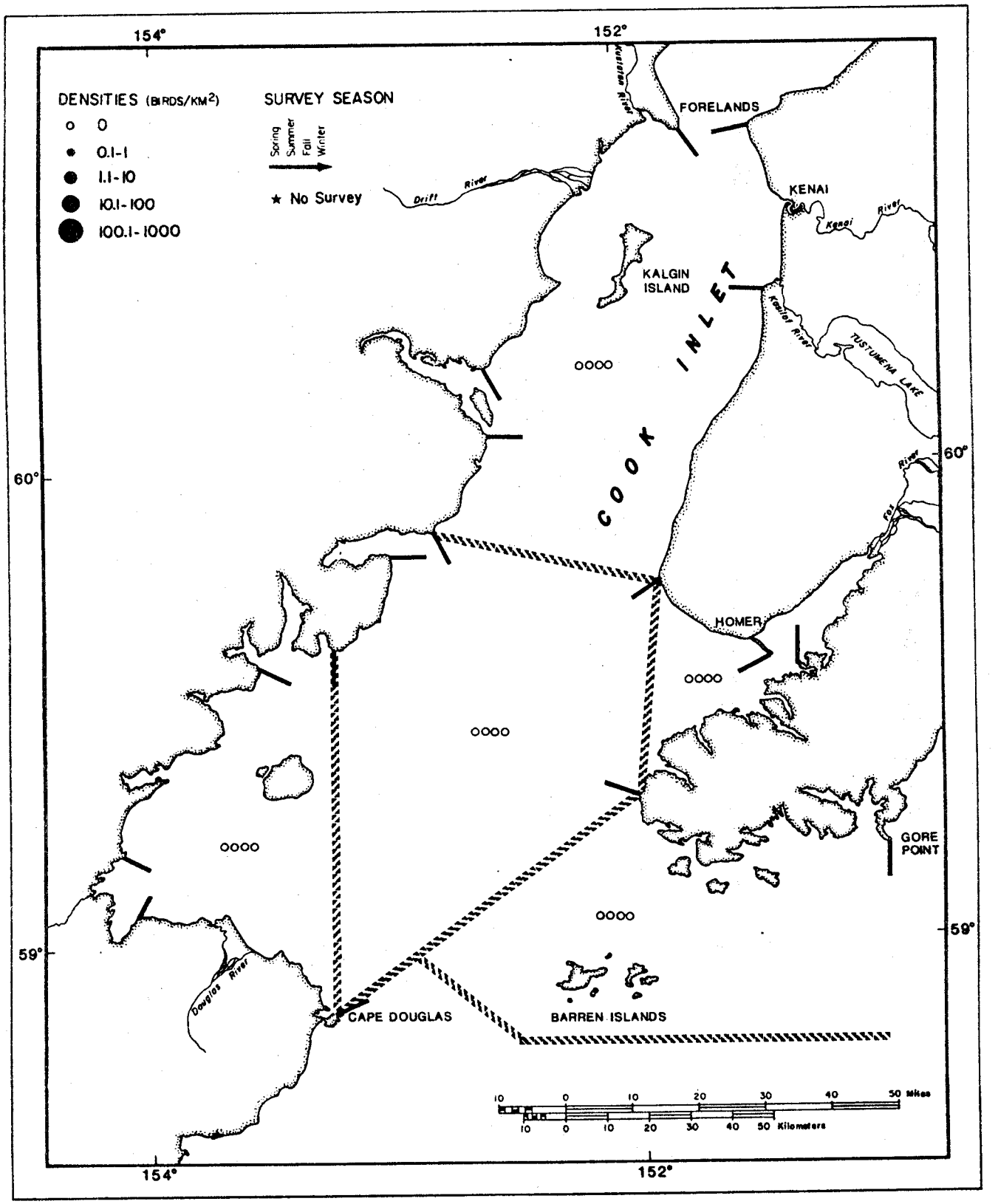


Fig. 88. Crane density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. No cranes were sighted.

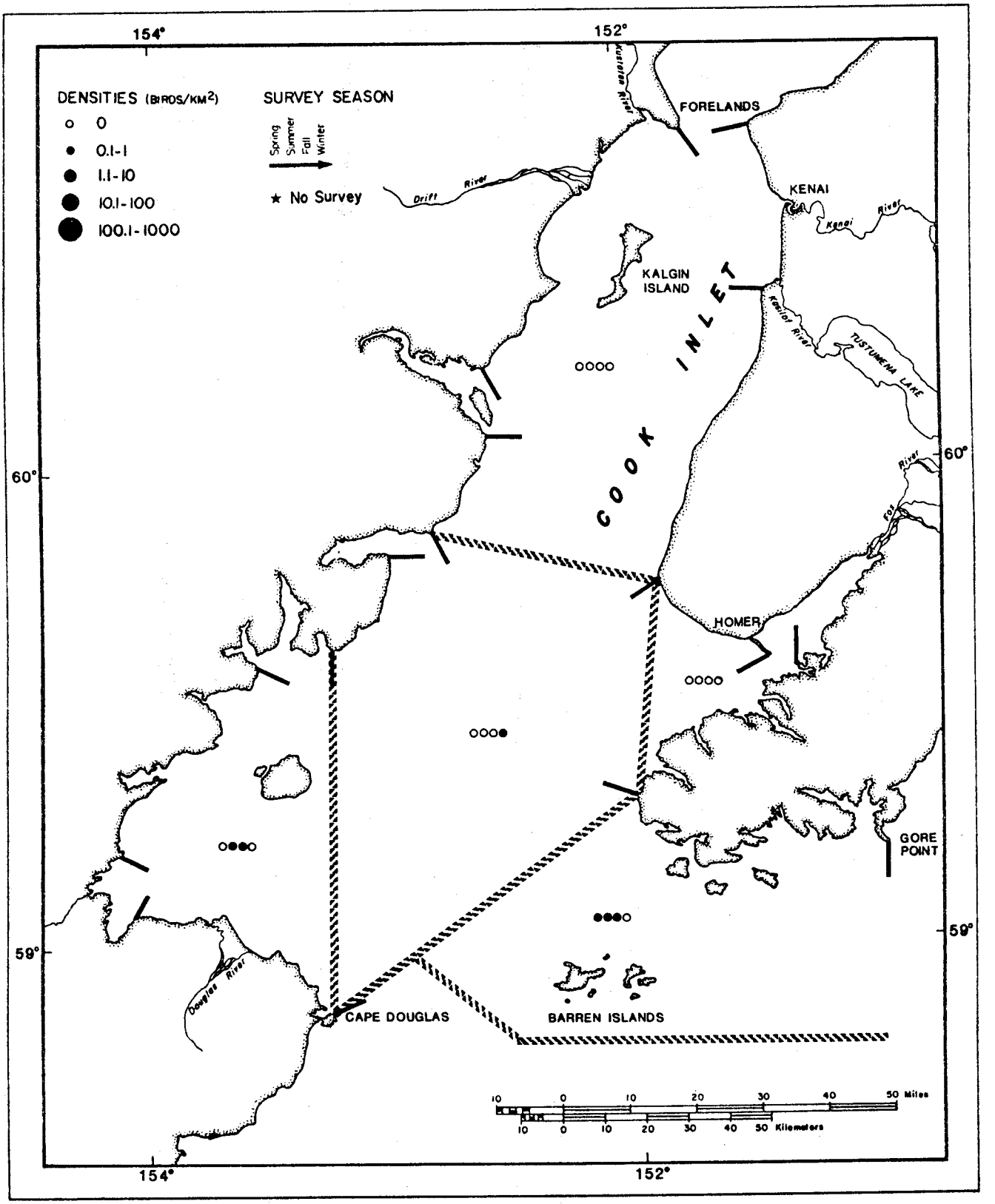


Fig. 89. Shorebird density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

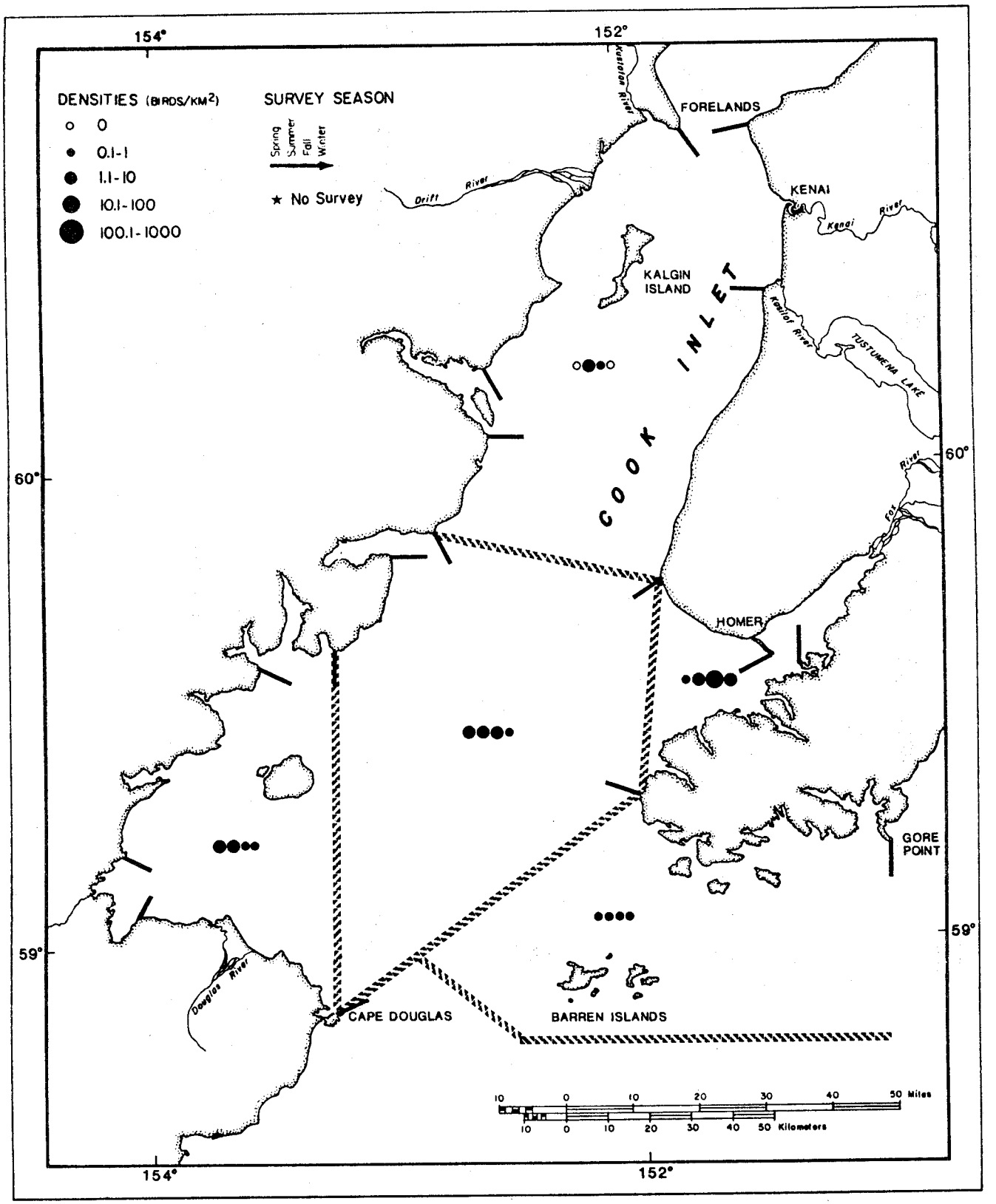


Fig. 90. Gull and jaeger density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

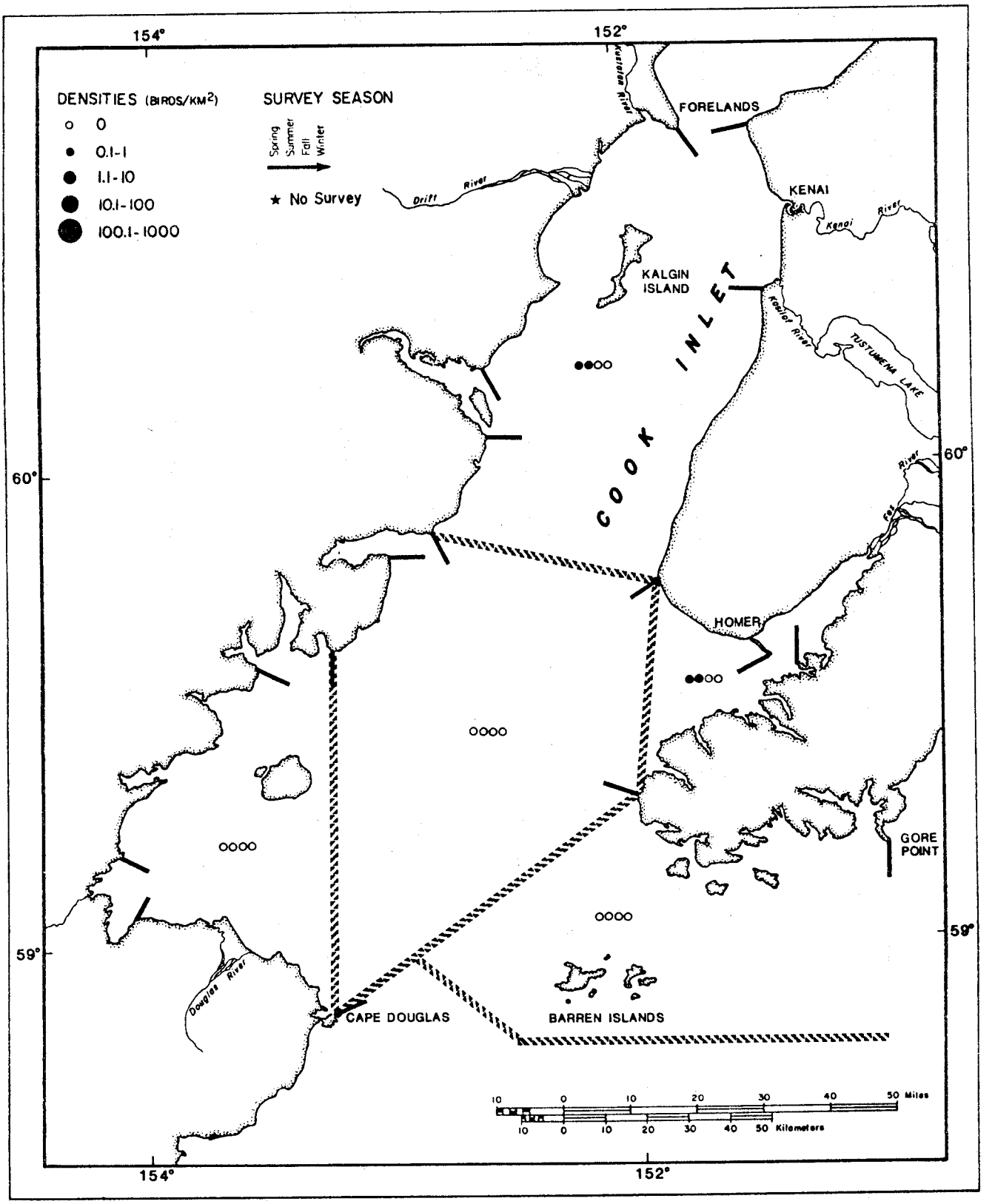


Fig. 91. Tern density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

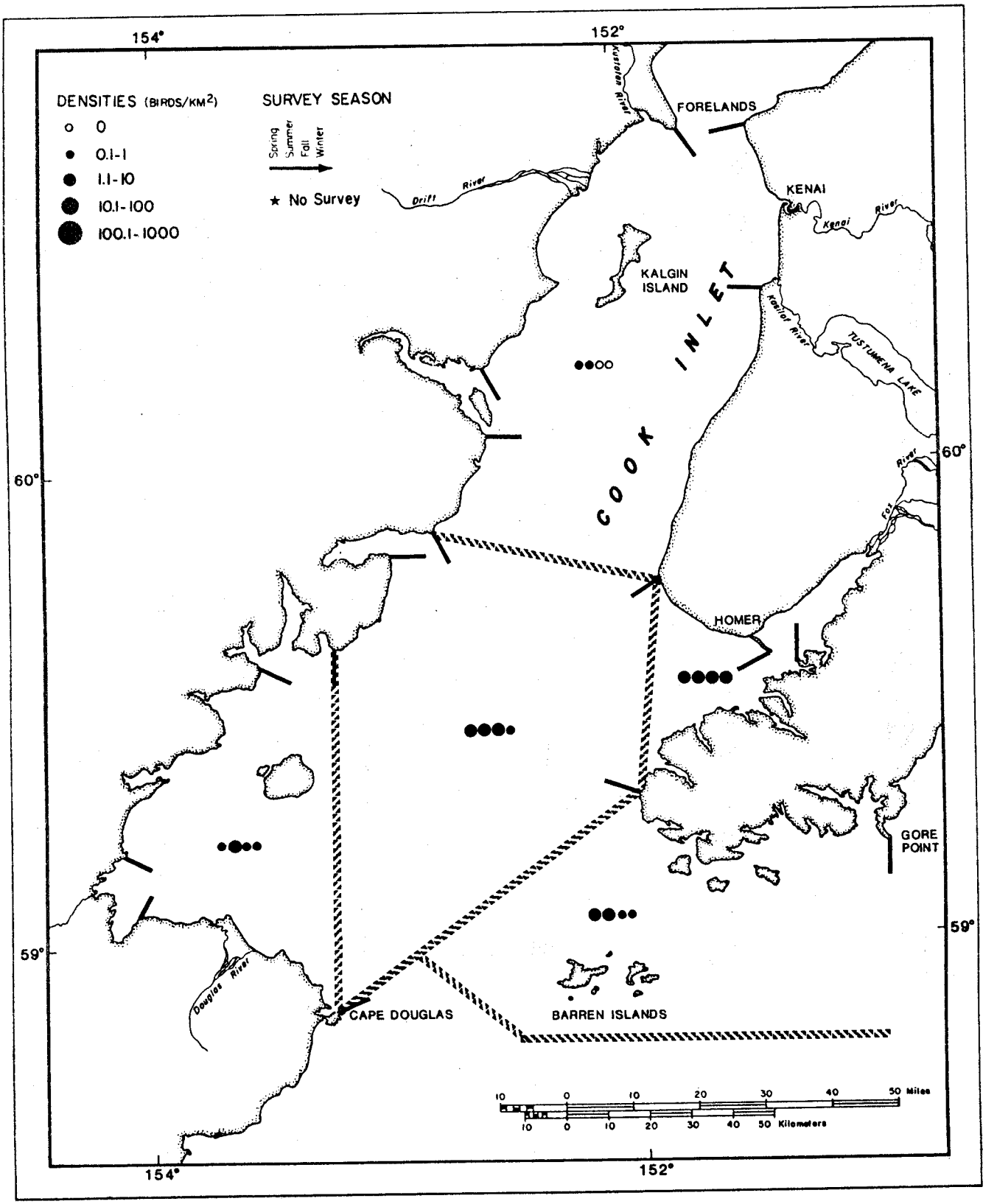


Fig. 92. Alcid density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

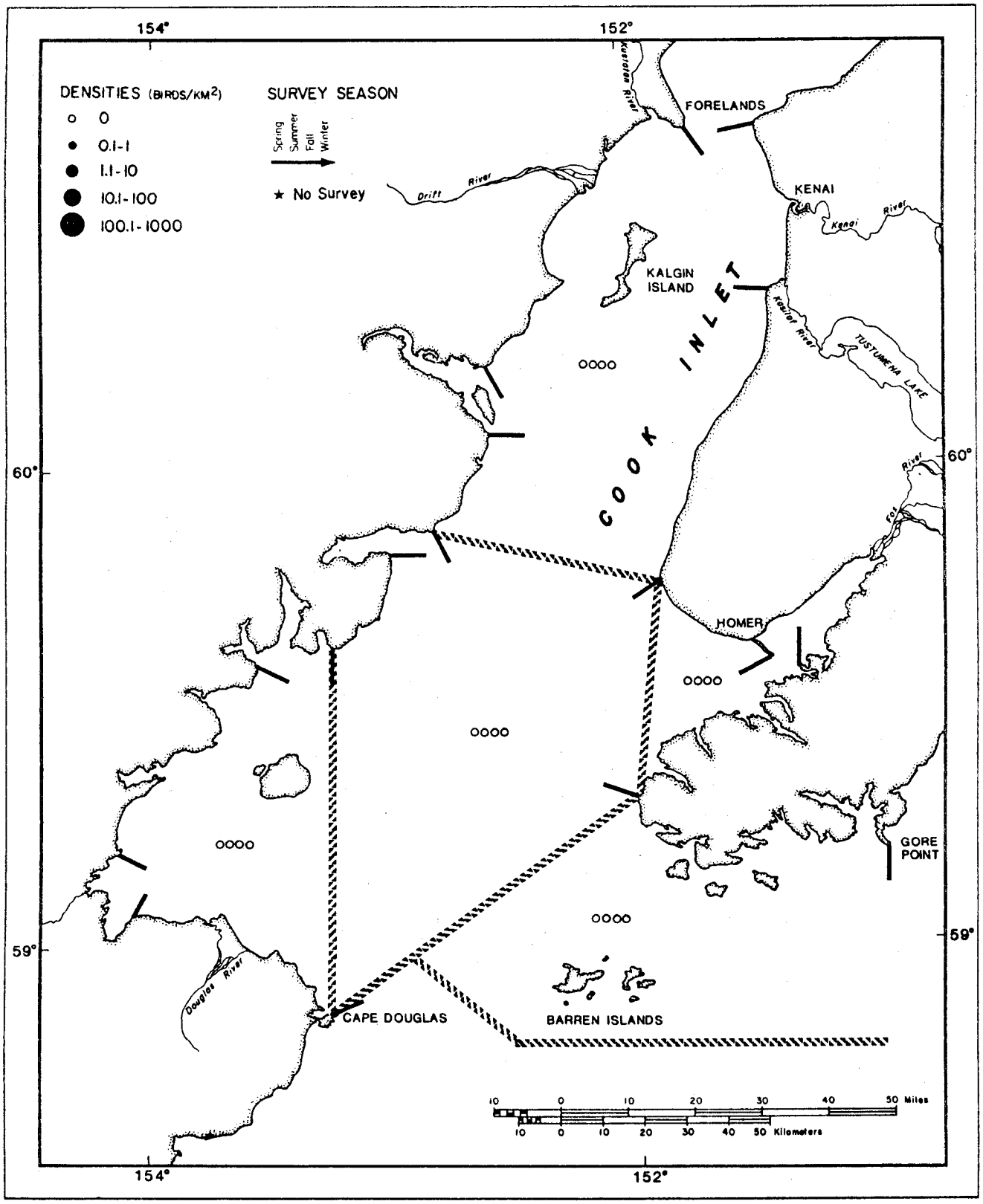


Fig. 93. Corvid density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. No corvids were sighted.

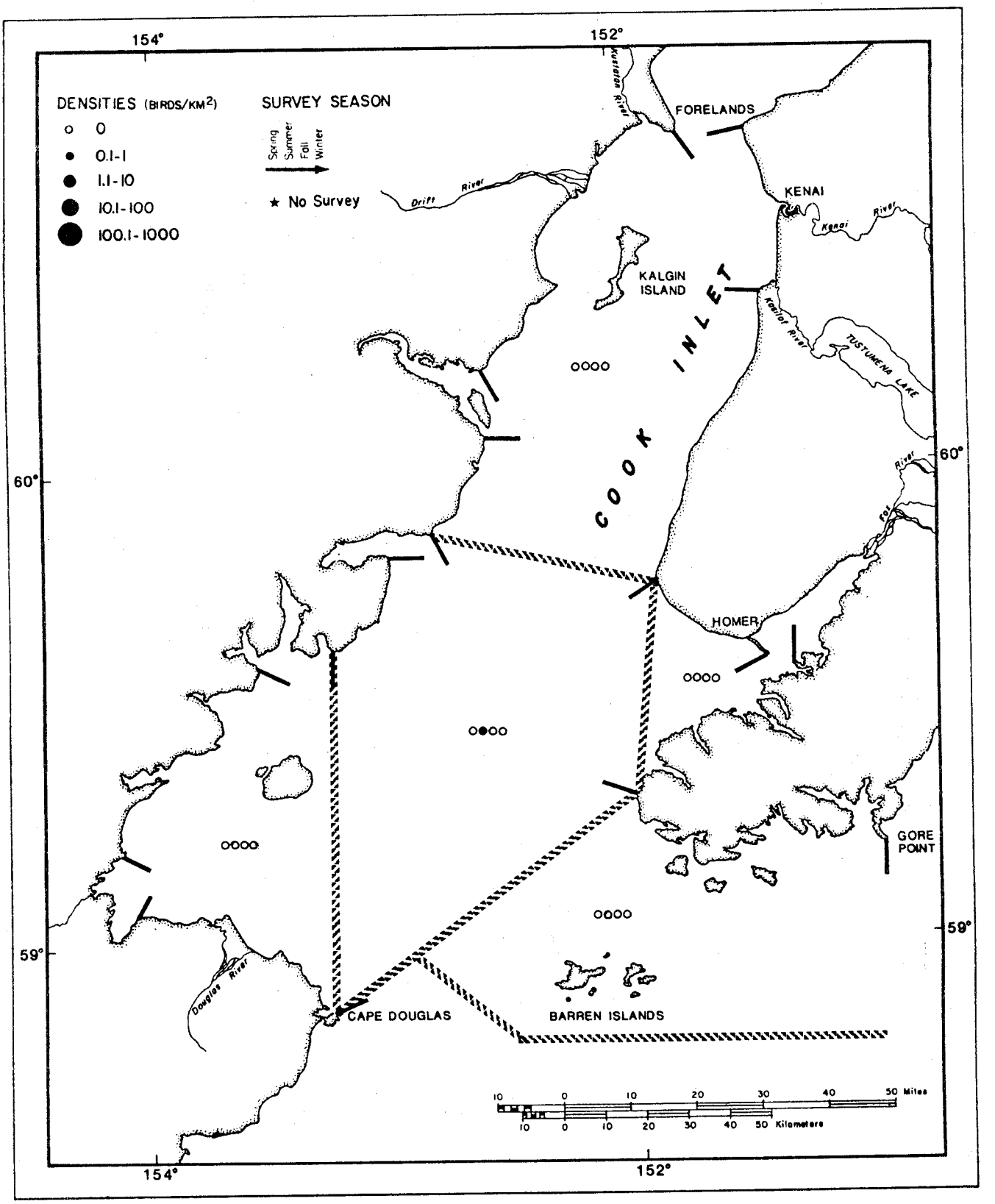
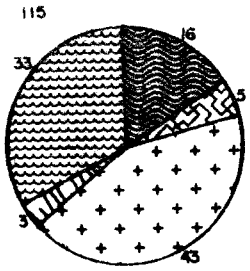


Fig. 94. Passerine (other than corvid) density by pelagic survey section in Lower Cook Inlet during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter.

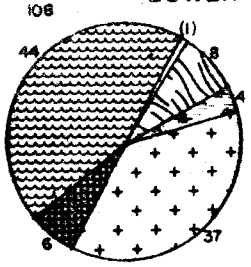
Table 8. Pelagic densities of birds by region in Lower Cook Inlet, spring and summer 1976, 1978. See Figure 58 for region boundaries. (T=trace).

	Spring Densities (birds/km^2)						Summer Densities (birds/km^2)					
	Region						Region					
Bird Groups	1	2	3	4	5	Total	1	2	3	4	5	Total
Loon	T		T		T	T	T	T	T			T
Grebe	T					T						0
Tubenose	T			T		T	2			11		2
Cormorant	T	T	T	T		T	T	T				T
Goose and Swan						0						0
Dabbler	T					T						0
Diver	T				T	T						0
Sea Duck	5	15	24	T	T	11	58	7	T	1		17
Merganser		T				T	T	T				T
Raptor					T	T						0
Crane						0						0
Shorebird				T		T		T		T		T
Gull and Jaeger	2	3	1	1		2	8	2	9	1	2	4
Tern			T		T	T			1		1	T
Alcid	4	T	7	8	T	2	3	4	2	3	T	3
Corvid						0						0
Other Passerine						0	T					T
Other Bird	T	T		T		T	T				T	T
TOTAL	11	18	32	10	1	15	73	13	12	16	3	26

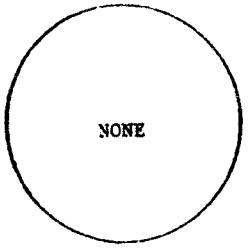
LOWER COOK INLET, SPRING



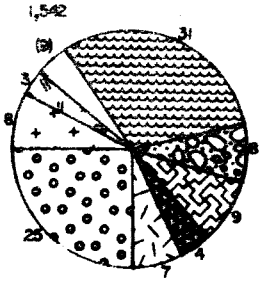
Loons



Grebes



Tubenoses



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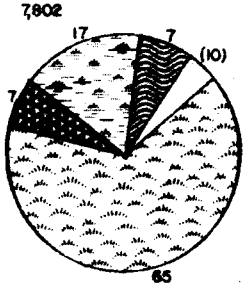

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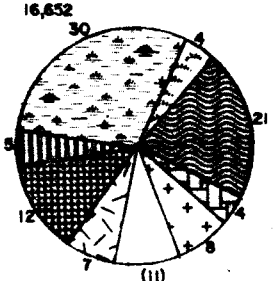

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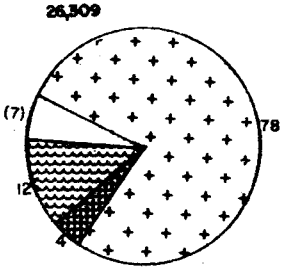
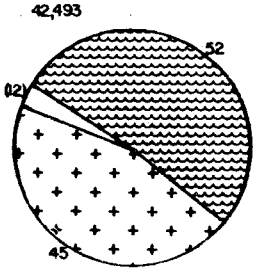
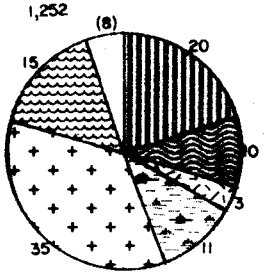


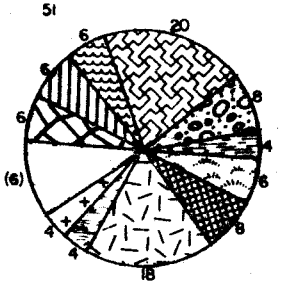
Divers



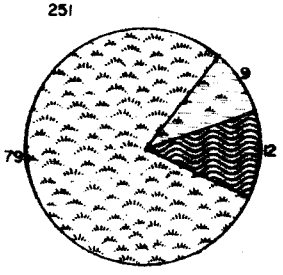
Sea Ducks



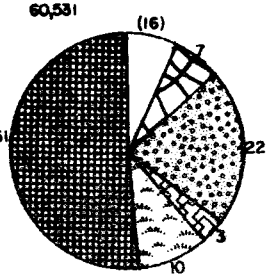
Mergansers



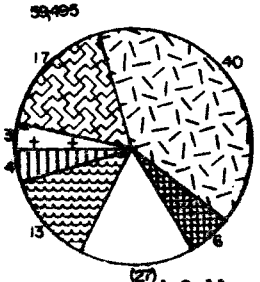
Raptors



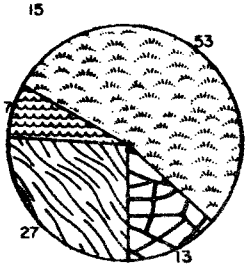
Cranes



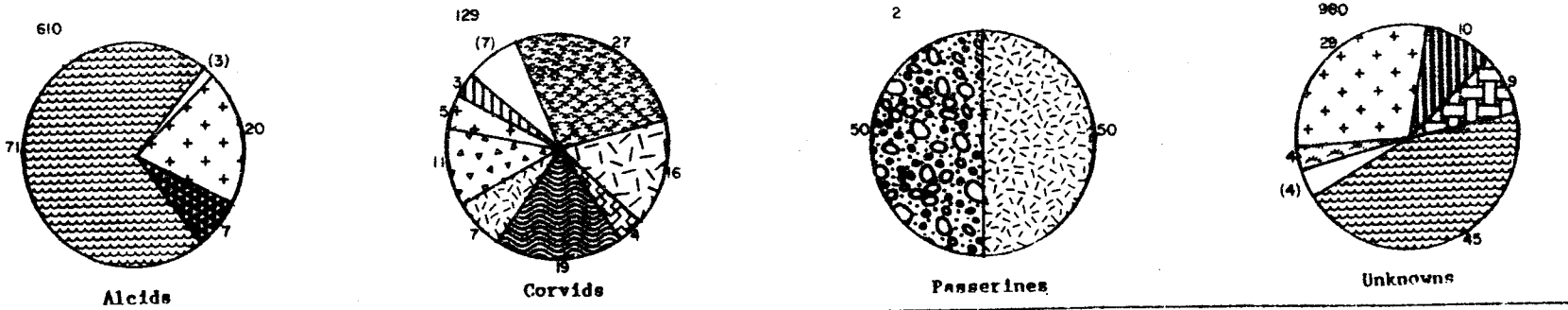
Shorebirds



Jaegers and Gulls



Terns



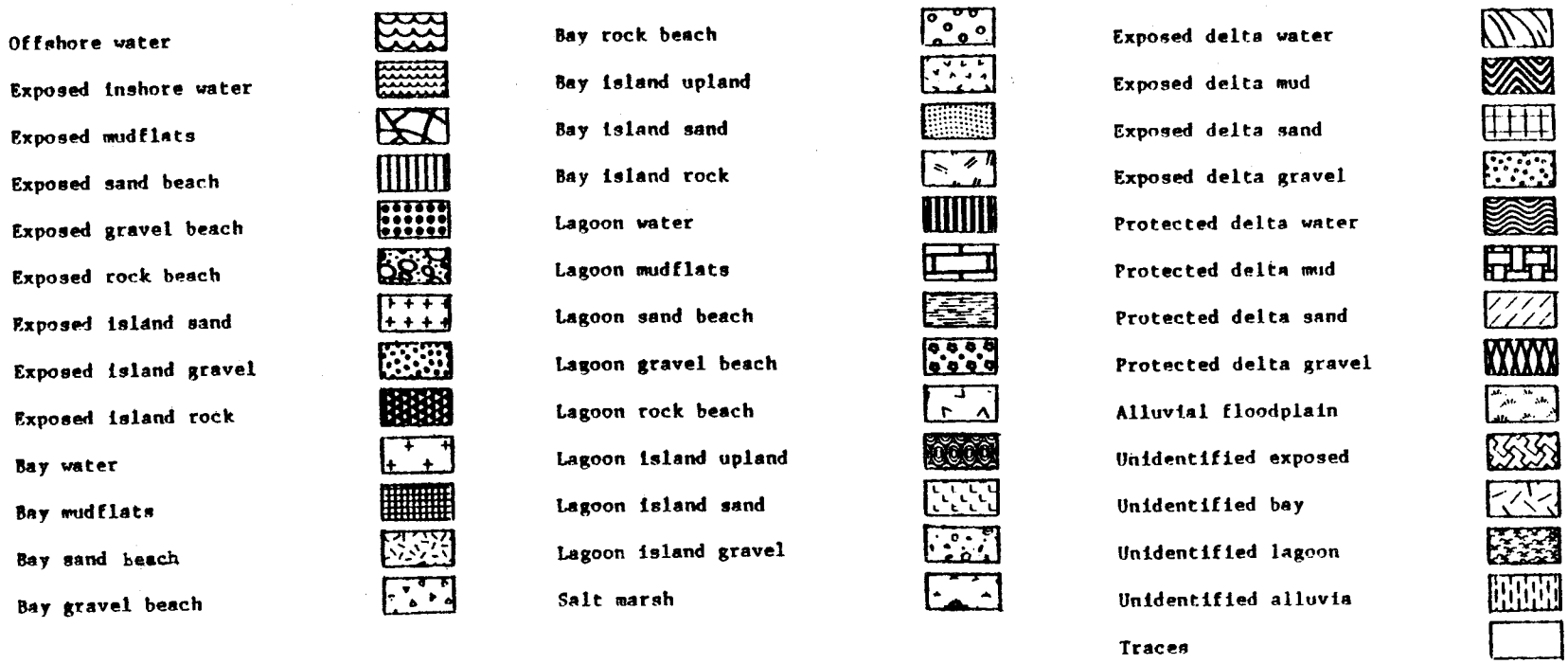
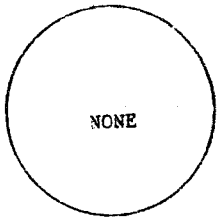
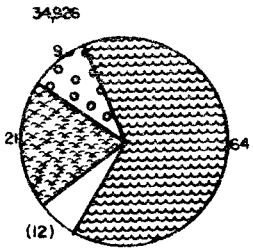


Fig. 95. Lower Cook Inlet, Spring 1976, 1978. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

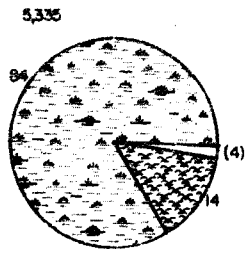
LOWER COOK INLET, SPRING



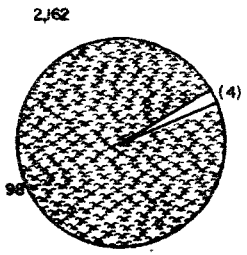
Offshore water



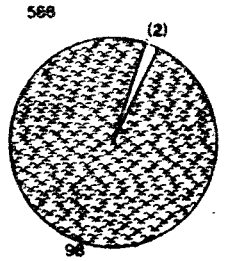
Exposed inshore water



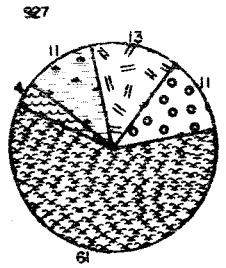
Exposed mudflats



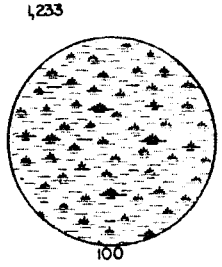
Exposed sand beach



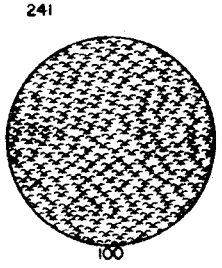
Exposed gravel beach



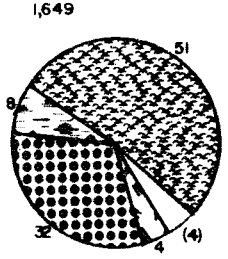
Exposed rock beach



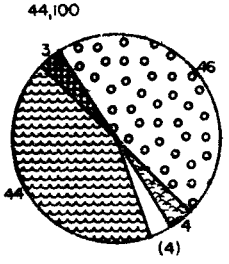
Exposed island sand



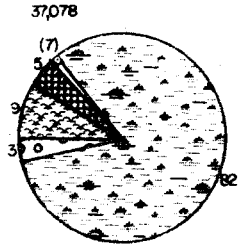
Exposed island gravel



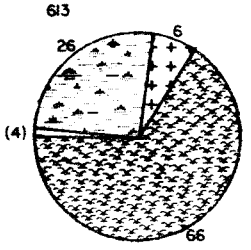
Exposed island rock



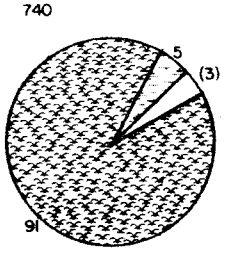
Bay water



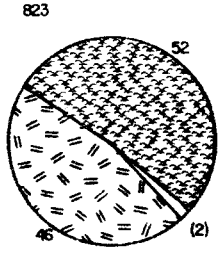
Bay mudflats



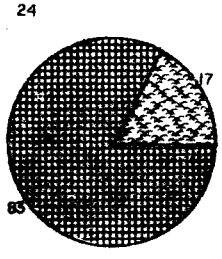
Bay sand beach



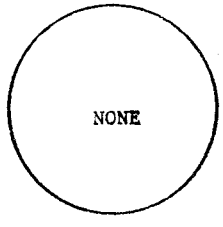
Bay gravel beach



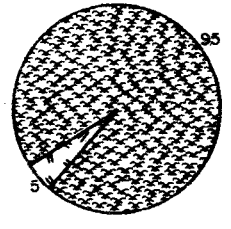
Bay rock beach



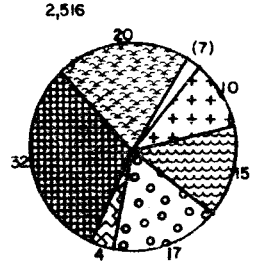
Bay island upland



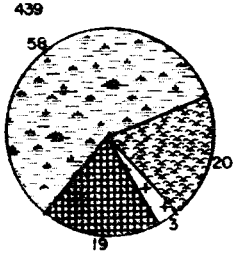
Bay island sand



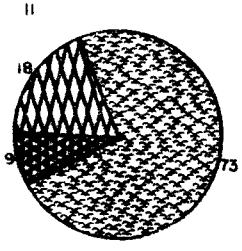
Bay island rock



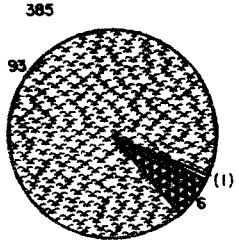
Lagoon water



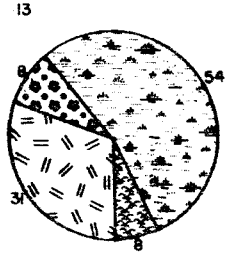
Lagoon mudflats



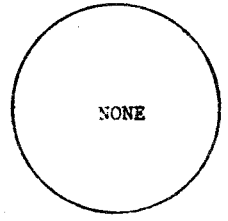
Lagoon sand beach



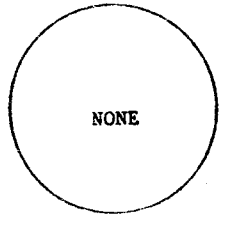
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

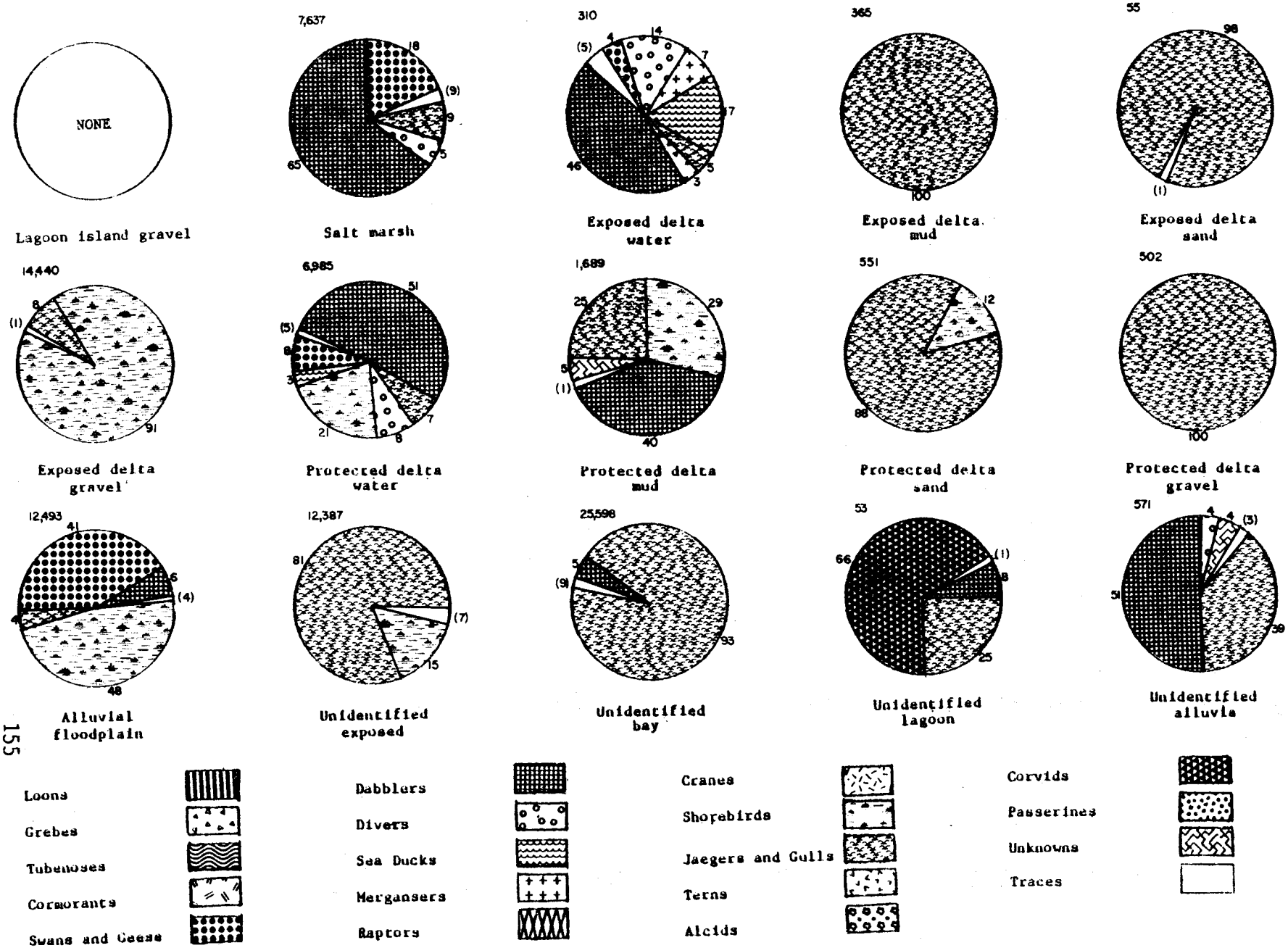


Fig. 96. Lower Cook Inlet, Spring 1976, 1978. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

Twenty percent of the total birds seen in spring surveys in Lower Cook Inlet were found on bay water habitat. Diving and sea ducks in about equal numbers comprised over 90 percent of the birds using bay waters. Bay mudflats and exposed inshore waters were the next most used habitats with 17 and 16 percent of the total birds, respectively. On bay mudflats 82 percent of the birds were shorebirds, 9 percent gulls and 5 percent dabbling ducks, while on exposed inshore waters 64 percent of the birds were sea ducks, 21 percent gulls and 9 percent diving ducks. The only other habitats supporting significant numbers of birds were exposed delta gravel (7%) and alluvial floodplain (6%). Only three bird groups were found on the former: shorebirds (91%), gulls (8%), and dabblers (1%). On floodplains, 48 percent of the birds were shorebirds, 41 percent geese, 6 percent dabblers, 4 percent gulls and 2 percent cranes with traces of raptors and terns.

In all, 30 identified coastal habitat types were used in spring by birds in Lower Cook Inlet.

SUMMER

Shoreline density - Coastal bird densities dropped from 192 to 130 birds/km^2 between spring and summer (Table 9). The largest decreases in density were for shorebirds, geese, dabblers and divers. There were slight increases in densities of gulls, alcids and cormorants, and the density of sea ducks remained the same. Section 8, Tuxedni Bay, had the highest summer density 538 birds/km^2. As in spring, much of this high bird use represented kittiwakes at their colony on Chisik Island. In summer, alcids also occupied the colony and 103 birds/km^2 were enumerated on nearby waters. Sea duck densities were higher in summer than spring (49 vs. 22 birds/km^2) in Tuxedni Bay. Diving ducks were much reduced from spring to summer (50 to 7 birds/km^2). Section 8 had the second highest summer density for divers after Chinitna Bay which had 8 birds/km^2. Summer densities were also second highest for dabblers in Tuxedni Bay where 13 birds/km^2 were recorded.

Augustine Island had the second highest overall summer bird density (254 birds/km^2) for Lower Cook Inlet. Gulls, the densest group at 97 birds/km^2, fed and roosted in large flocks around the periphery of the island. Many of the shorebirds, the next densest group (78 birds/km^2), were observed late in July and were likely early fall migrants. A large raft of mixed Horned and Tufted Puffins at Burr Point raised the alcid density to 28 birds/km^2. Non-breeding sea ducks feeding in coastal waters off Augustine Island had a summer density of 45 birds/km^2.

Two other sections had densities over 200 birds/km^2 in summer. Kachemak Bay's 229 birds/km^2 were mostly gulls and sea ducks with 111 and 109 birds/km^2, respectively. Section 14, in the southwestern corner of Kamishak Bay, with a density of 203 birds/km^2, had mostly sea ducks (105 birds/km^2) and gulls (68 birds/km^2) with some alcids (11 birds/km^2) and a relatively high cormorant density (7 birds/km^2).

Tubenoses and cormorants were densest (both with 9 birds/km^2) in Section 6, the Chugach Island area. High density stations for both species were

Table 9. Bird density by section of coastline in Lower Cook Inlet, summer 1976, 1978. See Figure 58 for section boundaries. (T=trace).

	Summer Densities (birds/km^2)																	
	Section of Coastline																	
Bird Group	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Loon	T	T	T	T	T	T	T			T	T	T	T	T	1	T	T	T
Grebe				T										T			T	T
Tubenose		T				9									T		T	1
Cormorant	T	T		T	T	9	T	4	4	3	5	3	4	7	3	T	3	3
Goose and Swan	T						T			1					T		T	T
Dabbler	1			1		T	4	13	3	22		1	T	2	4	2	T	3
Diver				2	T			7		8		1	1	3	2			1
Sea Duck	T	7	93	109	5	2	2	49	3	20	15	96	31	105	57	1	45	38
Merganser				1	T	T	T	T		T	1	T	T	1	1		2	T
Raptor		T		T	T	T	T	T		T	T	T	T	T	T			T
Crane	T						T							T	T	T		T
Shorebird	1		1	2		T	T			T		1	2	3	2	T	78	3
Gull and Jaeger	155	8	35	111	14	92	34	362	68	33	6	33	19	68	49	5	97	70
Tern	3	1	1	1			1									4		T
Alcid				T	T	1		103		24	3	16	5	11	9		28	10
Corvid	T			T	T	T				T	T	T	T		T		T	T
Other Passerine	T			T		T	T	1		1		1	T	2	1	T		T
Other Bird				T	T								T		2			T
TOTAL	160	17	130	229	20	112	43	538	78	113	30	152	64	203	130	13	254	130

found in that section: 10,000 tubenoses/km^2 at Nagahut Rocks and 601 cormorants/km^2 at Perl Rock. In summer, dabblers were densest in Chinitna Bay at 22 birds/km^2.

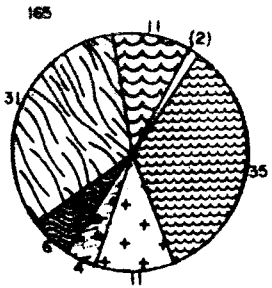
Besides high density sea duck areas in Kachemak and Akumwarvik Bays, others were found in Iniskin/Iliamna Bays (96 birds/km^2) and the Bluff Point area of outer Kachemak Bay (93 birds/km^2). In both summers 1976 and 1978, a large raft of non-breeding scoters numbering several thousand was observed in the Iniskin/Iliamna area. Section 1's (Kenai/Kasilof River) density of 160 birds/km^2 was made up almost entirely of gulls (155 birds/km^2) and some terns (3 birds/km^2). Almost 1500 gulls were observed on Nordyke Island, qualifying it as a high density site. Gulls were also dense (92 birds/km^2) in Section 6, the Chugach Island area, where several small gull and kittiwake colonies were located. The section with the lowest total density in summer, Kalgin Island, did have the highest tern density (4 birds/km^2).

Pelagic density - In summer offshore bird densities increased to 26 birds/km^2 for transects surveyed in Lower Cook Inlet (Table 8). Region 1, the central portion of the Inlet, had by far the greatest overall density - 73 birds/km^2. Regions 2, 3, and 4 were all comparable with densities of 13, 12 and 16 birds/km^2, respectively. The lowest density (3 birds/km^2) was found in the northern portion, Region 5. Sea ducks had the highest density with 17 birds/km^2 for all regions. The highest density for a single region was 58 sea ducks/km^2 in Region 1. Almost 4,000 of the sea ducks were Surf and White-winged Scoters. Gulls and alcids were the only two bird groups found in all regions. Regions 1 and 3 had the most gulls with 8 and 9 birds/km^2, respectively. The total summer pelagic density for gulls in Lower Cook Inlet was 4 birds/km^2. Only 3 alcids/km^2 were found in summer with almost equal densities in Regions 1 through 4. Two regions, 1 and 4, had tubenoses present for an overall density of 2 birds/km^2, but most were in Region 4, the Kennedy Entrance area, with 11 birds/km^2. Terns were the only other bird group with densities of one or more birds/km^2 and both Regions 3 and 5 had densities of one bird/km^2. Bird groups present in trace amounts included loons, cormorants, mergansers, shorebirds and passerines.

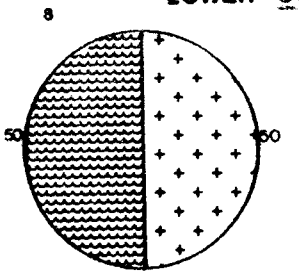
Habitat Usage - Habitat preferences of each species group and the species groups present on each habitat type are shown in Figs. 97 and 98, respectively. In summer, 44 percent of the marine birds were found along exposed coastal habitats in Lower Cook Inlet, 40 percent in bays or fjords, 6 percent on protected delta areas, 3 percent in lagoons and 2 percent on exposed delta habitats. Of identified habitats, bay waters had the largest numbers of birds present (20%), followed by exposed inshore water (16%), bay sand beach (6%), bay mudflats (4%), exposed rock beach (4%), and bay rock beach (3%). In all, 32 habitats with birds present were identified.

Of 165 loons, 35 percent were found along exposed inshore waters, 31 percent on exposed delta water, 11 percent on both offshore and bay waters and 6 percent in protected delta water. Most tubenoses observed on the coastal surveys used exposed inshore waters. Cormorants were

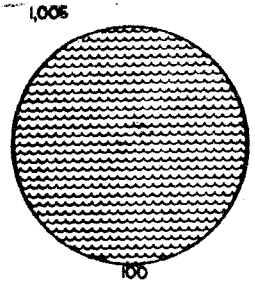
LOWER COOK INLET, SUMMER



Loons



Grebes



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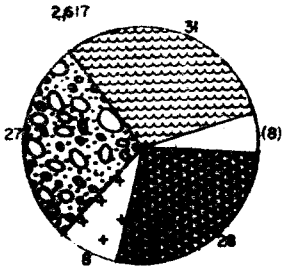

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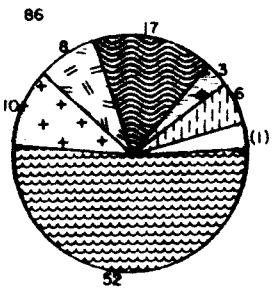

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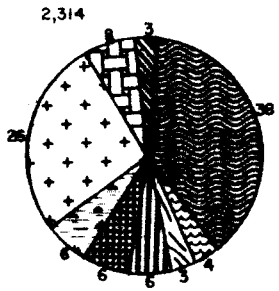

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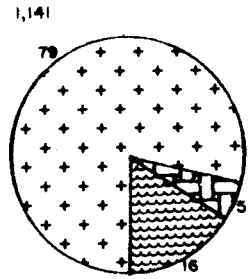

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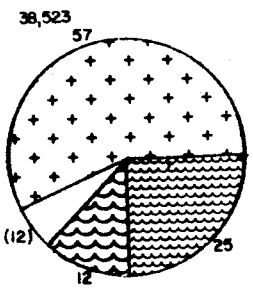

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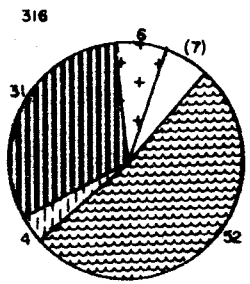

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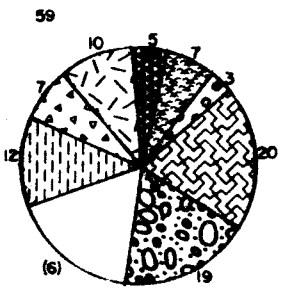

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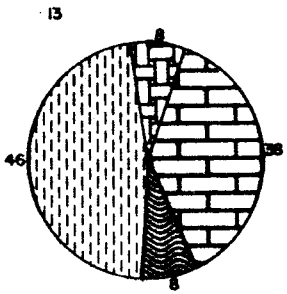

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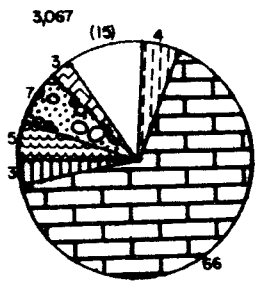
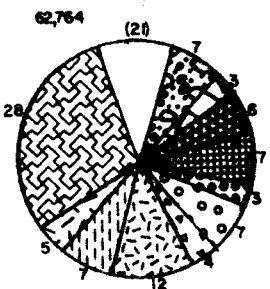
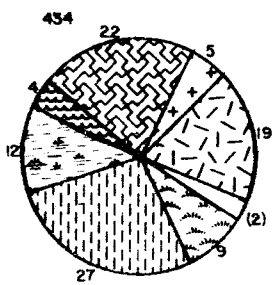


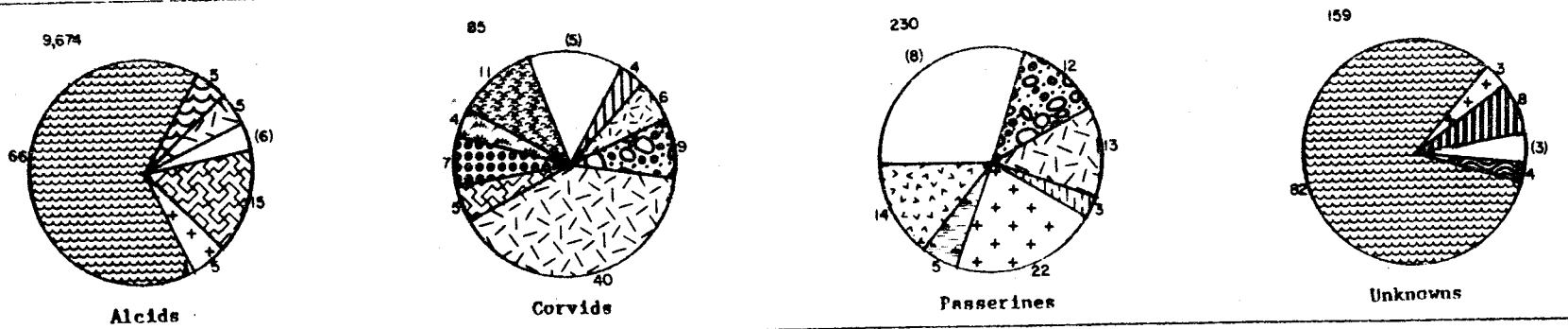
Shorebirds



Jaegers and Gulls



Terns



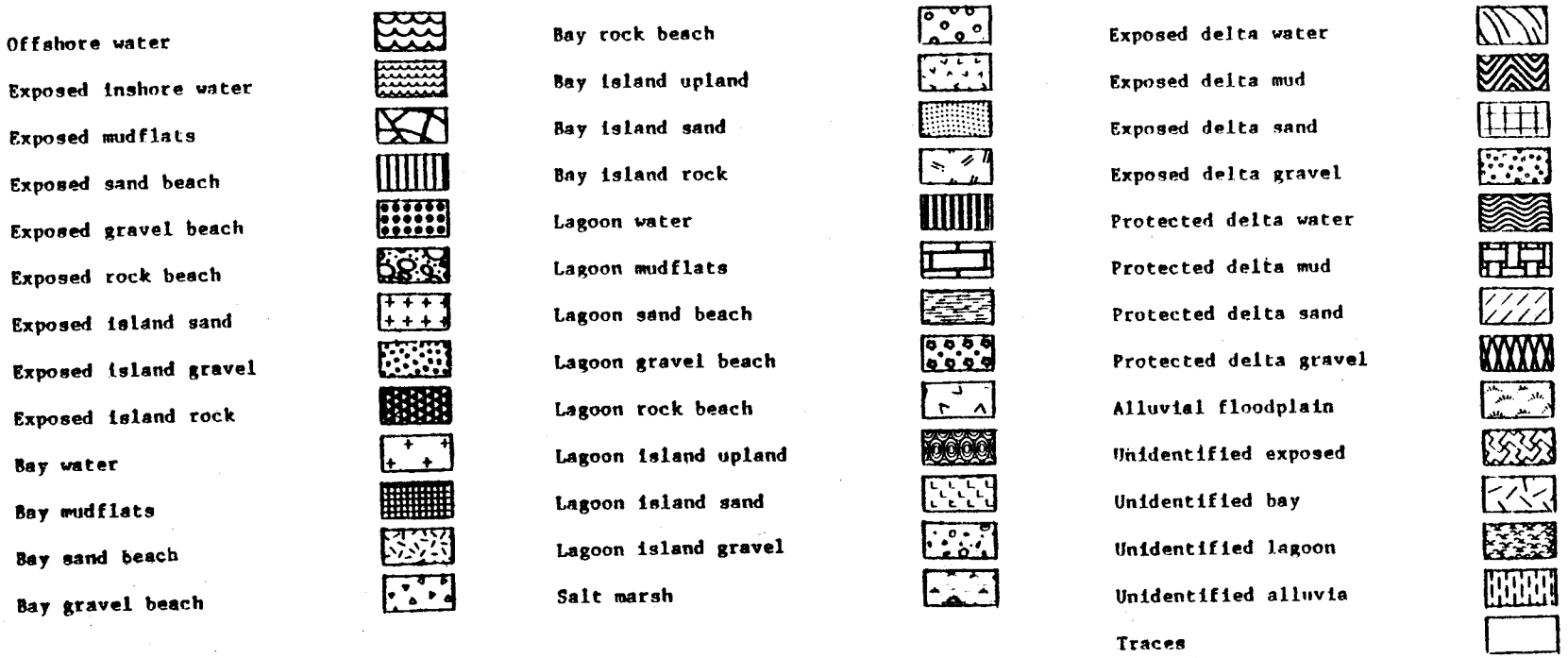
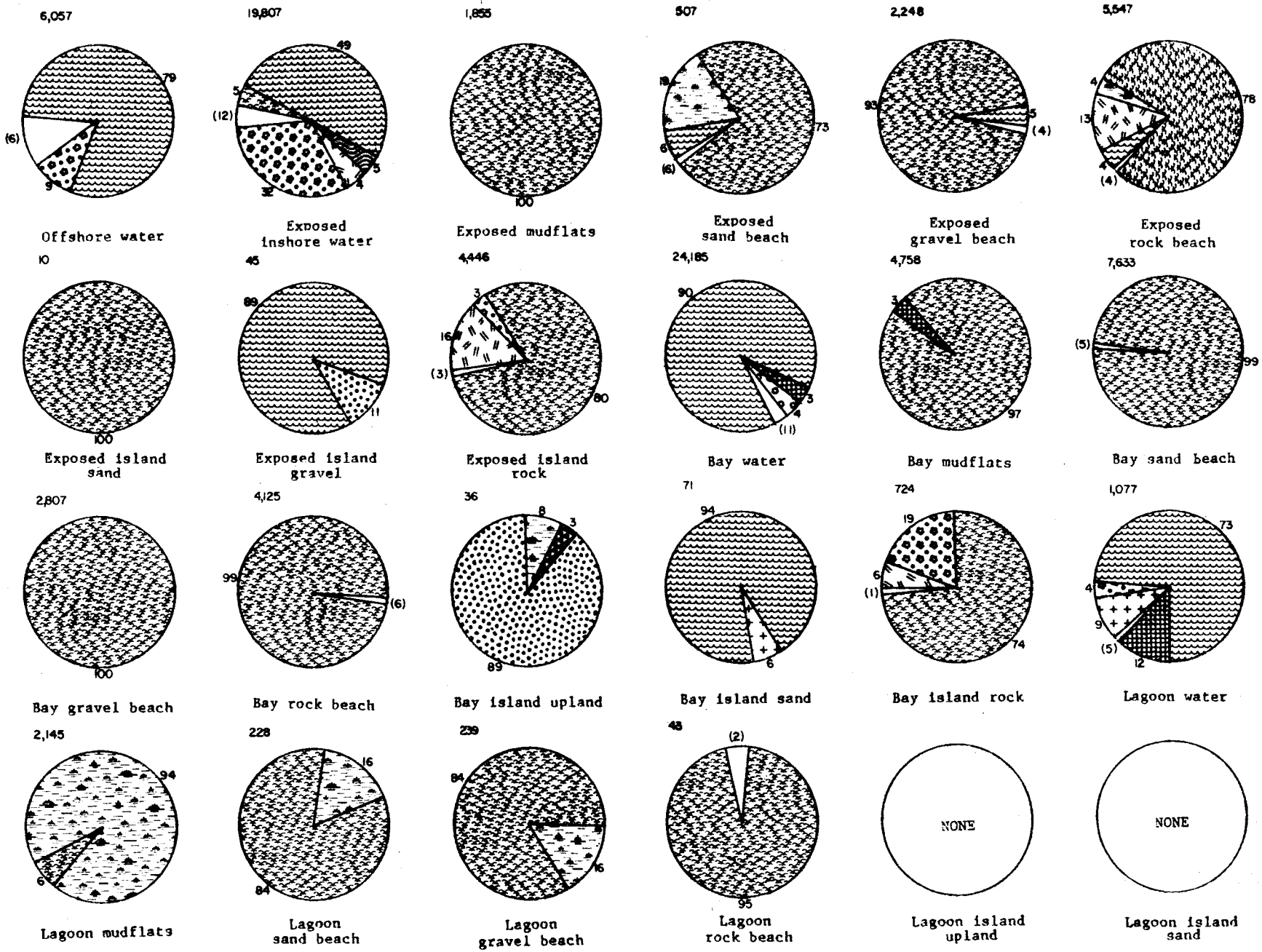


Fig. 97. Lower Cook Inlet, Summer 1976, 1978. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

LOWER COOK INLET, SUMMER



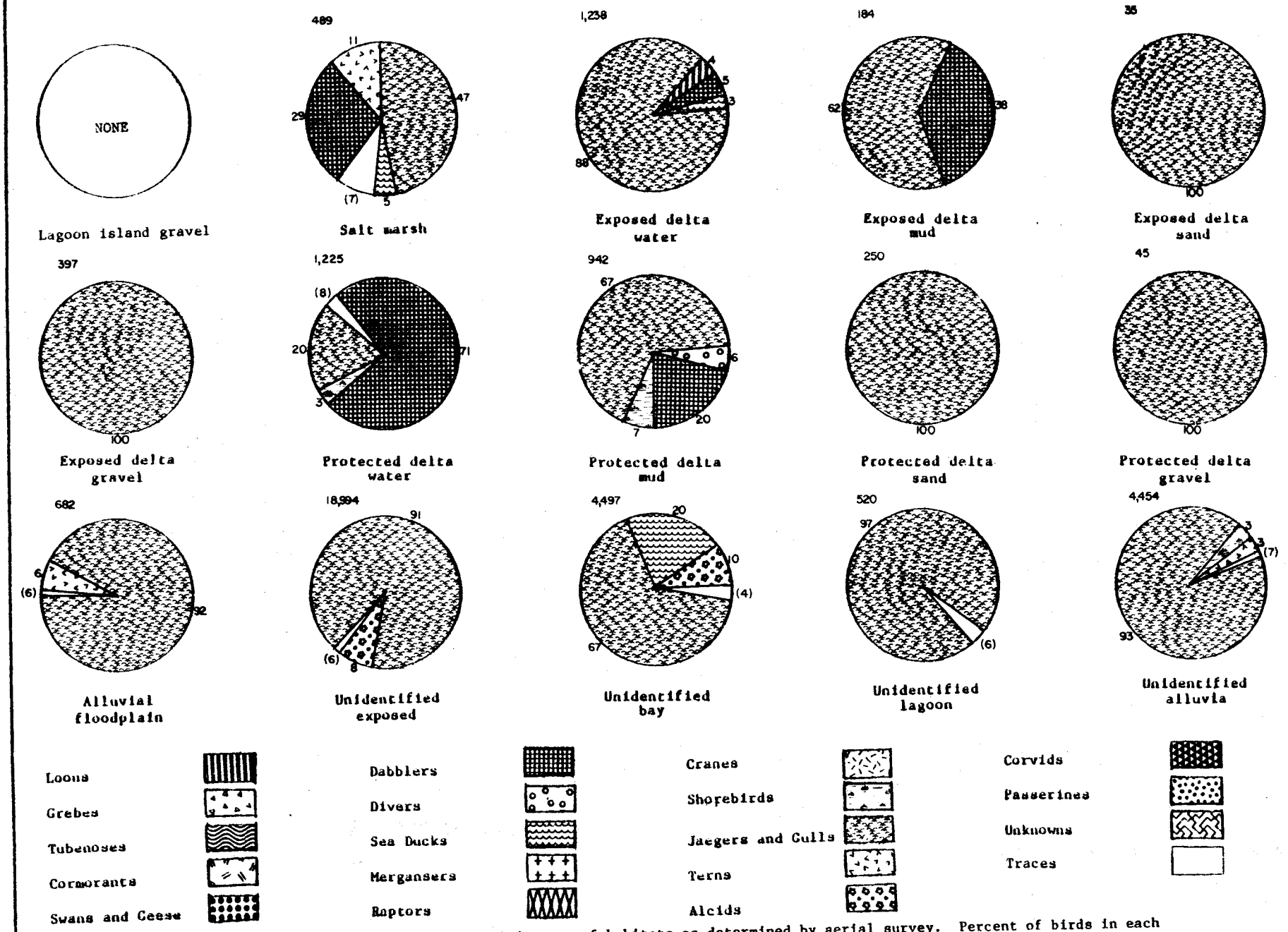


Fig. 98. Lower Cook Inlet, Summer 1976, 1978. Marine bird usage of habitats as determined by aerial survey. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

primarily found on three habitats: exposed inshore water (31%), exposed island rock (28%) and exposed rock beach (27%). Lagoon and bay waters were the habitats used by most dabbling ducks (38% and 26%, respectively) while diving and sea ducks preferred bay and exposed inshore waters (79% and 16% for diving ducks and 57% and 25% for sea ducks, respectively). Mergansers were found most on exposed inshore water (52%) and lagoon water (31%). Almost two-thirds of the shorebirds were on lagoon mudflats and the remainder were distributed among 20 other habitat types. Gulls, too, were widespread on 31 identified habitat types. Fifty percent were on exposed, 36 percent on bay, 10 percent on protected delta, 3 percent on exposed delta and 2 percent on lagoon habitats. Protected delta habitats were preferred summer habitat for 38 percent of the terns in Lower Cook Inlet, while 26 percent of the terns were on exposed, 24 percent on bay, and 12 percent on salt marsh habitats. Eighty-six percent of the alcids were on exposed inshore and offshore waters.

For Lower Cook Inlet in summer, all but three habitat types were used predominantly by one species group. On 21 habitat types, gulls comprised 73 percent, or more, of the total birds seen. Sea ducks predominated (73% or more) on five habitats: offshore water, exposed island gravel, bay and lagoon water and bay island sand. Seventy-one percent of the birds on protected delta water were dabblers, 94% on lagoon mudflats were shorebirds and 89% on bay island upland were passerines (excluding corvids).

On exposed inshore waters two bird groups predominated: sea ducks (49%) and alcids (32%). For saltmarshes, 47 percent were gulls and 29 percent were dabblers; on exposed delta mud, 62 percent were gulls and 38 percent dabblers. On unclassified exposed inshore, bay, lagoon and alluvial habitats gulls predominated.

FALL

Shoreline density - In fall, shoreline densities of 66 birds/km^2 (Table 10) were one-half of summer and one-third of spring densities. The largest drop was in gull densities which went from 70 birds/km^2 in summer to 26 birds/km^2 in fall. There also was a significant decrease in sea duck densities from 38 birds/km^2 in spring and summer to 14 birds/km^2 in fall. Most alcids had departed for pelagic waters by the late September/early October survey. Only a trace of alcids remained inshore, whereas 10 birds/km^2 were present in summer. Migrating dabblers and geese increased fall densities of those groups to 15 and 30 birds/km^2, respectively, from 3 birds/km^2 and trace numbers in summer. Corvids, too, increased as Common Ravens and Northwestern Crows left timbered breeding grounds and came to the coast for fall and winter. No cranes or terns were sighted on fall surveys.

Four sections in Lower Cook Inlet had fall bird densities greater than 100 birds/km^2. Section 4, Kachemak Bay, had the highest fall density with 152 birds/km^2. Gulls predominated in that section at 66 birds/km^2. Dabblers and sea ducks accounted for most of the remainder of birds in Kachemak Bay (38 and 29 birds/km^2, respectively). Diving ducks and corvids were most dense in Kachemak Bay in fall, but only seven and three birds/km^2, respectively, were found.

Table 10. Bird density by section of coastline in Lower Cook Inlet, fall 1976, 1977. See Figure 58 for section boundaries. (T=trace).

Fall Densities (birds/km^2)

Bird Group	Section of Coastline 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Loon		T	1		T	T				T		T		T	T		T	T
Grebe			T	T	T	T		T	T				T	T	T		T	T
Tubenose						T												T
Cormorant			4	4	6	14		T			T	T	3	T	1	T	4	3
Goose and Swan	T			4				41							4			3
Dabbler	3			38	8	4	20	47		60		3	4	29	9	T	1	15
Diver			T	7	T		T	T		1		2	2	2	5	T		1
Sea Duck	T	6	78	29	27	19	1	5	2	5	3	12	11	32	13	3	3	14
Merganser		T		T	T	1		T		3				1				T
Raptor	T		T	T	T	T	T	T	T	T					T	T	T	T
Crane																		0
Shorebird	1			1	T	1	1			T		T	T	54			4	2
Gull and Jaeger	20	1	19	66	33	24	34	17	4	28	3	15	10	8	50	8	5	26
Tern																		0
Alcid		2	2	T	T	T									T		T	T
Corvid		T		3	2	2	T								T			1
Other Passerine		T			T	T			1			T			T			T
Other Bird					1	1		T		T		T					1	T
TOTAL	24	10	105	152	79	68	55	111	6	97	6	32	31	125	81	12	18	66

A fall density of 125 birds/km^2 in Section 14, the McNeil Cove/Akumwarvik Bay area, was the second highest. Nearly half of the birds were shorebirds (54 birds/km^2). Sea ducks (32 birds/km^2) and dabbling ducks (29 birds/km^2) made up most of the remainder. Only eight gulls/km^2 were found in that region.

Most of the birds in Section 8, Tuxedni Bay, which had a density of 111 birds/km^2, were dabblers (47 birds/km^2) and geese (41 birds/km^2). Few gulls and sea ducks were found (17 and 5 birds/km^2, respectively). However, Section 3, with 105 birds/km^2, had mostly sea ducks (78 birds/km^2) and again few gulls (19 birds/km^2). This section also had cormorants (4 birds/km^2), alcids (2 birds/km^2) and loons (1 bird/km^2).

Tubenoses were sighted only in Section 6 and in trace amounts. Cormorants densities were highest in the southeastern portion of Lower Cook Inlet, particularly in Section 6 (14 birds/km^2). Two sites of high cormorant density were in Section 6 with 1500 and 123 birds/km^2 and others were in Section 5 (2950 birds/km^2) and Section 4 (2060 birds/km^2). These high densities represent large flocks on relatively small island-type stations. Geese were present in measurable quantities in only three sections. Most were in Tuxedni Bay with small amounts at the head of Kachemak Bay and at the mouth of the Douglas River. Chinitna Bay (Section 10) had the highest dabbler density (60 birds/km^2). Mergansers were also most dense in that section (3 birds/km^2). Besides Section 4, mentioned earlier, gulls were abundant in Section 15 on the south side of Kamishak. Fall densities (50 birds/km^2) in that section were comparable to summer densities (49 birds/km^2).

Pelagic density - Offshore densities in fall dropped to only 9 birds/km^2 for Lower Cook Inlet (Table 11). Sea ducks, gulls, alcids and tubenoses were the most frequently observed species (3, 2, 2 and 1 birds/km^2, respectively). Six other groups were recorded in trace amounts. Region 3, Kachemak Bay, had the greatest density - 44 birds/km^2. Here gulls, sea ducks, alcids and diving ducks comprised 16, 13, 9 and 5 birds/km^2, respectively. Diving ducks were found only in this region.

Almost equal densities of alcids, gulls, sea ducks and tubenoses were found in Region 1 (total density: 8 birds/km^2). Four of five birds/km^2 in Section 2 (Kamishak Bay) were sea ducks. Tubenoses comprised five of the total seven birds/km^2 in Section 4. Section 5 had the lowest density (1 bird/km^2) and sea ducks were the predominant species group. Sea ducks, gulls and loons were the only groups sighted in all five regions.

Habitat Usage - During in fall surveys of Lower Cook Inlet, birds selected bay and exposed inshore waters in almost equal numbers - each with 20 percent of the total. Likewise, these habitats were used by the widest variety of bird groups recorded. Exposed inshore waters were used by all groups except geese, and bay waters by all groups except raptors and shorebirds. Most of the birds in exposed inshore waters were sea ducks (59%) followed by gulls (20%), dabbling ducks (9%) and cormorants (6%). Sea ducks (37%) predominated on bay waters followed closely by dabbling

Table 11. Pelagic densities of birds by region in Lower Cook Inlet, fall and winter 1976, 1978. See Figure 58 for region boundaries. (T=trace).

	Fall Densities (birds/km^2)						Winter Densities (birds/km^2)					
	Region						Region					
Bird Group	1	2	3	4	5	Total	1	2	3	4	5	Total
Loon	T	T	T	T	T	T		T	T			T
Grebe		T	T			T						0
Tubenose	1			5		1	T					T
Cormorant	T	T	T	T		T	T	T	T	T		T
Goose and Swan						0						0
Dabbler		T	T			T						0
Diver			5			T						0
Sea Duck	2	4	13	T	1	3	4	4	7	T	1	3
Merganser						0						0
Raptor						0						0
Crane						0						0
Shorebird		T	T			T	T					T
Gull and Jaeger	2	1	16	1	T	2	1	1	3	T		1
Tern						0						0
Alcid	3	T	9	T		2	T	T	8	T		1
Corvid						0						0
Other Passerine						0						0
Other Bird		T	T			T	T		T			T
TOTAL	8	5	44	7	1	9	6	4	18	1	1	5

ducks (34%). Gulls comprised 18 percent, diving ducks 6 percent and cormorants 3 percent of the birds observed on that habitat. Habitat preferences of each species group and what species groups were found on each habitat type are shown on Figs. 99 and 100.

Exposed habitats, in general, were the ones most used by birds (42% of the total). Exposed mudflats were the third most important habitat with 12 percent of the total use. Gulls (80%) and dabblers (19%) were the groups most frequently using the mudflats. Sixty-two percent of the almost 2,000 birds on exposed gravel were shorebirds.

Thirty-one percent of the birds were found in protected bay/fjord habitats. Besides bay water, the habitats most used were bay gravel beach (3%), bay mudflats (2%) and bay rock beach (2%). On all three habitats, gulls were the predominant species group.

Lagoon and protected delta habitats each had 11 percent of the total birds. For lagoons, most birds were observed on the water (6% of total). Over half the birds on lagoon water were dabblers (52%), 23 percent were sea ducks and 16 percent gulls. Lagoon mudflats were used by 4 percent of the birds and 99 percent of the birds on this habitat were gulls. Six percent of the total birds were found on protected delta water. Over 90 percent of the birds found were dabblers. On protected delta mud (2% of total), 72 percent of the birds were gulls and 23 percent dabblers.

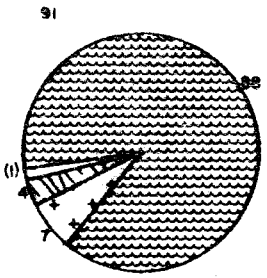
Four percent of all birds were on saltmarshes. Ninety-eight percent of these birds were geese. Two percent of the birds were observed on exposed delta habitats. Most of these were dabbling ducks.

Gulls were the most abundant bird group found in the fall Lower Cook Inlet surveys (40% of the total). They were observed on 26 of 28 identified habitats. Twenty-five percent used exposed mudflats, 10 percent exposed inshore water, 9 percent lagoon mudflats and 9 percent bay water. The rest were scattered on the remainder of the habitats.

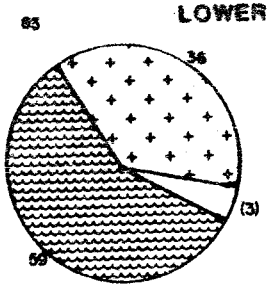
Twenty-three percent of the birds were dabbling ducks. Most (30%) were on bay water while 23 percent used protected delta water, 14 percent lagoon water and 8 percent exposed inshore water. Sea ducks made up 21 percent of the birds and 57 percent of this group were found on exposed inshore water. Thirty-five percent used bay water and 7 percent lagoon water.

Cormorants and geese were the only other groups comprising a significant portion of the total birds, each with 5 percent. Cormorants were found largely on five habitats: exposed rock beach (30%), exposed inshore water (25%), bay island rock (13%), exposed island rock (13%) and bay water (11%). Eighty-one percent of the geese were found on saltmarshes, 14 percent on alluvial floodplains and 5 percent on exposed island rock.

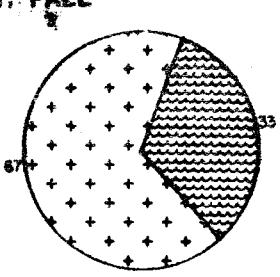
LOWER COOK INLET, FALL



Loons



Grebes



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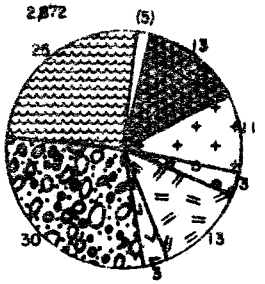
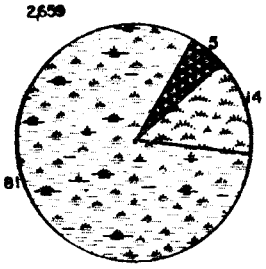
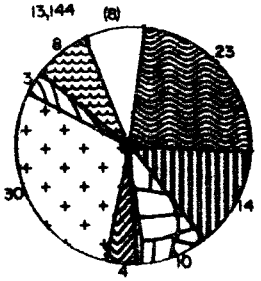


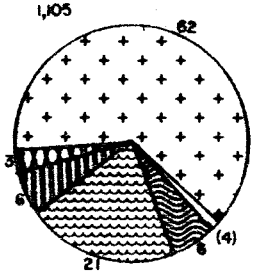
Cormorants



Swans and Geese



Dabblers



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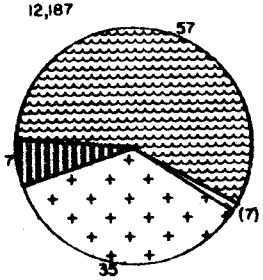
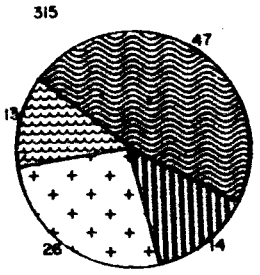
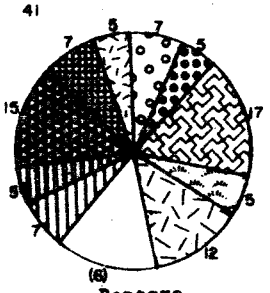


Sea Ducks



Mergansers



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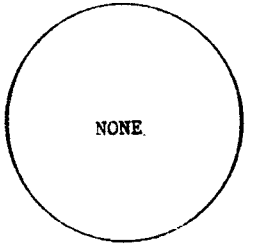
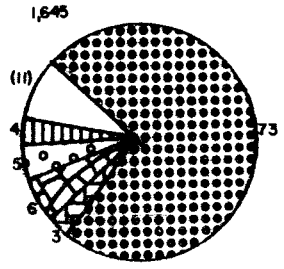
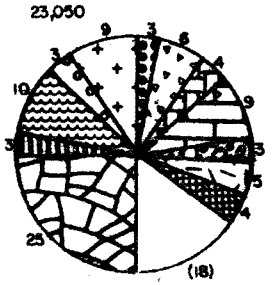


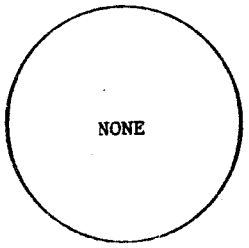
Cranes



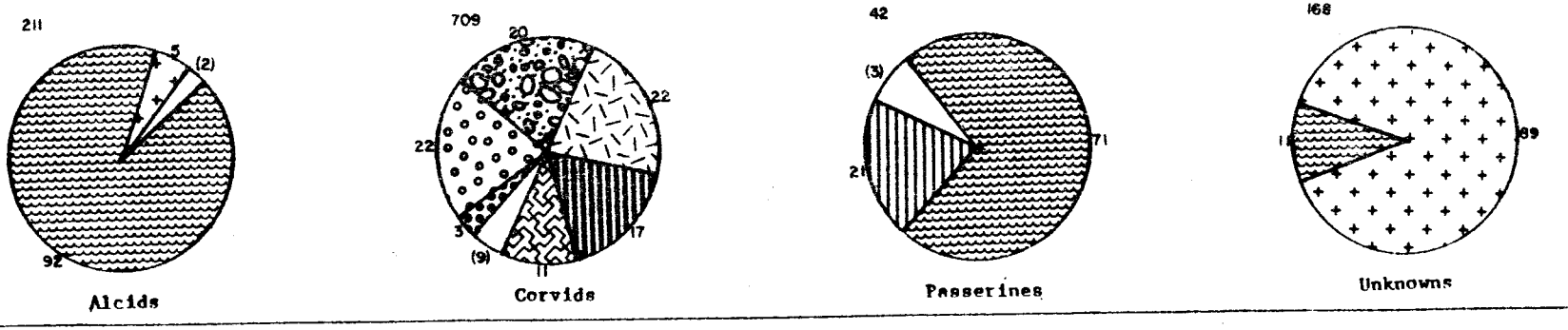
Shorebirds



Jaegers and Gulls



Terns



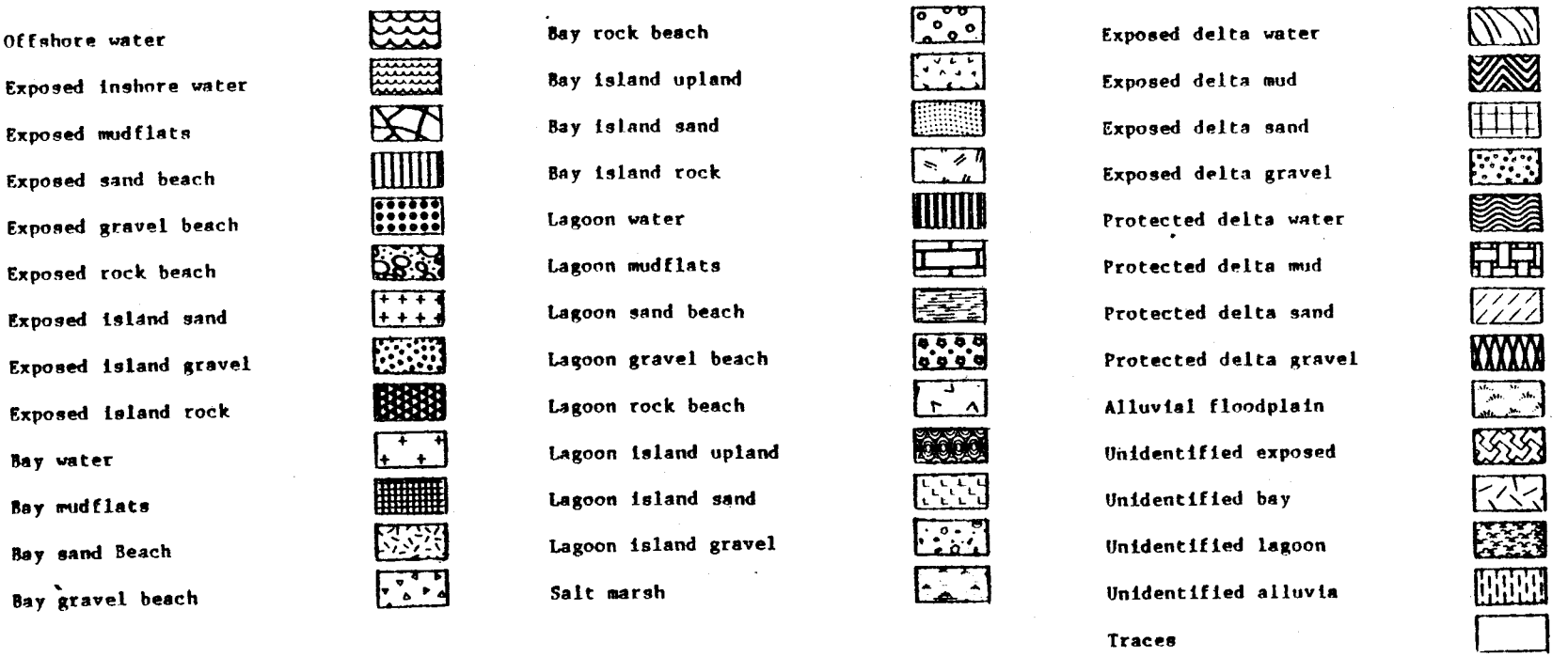
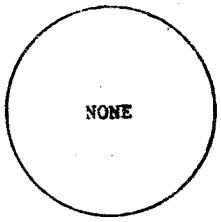
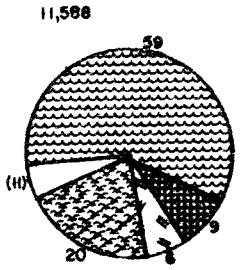


Fig. 99. Lower Cook Inlet, Fall 1976-1977. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

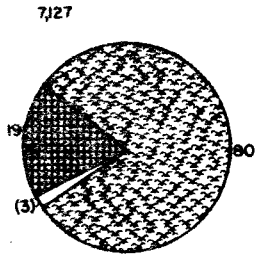
LOWER COOK INLET, FALL



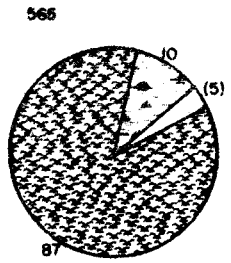
Offshore water



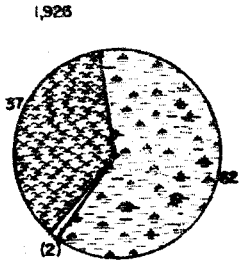
Exposed inshore water



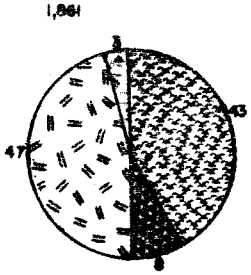
Exposed mudflats



Exposed sand beach



Exposed gravel beach



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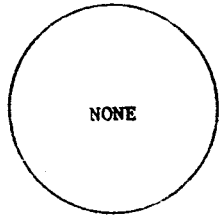
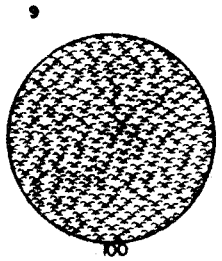
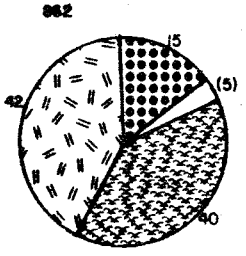


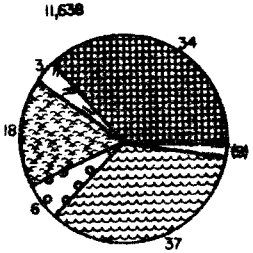
Exposed island sand



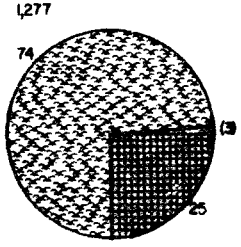
Exposed island gravel



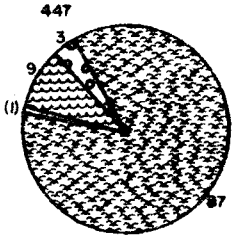
Exposed island rock



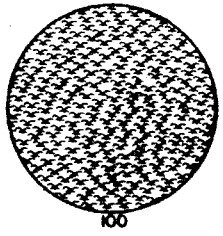
Bay water



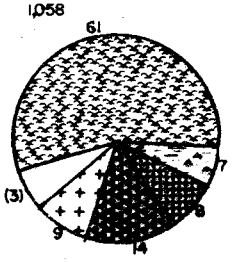
Bay mudflats



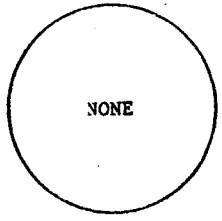
Bay sand beach



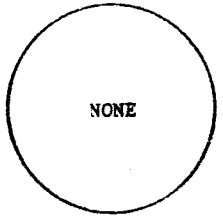
Bay gravel beach



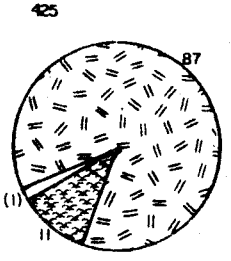
Bay rock beach



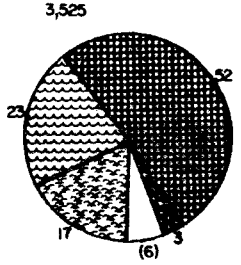
Bay island upland



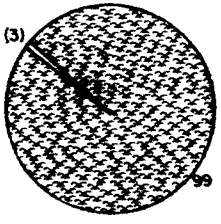
Bay island sand



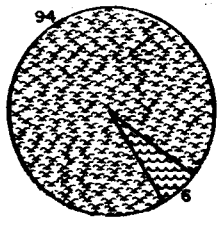
Bay island rock



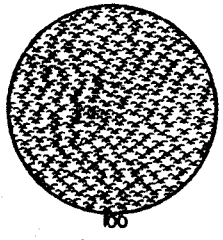
Lagoon water



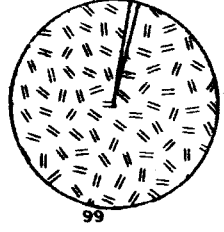
Lagoon mudflats



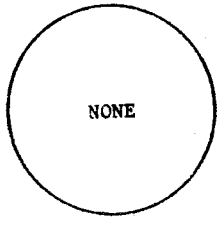
Lagoon sand beach



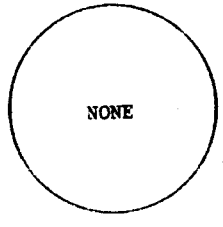
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

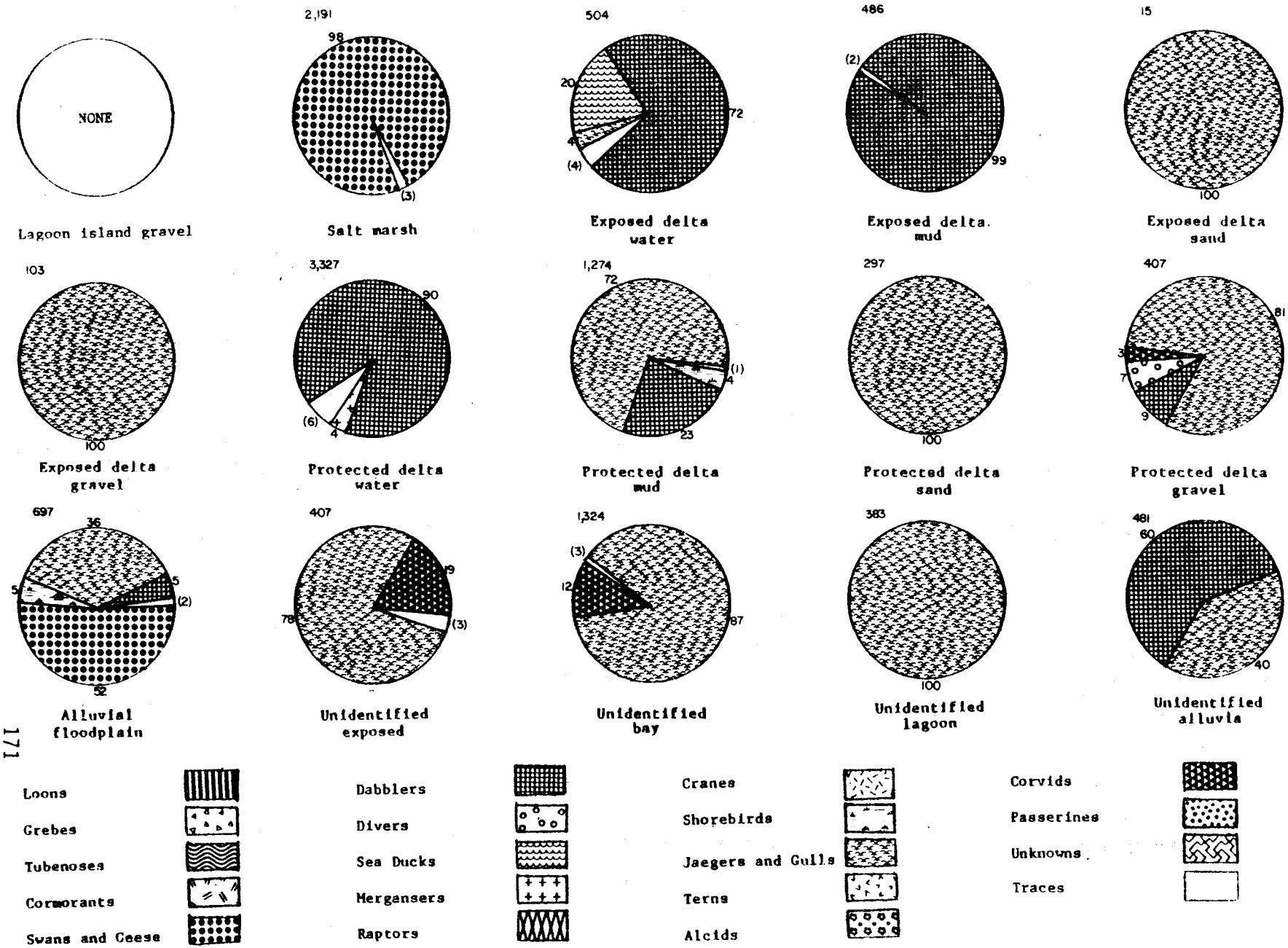


Fig. 100. Lower Cook Inlet, Fall 1976-1977. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

Almost three-fourths of the shorebirds, which comprised less than 3 percent of the total birds, were on exposed gravel beaches. Six percent were on exposed mudflats, 5 percent on bay rock beach, 4 percent on exposed sand beach, and 3 percent on both exposed rock beach and protected delta mud. Diving ducks made up less than 2 percent of birds seen; almost two-thirds of these were observed on bay water and 21 percent were on exposed inshore water. Corvids were the only other group with over 1 percent of the total and most of these were on unspecified habitats, likely because they were flying and could not be associated with a particular habitat.

WINTER

Shoreline Denisty - In winter coastal densities of birds dropped to over one-half of their fall densities, 66 to 32 birds/km^2 (Table 12). The largest decrease was in gull densities (26 birds/km^2 in fall to 3 birds/km^2 in winter). When fall migrating dabblers (15 birds/km^2) left the area, a wintering population of 2 dabblers/km^2 remained. Sea duck densities were about the same in winter as in fall (15 vs. 14 birds/km^2). A slight increase in density was noted for diving ducks and shorebirds, from 1 bird/km^2 in fall to 4 birds/km^2 in winter for divers and from 2 to 5 birds/km^2 for shorebirds. Corvid densities remained the same fall and winter and were slightly higher than in spring and summer.

In winter, there was a marked difference in densities between the east and west sides of the Inlet. A density of 47 birds/km^2 was observed on the six eastern sections. Section 4, in inner Kachemak Bay, had the highest density, 99 birds/km^2. Several species groups made up that total. One-third were sea ducks (33 birds/km^2) plus 23 divers/km^2, 20 dabblers/km^2, 12 shorebirds/km^2 and 5 corvids/km^2. There was 1 bird/km^2 for mergansers, gulls and alcids. A density of 82 birds/km^2 was found on the north side of outer Kachemak Bay (Section 3). Most of the birds in this section were sea ducks (43 birds/km^2) and gulls (29 birds/km^2). Four birds/km^2 were recorded for both cormorants and shorebirds in Section 3. The only winter site of high density was 321 corvids/km^2 on Cohen Island in Section 5 on the south side of outer Kachemak Bay. The north portion of the eastern side of the Inlet (Section 1) had only a trace of birds and Section 2 had 14 birds/km^2.

On the west side, the overall density was 16 birds/km^2. Except for Section 8, with a density of 81 birds/km^2, densities were low in all sections for all bird groups. Most of the birds in Section 8 represented two large flocks of shorebirds in Tuxedni Channel which resulted in a density of 75 shorebirds/km^2. Twenty-seven sea ducks/km^2 were found in Section 12, and the remaining densities were 10 birds/km^2 or less. Many of the sections had few bird types present and one, Section 14, had no birds at all. Gull densities were highest in Section 15 at 5 birds/km^2. Sea ducks, alcids and gulls were the most frequently observed groups.

Pelagic Density - Five birds/km^2 were recorded in offshore waters for Lower Cook Inlet in winter (Table 11). Sea ducks were the most abundant

Table 12. Bird density by section of coastline in Lower Cook Inlet, winter 1976, 1978. See Figure 58 for section boundaries. (T=trace).

Winter Densities (birds/km^2)

Bird Group	Section of Coastline 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
Loon		T	T	T	1	T												T
Grebe			T			T									T			T
Tubenose																		0
Cormorant		T	4	T	1	3					T		T					1
Goose and Swan			T															T
Dabbler				20	T	2												2
Diver		T	T	23	10	7			T		T	T						4
Sea Duck	T	11	43	33	31	27	T	3	T	2	4	27	7		10		1	15
Merganser				1	1	1												T
Raptor		T	T	T	T	T			T		T							T
Crane																		0
Shorebird			4	12	2	2		75				T						5
Gull and Jaeger	T	3	29	1	1	1	2	2	3	T	2				5		1	3
Tern																		0
Alcid	T	T	1	1	2	T	T	T	T		1	T	1		T		T	T
Corvid	T	T	T	5	2	3		T			T	T	T		T			1
Other Passerine					T	T					T							T
Other Bird			T	3	1	2												T
TOTAL	T	14	82	99	52	48	3	81	4	2	7	27	7	0	15		1	32

group (3 birds/km^2) followed by gulls and alcids with 1 bird/km^2 each. Region 3, Kachemak Bay, had the greatest density (18 birds/km^2) and led other regions in species group densities for alcids (8 birds/km^2), sea ducks (7 birds/km^2) and gulls (3 birds/km^2). Sea ducks had a density of 4 birds/km^2 in both Sections 1 and 2. Only sea ducks were present in Region 5 (1 bird/km^2). Cormorants, sea ducks, gulls and alcids were each found in Regions 1-4. Tubenoses, in this case Northern Fulmars (*Fulmarus glacialis*), were present in Region 1 only.

Habitat Usage - In winter, birds of Lower Cook Inlet concentrated on four basic habitat types: bay water (32%), exposed inshore water (28%), lagoon water (12%) and bay mudflats (11%). Fourteen other habitat types were used but in lesser intensities. Combined bay/fjord areas provided habitat for 48 percent of the birds, exposed habitats 34 percent and lagoon/embayment habitats 15 percent. Only 3 percent were on river/stream deltas, 2 percent on protected and 1 percent on exposed.

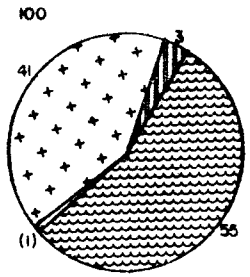
Diagrams of winter habitat preferences of each species group and of what species groups were found on each habitat type are shown on Figs. 101 and 102. On bay waters, 62 percent of the birds were sea ducks and 27 percent diving ducks. Seventy-five percent of the birds on exposed inshore waters were sea ducks, 16 percent gulls and 5 percent cormorants. Waterfowl species predominated on lagoon/embayment water; 39 percent of the birds were dabblers, 36 percent sea ducks, 22 percent divers and 3 percent mergansers.

Forty-seven percent of the winter birds in Lower Cook Inlet surveys were sea ducks. Forty-five percent were found on exposed inshore waters, 42 percent on bay waters and 10 percent on lagoon waters. Shorebirds were next most abundant (17% of total), and 33 percent were on bay mudflats. Almost half of the shorebirds were on unspecified bay habitats. When birds were sighted in the air, as shorebirds often were, the habitat from which they flushed often was unknown. Diving ducks made up 12 percent of the total and were most commonly found on bay water (72%) and lagoon water (23%). One-half the gulls, which made up 9 percent of the total, were observed on exposed inshore waters, 10 percent on exposed sand beach, 6 percent on exposed rock beach and an additional 13 percent on unspecified exposed habitats. Most of the rest were on exposed delta habitats: 8 percent sand, 5 percent gravel and 3 percent water. Only 6 percent of the gulls were on protected habitats. The only other bird group found in relatively high numbers (dabblers) were observed on lagoon waters 86 percent of the time, on bay water 9 percent and protected delta mud 4 percent. Raptors, although found in small numbers, were recorded on the most habitat types (11).

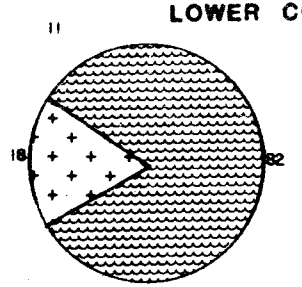
SOUTH - ALASKA PENINSULA

Three aerial surveys were conducted in this region (Fig. 103 and 104). One in fall 1976 covered only the southern three sections from Cold Bay to Unimak Island (Fig. 104). The first winter survey covered only

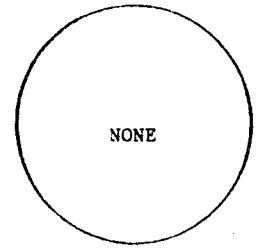
LOWER COOK INLET, WINTER



Loons



Grebes



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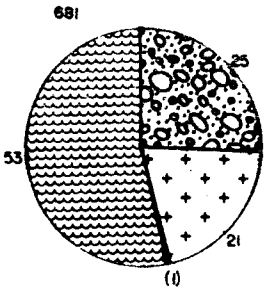
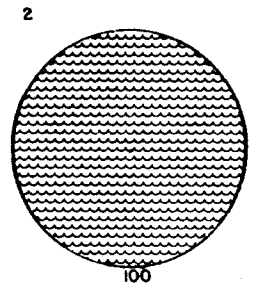
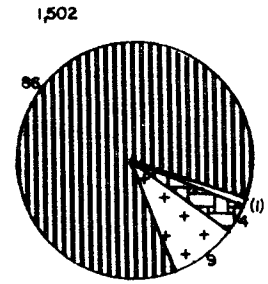


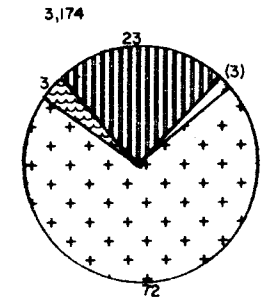
Cormorants



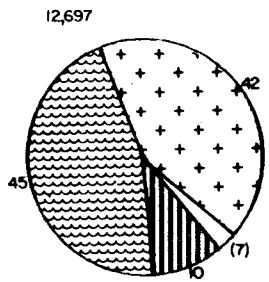
Swans and Geese



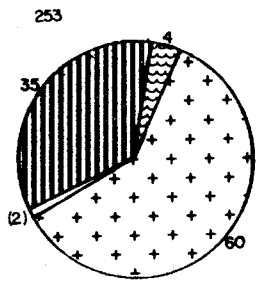
Dabblers



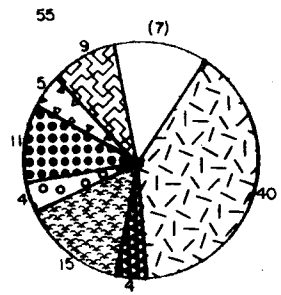
Divers



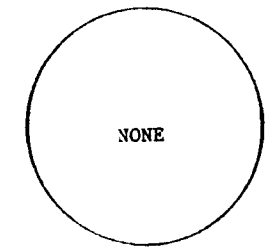
Sea Ducks



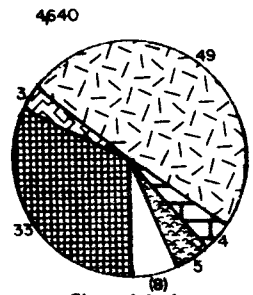
Mergansers



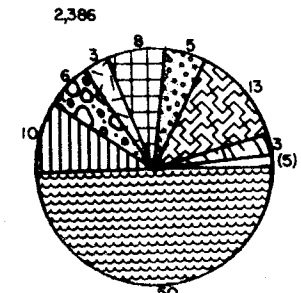
Raptors



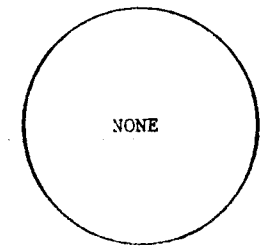
Cranes



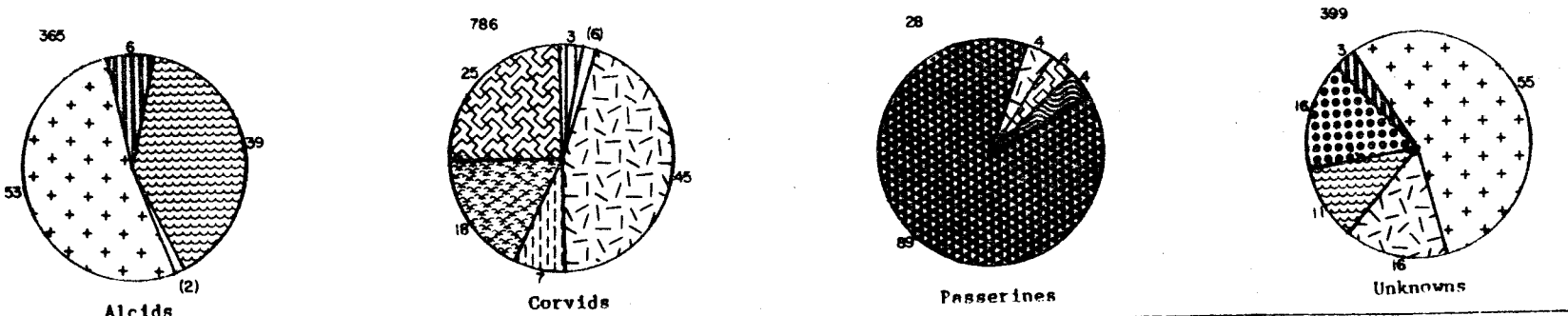
Shorebirds



Jaegers and Gulls



Terns



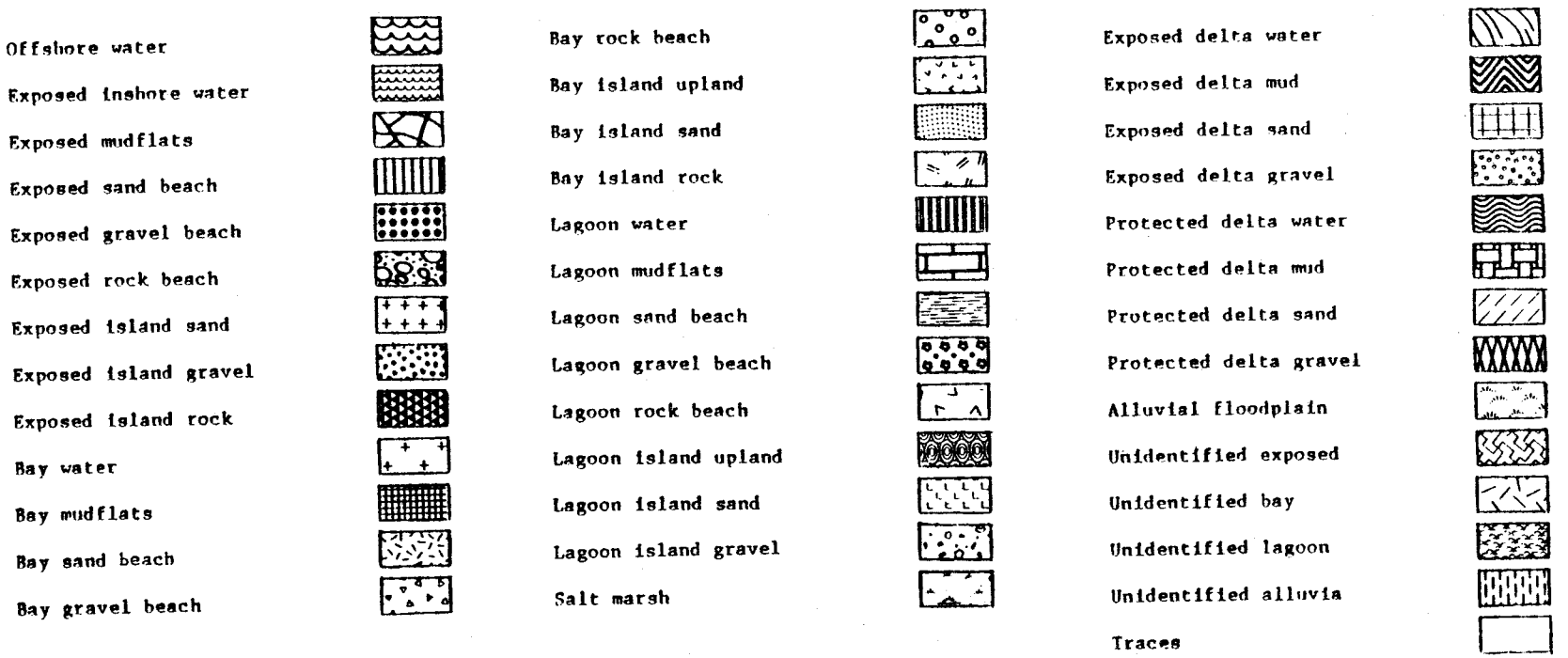
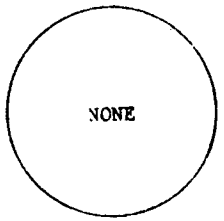
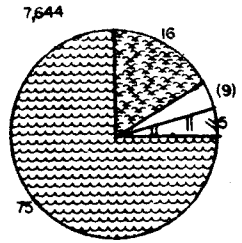


Fig. 101. Lower Cook Inlet, Winter 1976, 1978. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

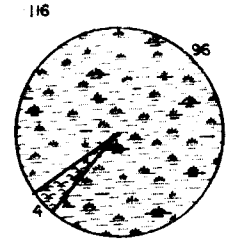
LOWER COOK INLET, WINTER



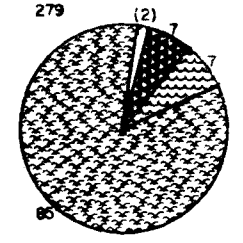
Offshore water



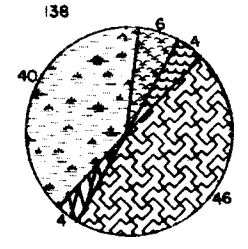
Exposed inshore water



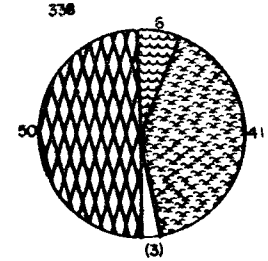
Exposed mudflats



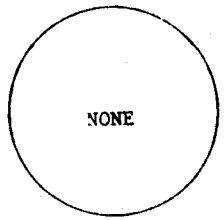
Exposed sand beach



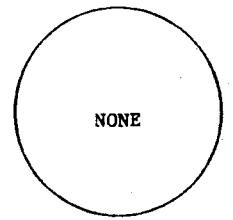
Exposed gravel beach



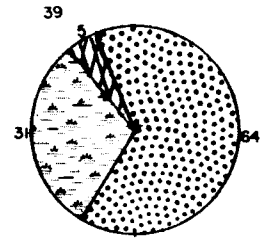
Exposed rock beach



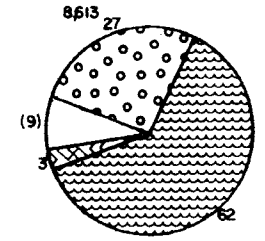
Exposed island sand



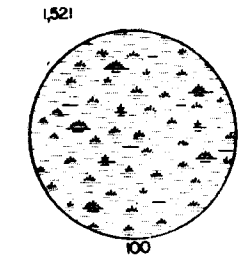
Exposed island gravel



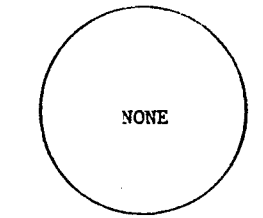
Exposed island rock



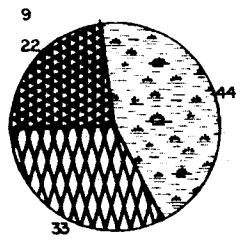
Bay water



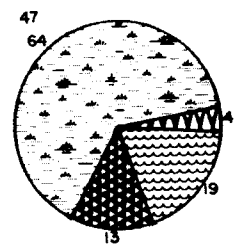
Bay mudflats



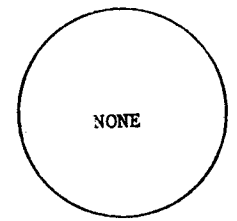
Bay sand beach



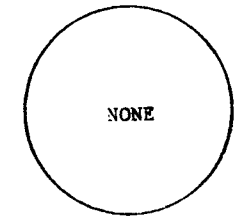
Bay gravel beach



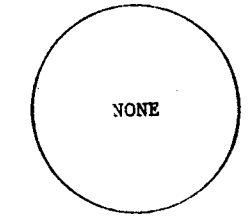
Bay rock beach



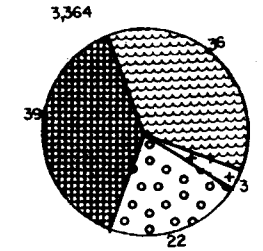
Bay island upland



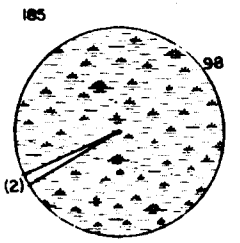
Bay island sand



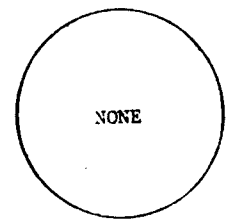
Bay island rock



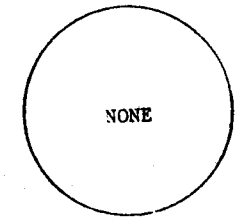
Lagoon water



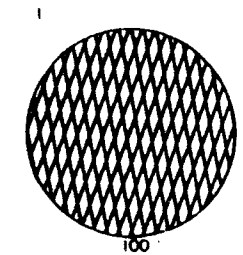
Lagoon mudflats



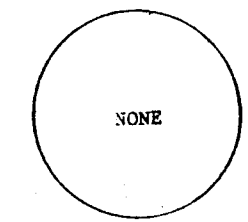
Lagoon sand beach



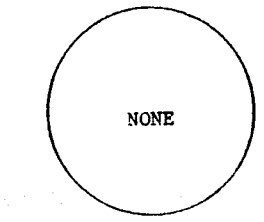
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

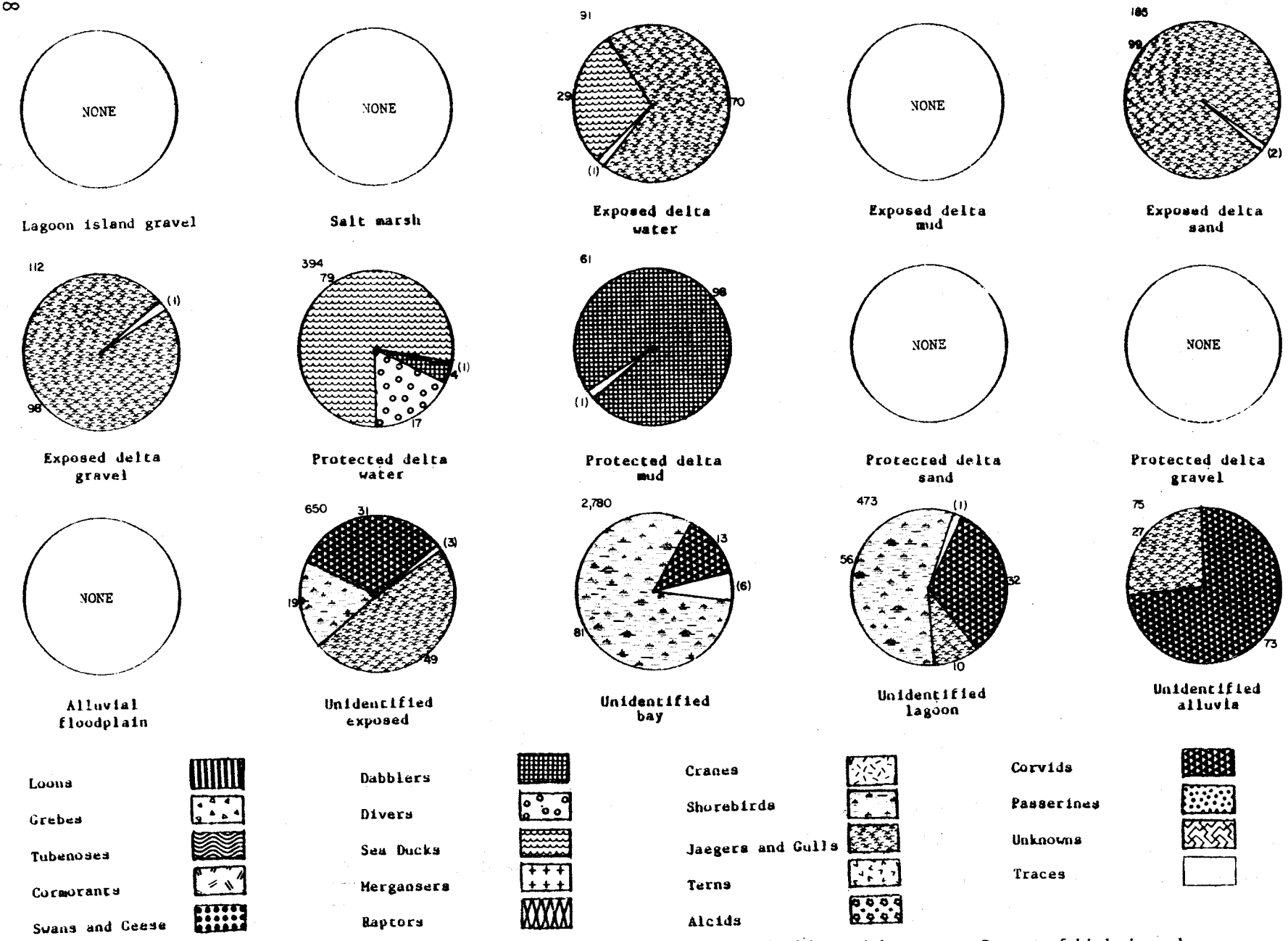


Fig. 102. Lower Cook Inlet, Winter 1976, 1978. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

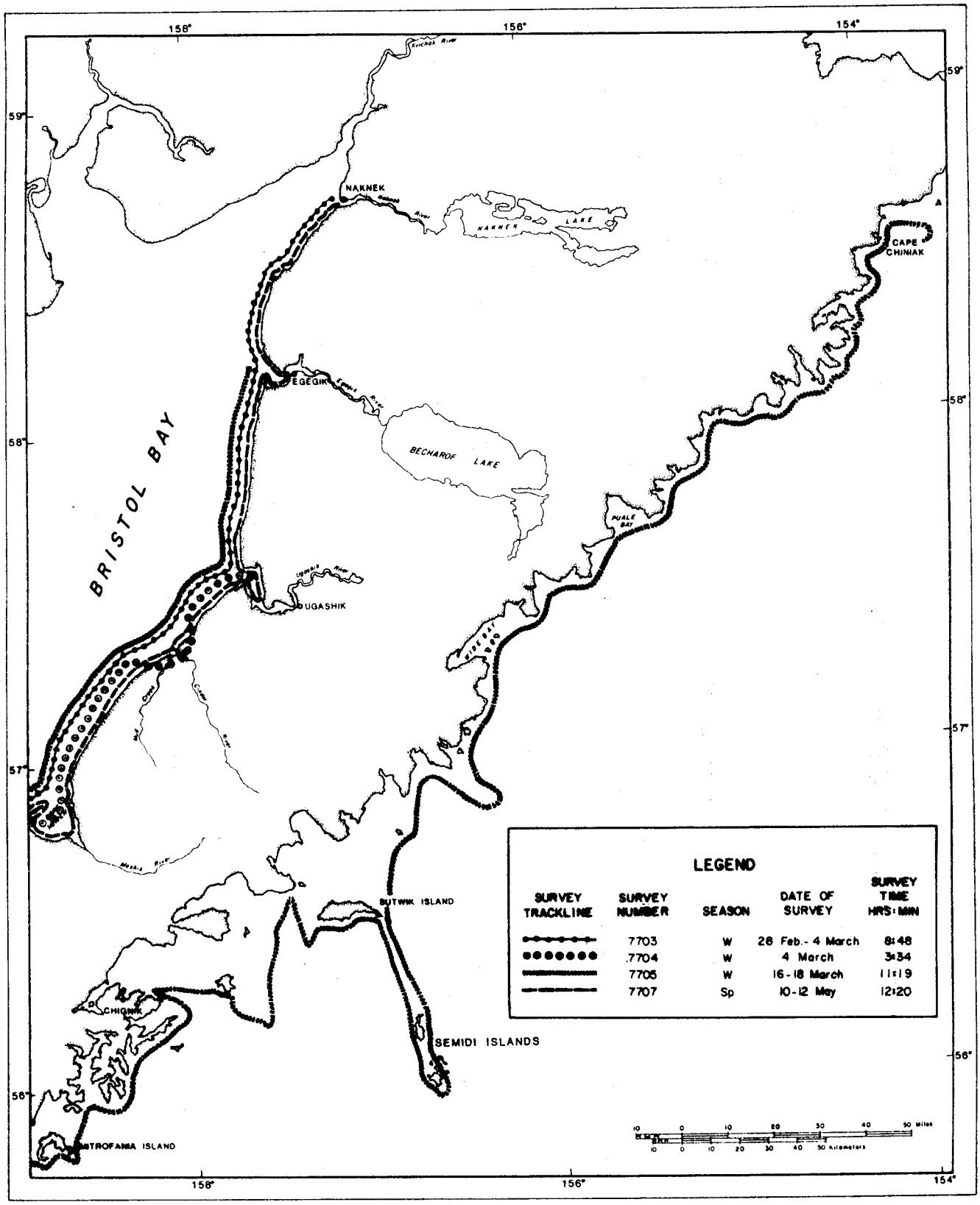


Fig. 103. Tracklines of aerial bird surveys along North- and South-Alaska Peninsula, 1977. Continued on next page.

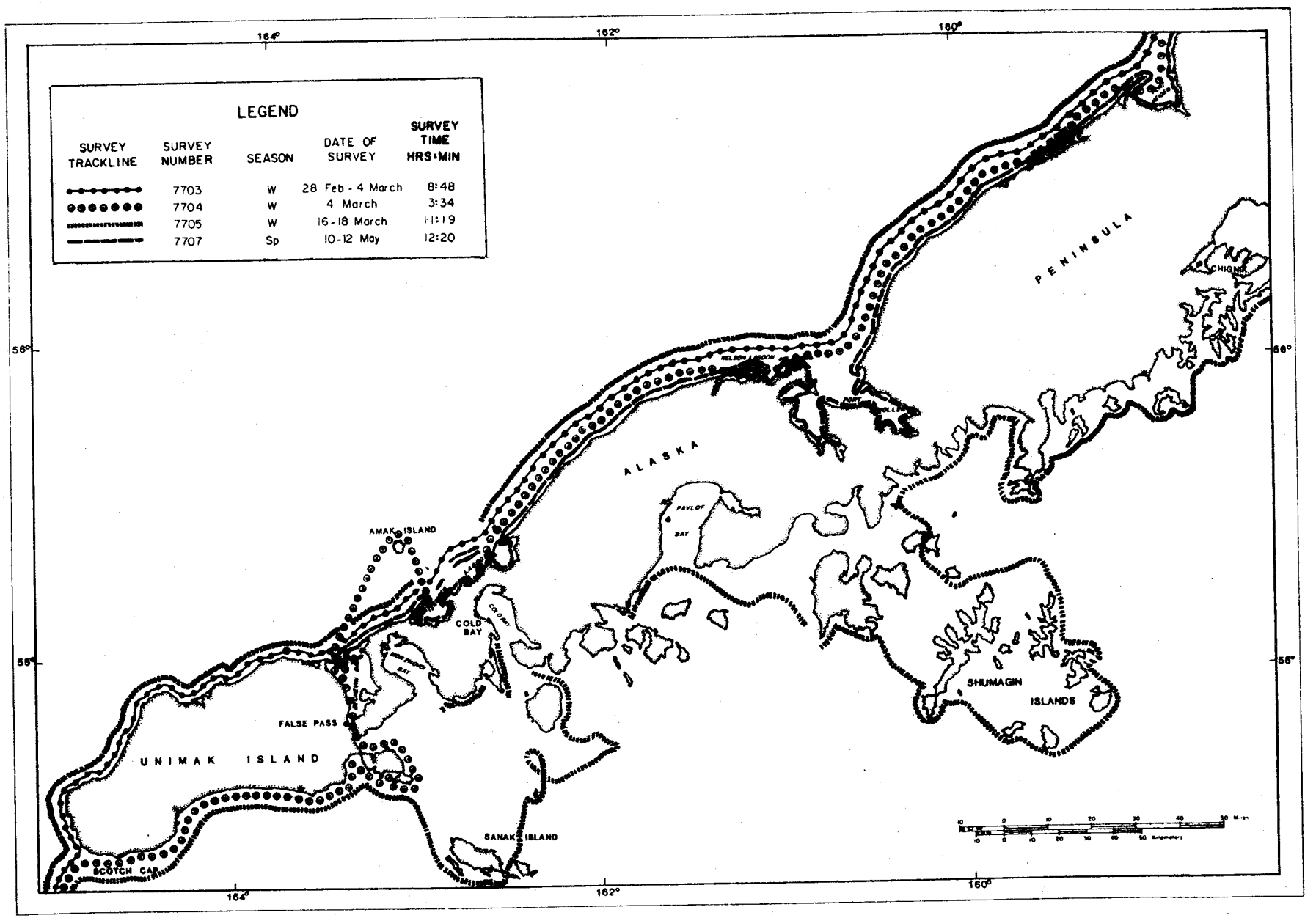


Fig. 103 (cont.). Tracklines of aerial bird surveys along North- and South-Alaska Peninsula, 1977.

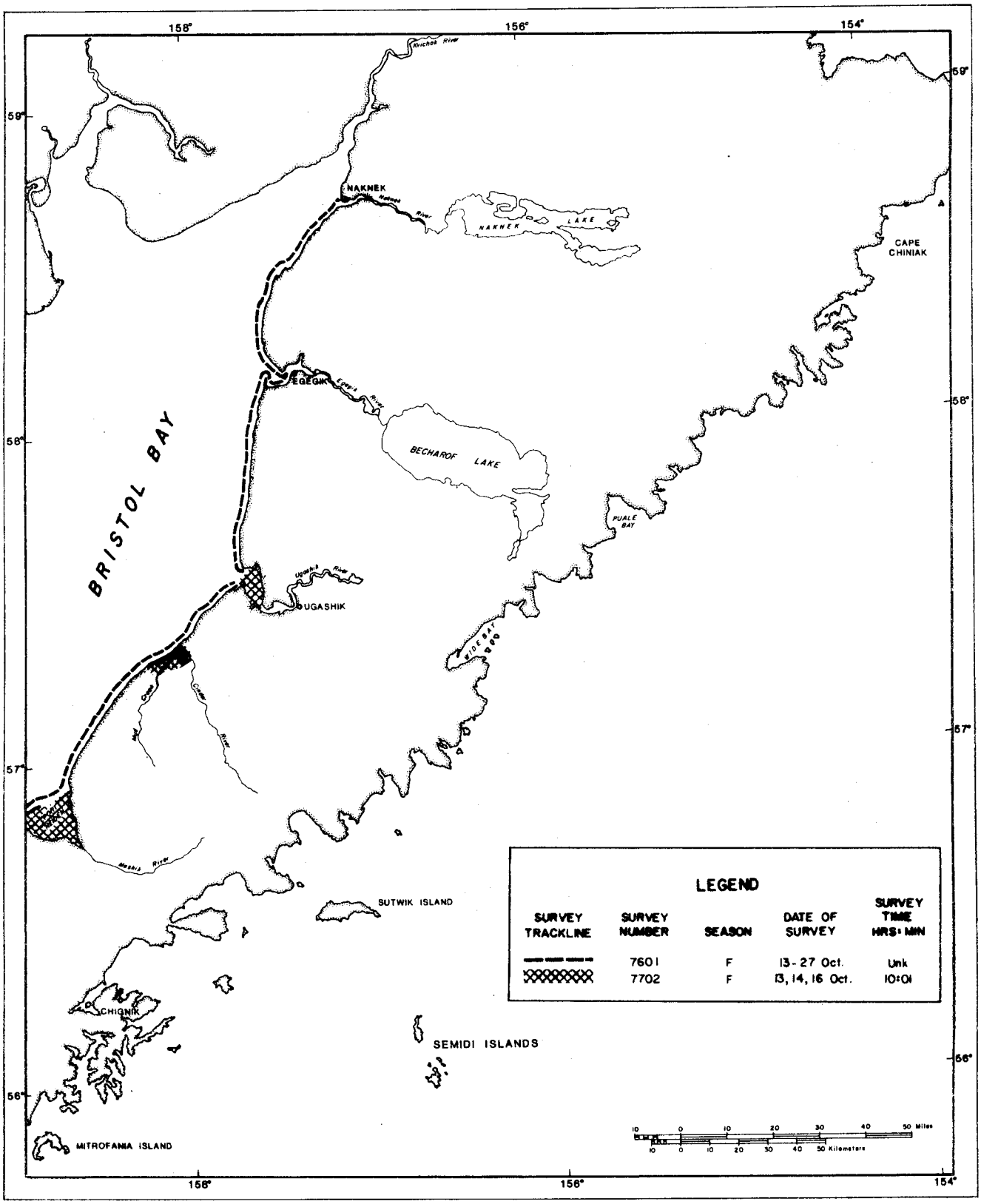


Fig. 104. Tracklines of aerial bird surveys along North-Alaska Peninsula, 1975 and 1976. Continued on next page.

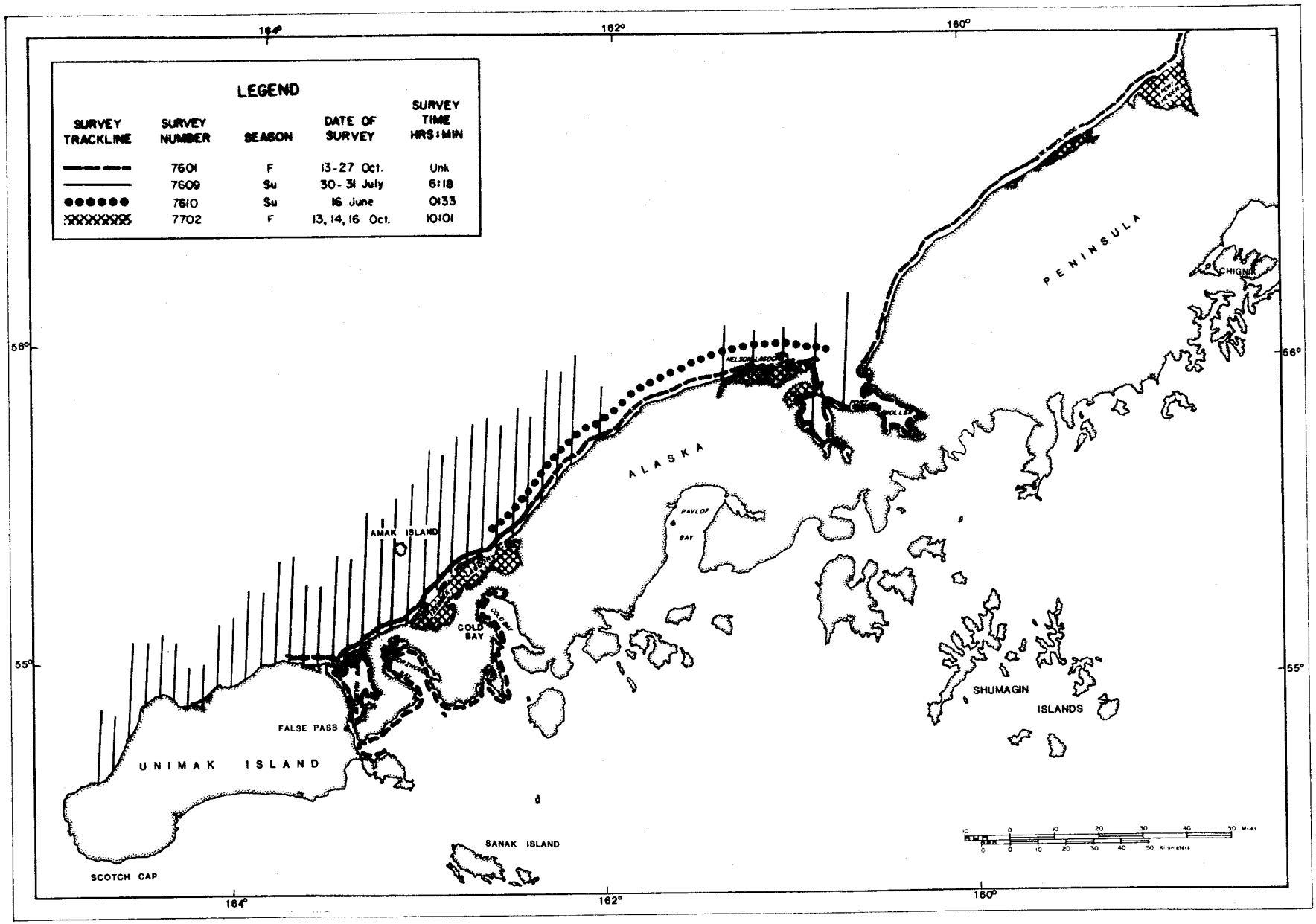


Fig. 104 (cont.). Tracklines of aerial bird surveys along North-Alaska Peninsula, 1975 and 1976.

Unimak Island (Section 8). Another winter survey was conducted in mid-March 1977 in conjunction with an ADF&G marine mammal survey (Fig. 103). On this survey only one bird observer was present, and the trackline was generally offshore or in exposed nearshore waters as we headed between islands or promontories that were traditional hauling areas for sea lions. Few protected habitats were searched, and the species densities and habitat selection recorded reflected this.

The region was subdivided into eight sections (Fig. 105) following the winter trackline. The first section corresponds to the boundary of the Shelikof Strait area. The rest, up to Cold Bay, encompasses island groups or the coastline between. These groups from Cold Bay to Scotch Cap, sections are more typical coastal physiographic areas.

FALL

Density - Bird density information for South-Alaska Peninsula is pictorially displayed in Figs. 106-123. Fall bird densities were high (279 birds/km^2) in the three sections surveyed (Table 13). Most of the birds were geese (227 birds/km^2, 82 percent of the total) including Brant, Canada and Emperor geese. Gull densities were only 17 birds/km^2, dabblers 14 birds/km^2, sea ducks 10 birds/km^2, divers 4 birds/km^2, cormorants 3 birds/km^2 and shorebirds 1 bird/km^2.

Of the three sections surveyed, Section 7 (Morzhovoi Bay area) had the highest bird densities (363 birds/km^2) and Section 8, the south side of Unimak Island, the lowest (90 birds/km^2). Geese comprised over 90 percent of the birds in Section 7 and 75 percent of the birds in Section 6. Most of the geese were found in lagoons at the heads of both bays. Highest goose densities were found at Old Man's Lagoon in Cold Bay and Big Lagoon in Morzhovoi Bay (over 1,000 and 2,000 birds/km^2, respectively). Geese were not found in Section 8 in fall. Its avifauna was comprised of gulls (69 birds/km^2), sea ducks (11 birds/km^2) and cormorants (10 birds/km^2). Dabblers were most abundant in Section 6 where 20 birds/km^2 were recorded. The remaining bird groups were seen in small or trace amounts. Although tubenoses were not recorded during the 20 October 1975 survey, on 17 October 1976, when we mapped the area and were not recording birds except for incidental observations, tens of thousands of shearwaters were feeding in scattered groups throughout Morzhovoi Bay. They were, most likely, opportunistically feeding there and may not visit the bay in fall on a regular basis. Also on that mapping flight, we observed hundreds of Emperor Geese along the coast to Pavlof Bay, the terminus of our flight.

Habitat Usage - Only a few habitats were recorded during the abbreviated fall survey. Information is depicted in diagrams in Figs. 124 and 125. Only seven discrete habitats on which birds were found were recorded for this area. Eighty-four percent of the birds observed were in lagoon habitats, 6 percent in bays and 5 percent in both saltmarsh and exposed inshore habitats. On lagoon waters, 97 percent of the birds were geese and on lagoon beaches 84 percent were geese. On bay waters only 41

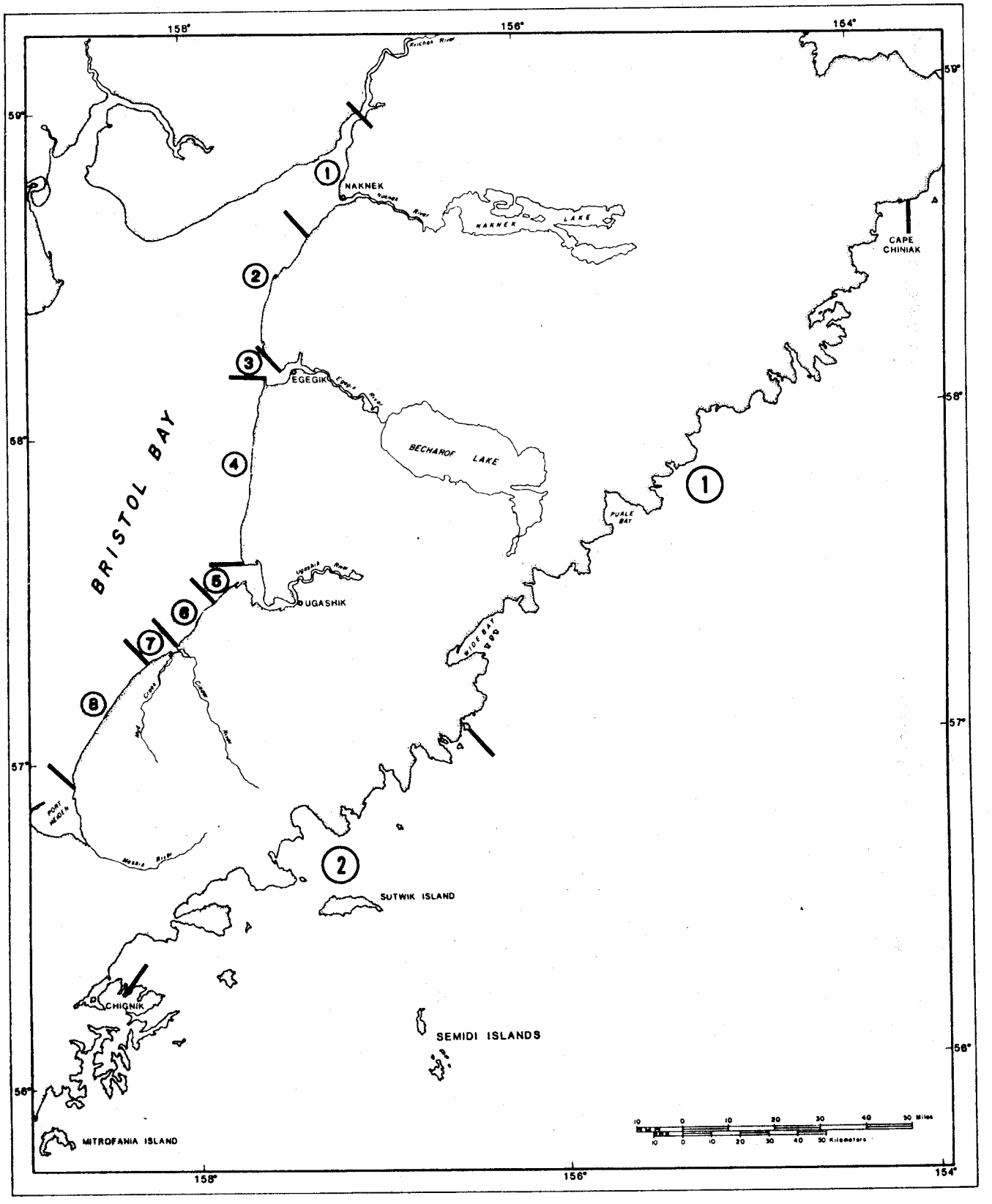


Fig. 105. Physiographic subdivision of North- and South-Alaska Peninsula for bird density analysis. The North-Alaska Peninsula survey region is labeled with the smallest circled numbers. Each numbered section contains several survey stations. (Figure continued on next page.)

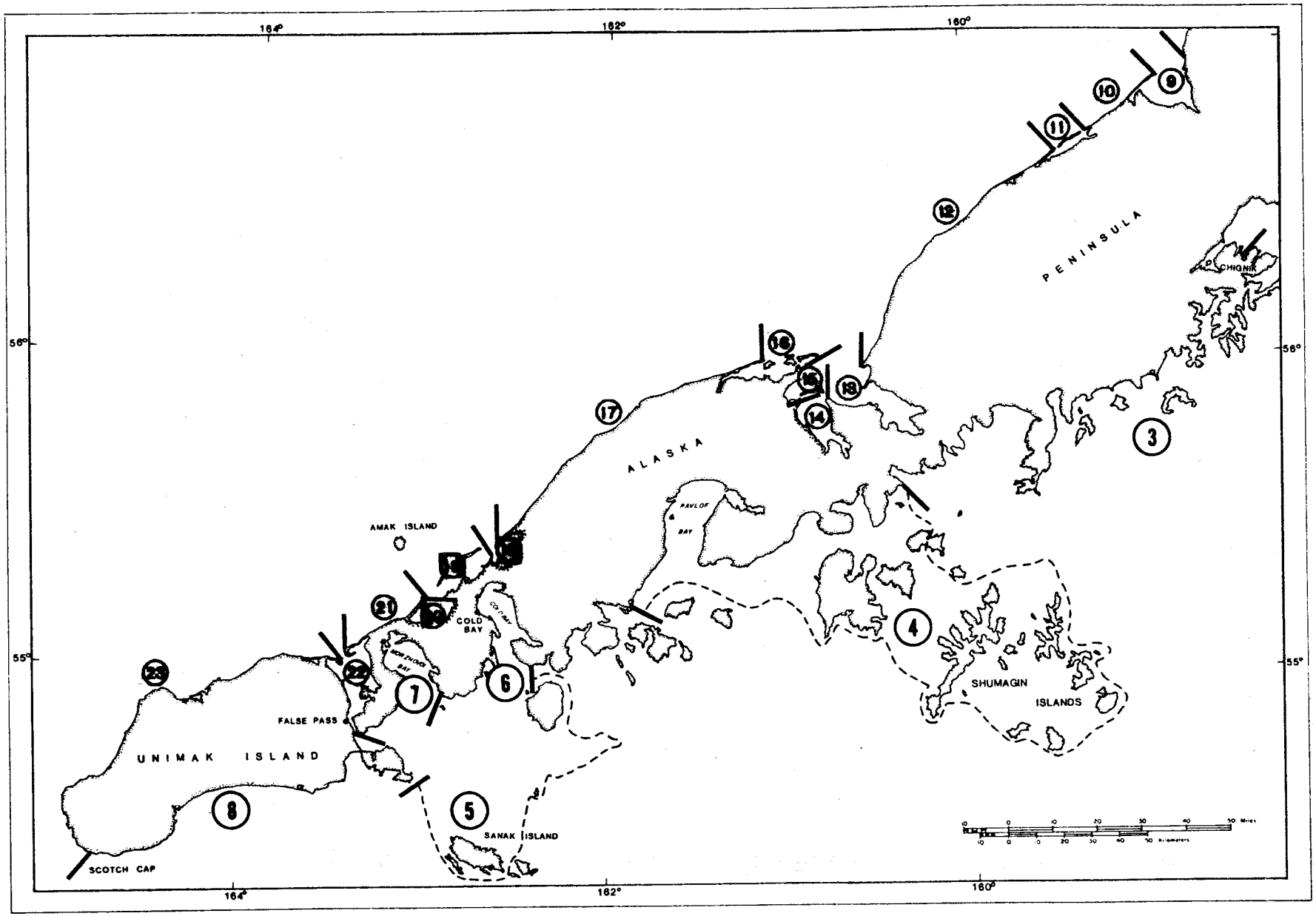


Fig. 105 (cont.). Physiographic subdivision of North- and South-Alaska Peninsula for bird density analysis. The North-Alaska Peninsula survey region is labeled with the smallest circled numbers. Each numbered section contains several survey stations.

Table 13. Bird density by section of coastline in South-Alaska Peninsula, fall 1976, winter 1977. See Figure 105 for section boundaries. (T=trace).

	Fall Densities (birds/km^2)				Winter Densities (birds/km^2)								
	Section of Coastline				Section of Coastline								
Bird Group	6	7	8	Total	1	2	3	4	5	6	7	8	Total
Loon	1			T	T	T	T	T	T	T		T	T
Grebe		T		T			T	T	T			T	T
Tubenose				0		T							T
Cormorant	2	3	10	3	2	4	3	4	4	4		2	3
Goose and Swan	195	335		227	10	3	1	1	7	T		1	3
Dabbler	20	7		14			T	T		9		T	T
Diver	6	3		4	T		1			12			1
Sea Duck	13	3	11	10	20	3	20	18	8	41		26	18
Merganser	T	T		T			T		T	1			T
Raptor	T		T	T	T	T	T	T	T			T	T
Crane				0									0
Shorebird	1	2		1	3	T	1	5	7	5		T	2
Gull and Jaeger	16	7	69	17	10	2	20	6	4	26		12	9
Tern				0									0
Alcid	T	T	T	T	1	3	92	90	20			T	29
Corvid	T	T		T	1	T		T	T	T		T	T
Other Passerine	T			T								T	T
Other Bird		2		1								T	T
TOTAL	255	363	90	279	47	15	138	124	50	99	*	42	67

* Not surveyed.

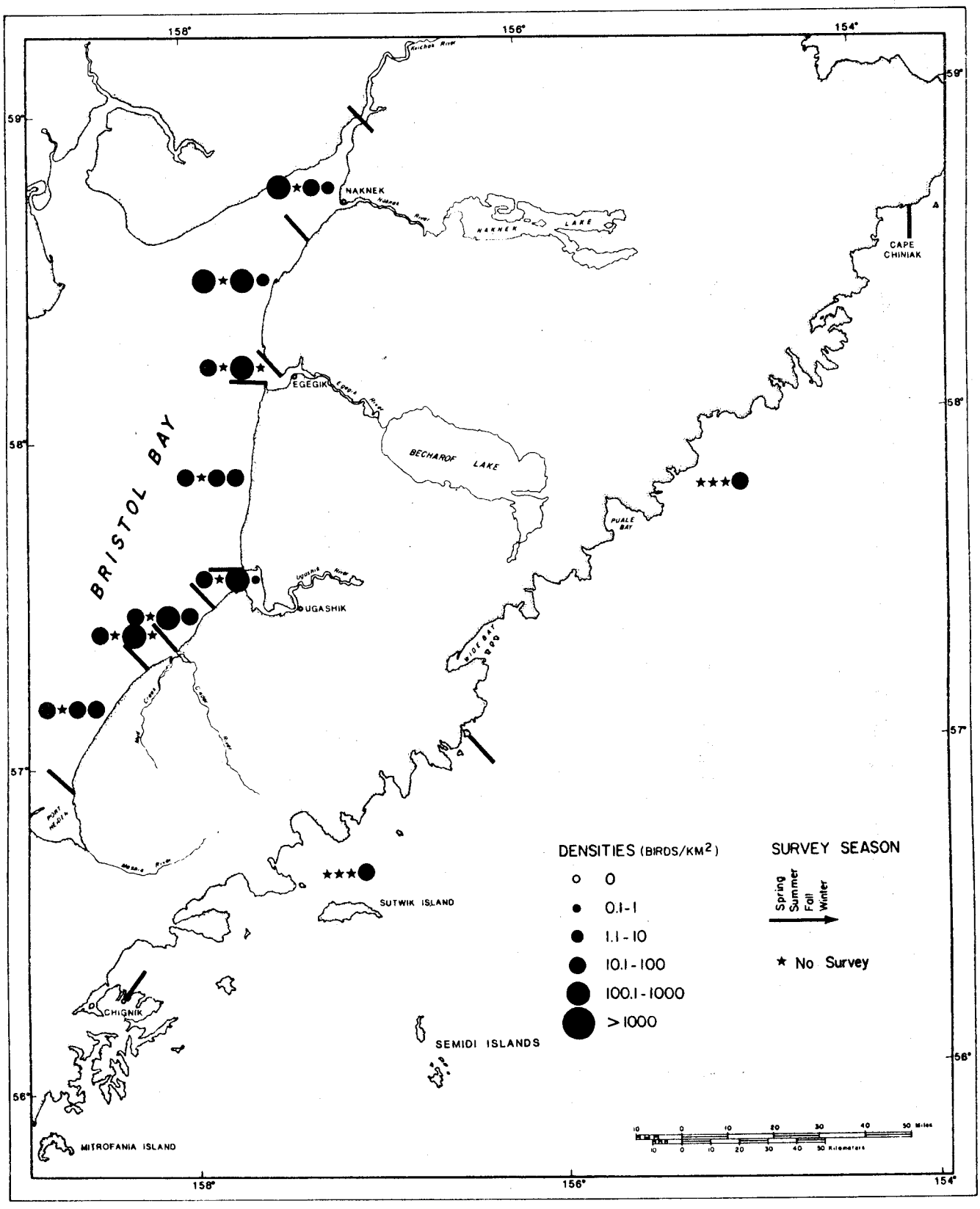


Fig. 106. Total bird density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. **(Figure continued on next page.)**

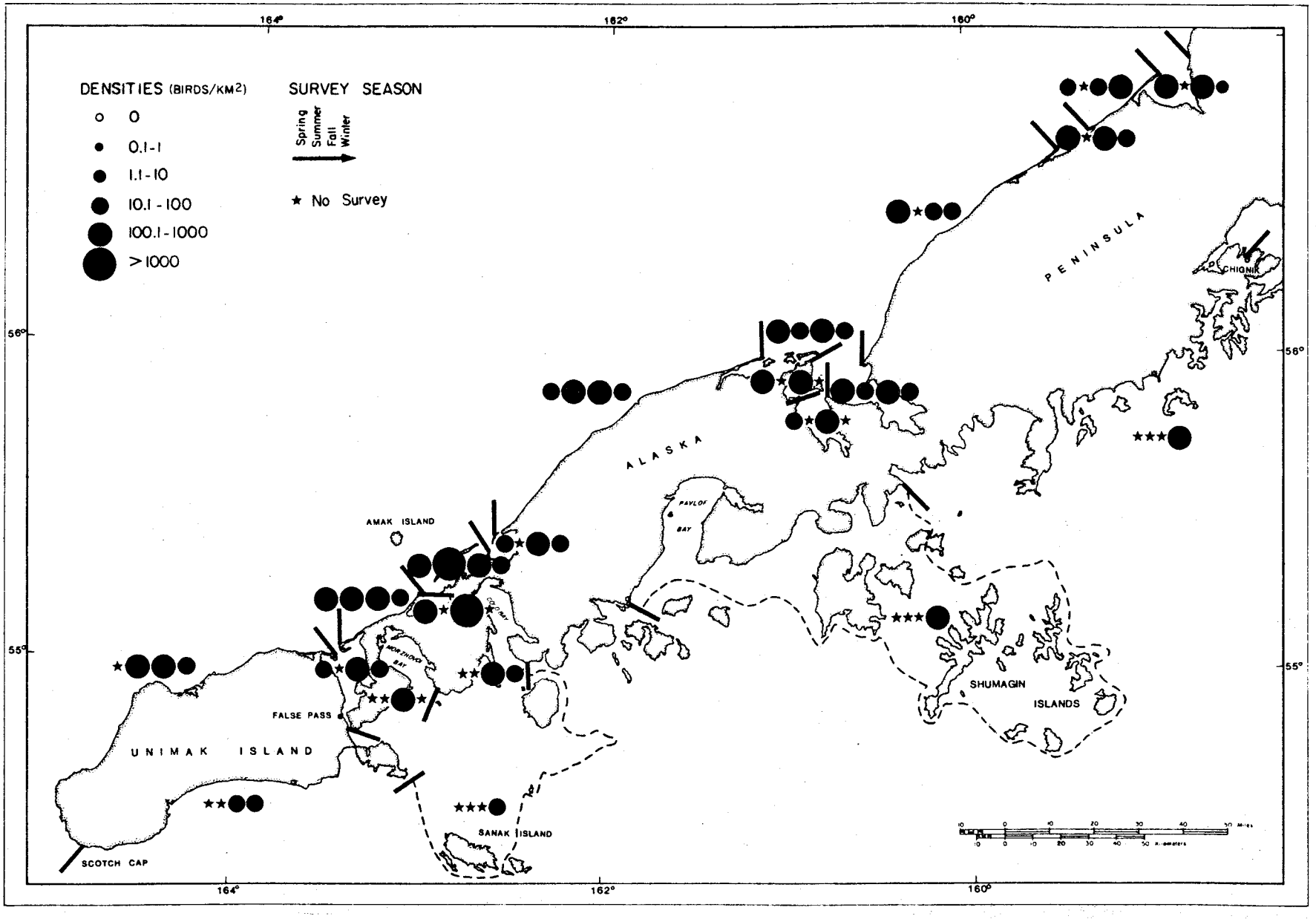


Fig. 106 (cont.). Total bird density by section along North- and South Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

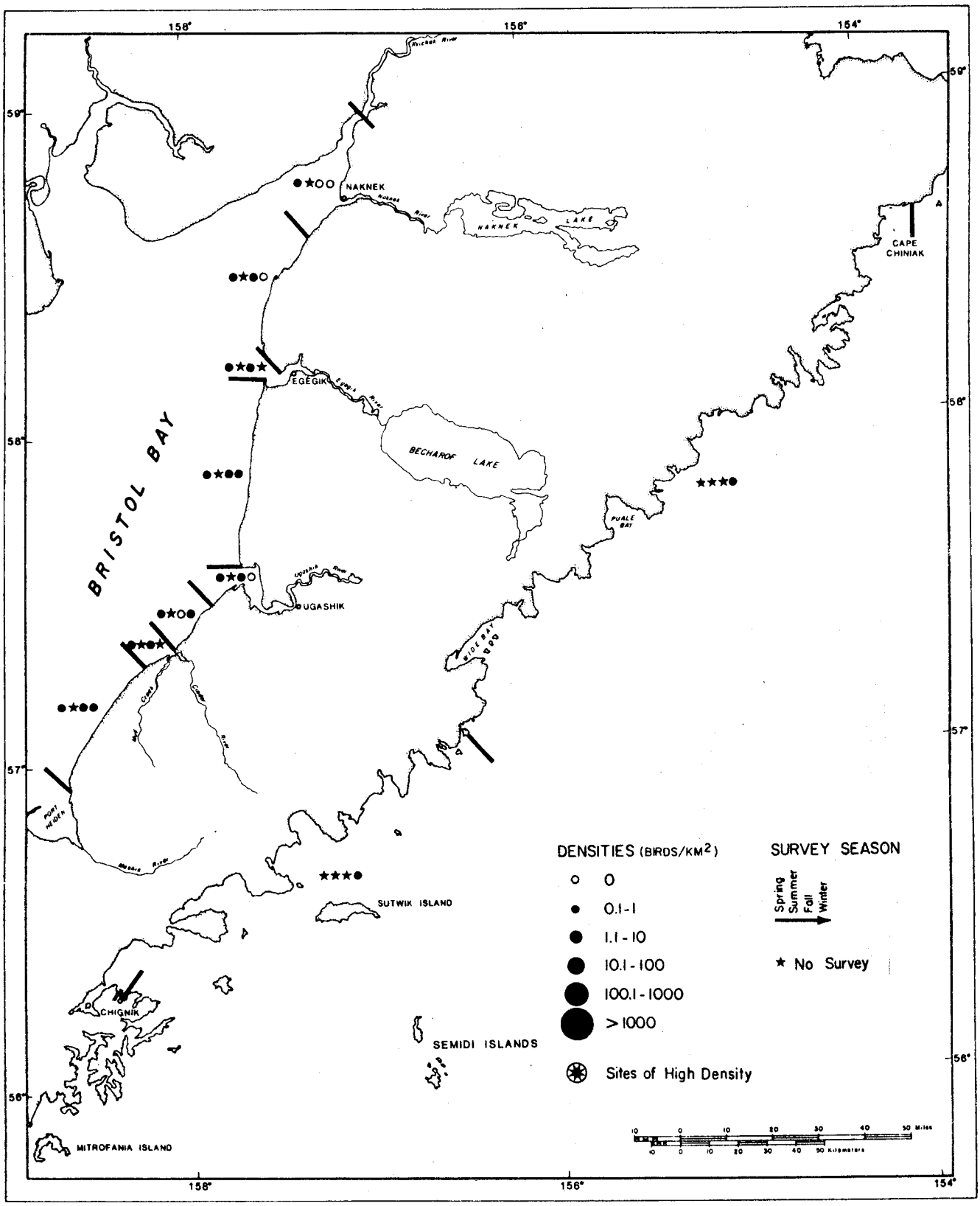


Fig. 107. Loon density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

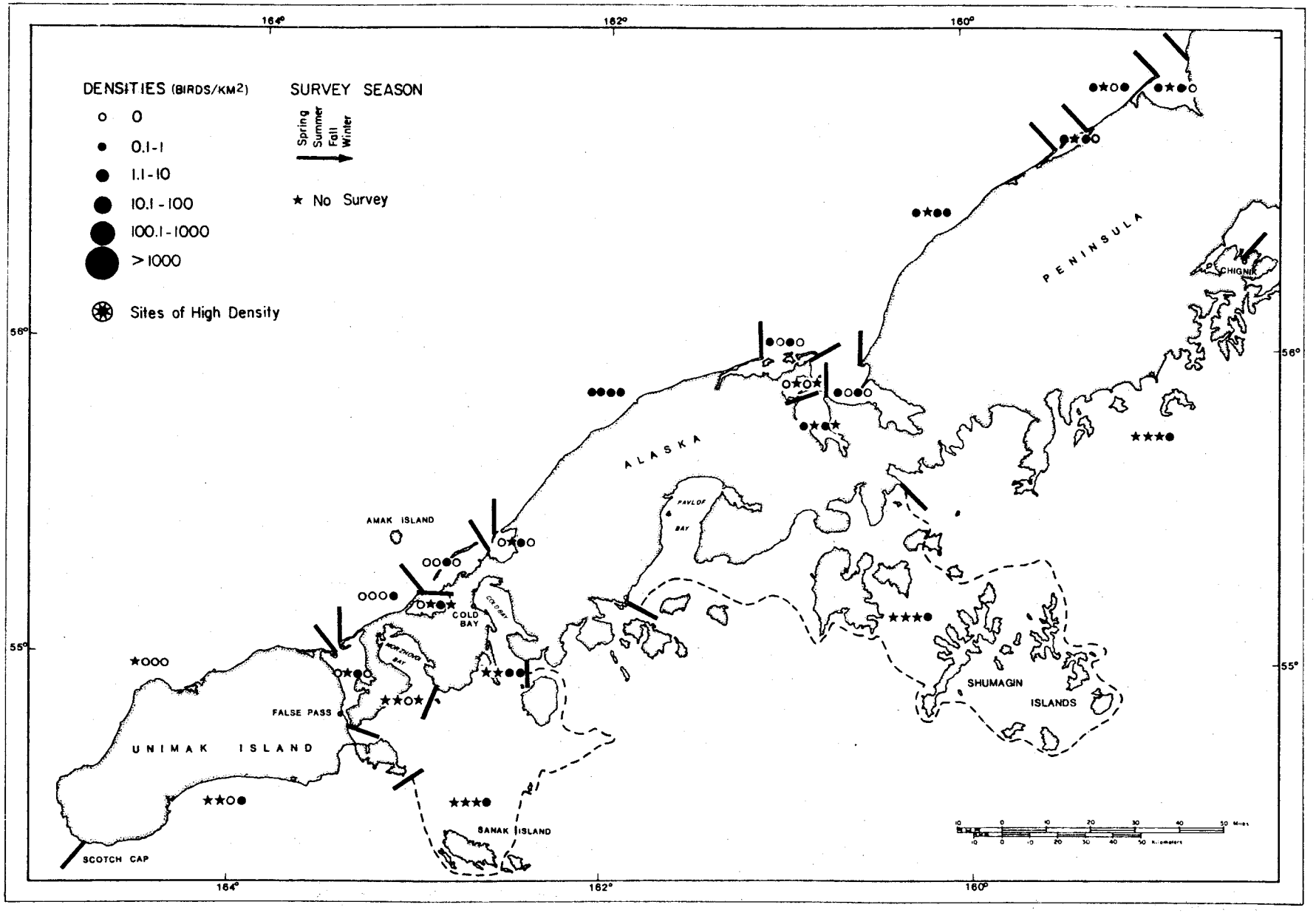


Fig. 107 (cont.). Loon density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

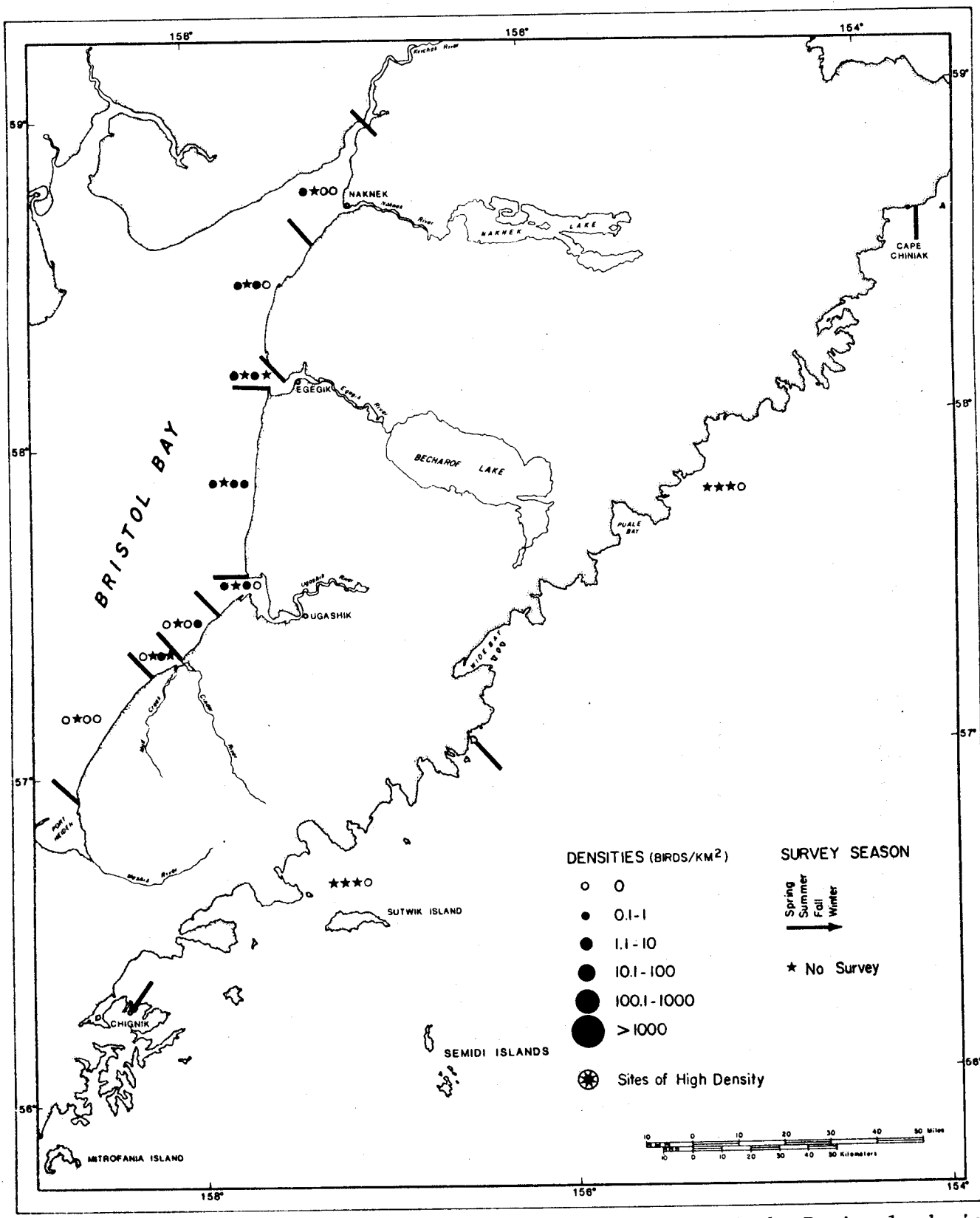


Fig. 108. Grebe density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

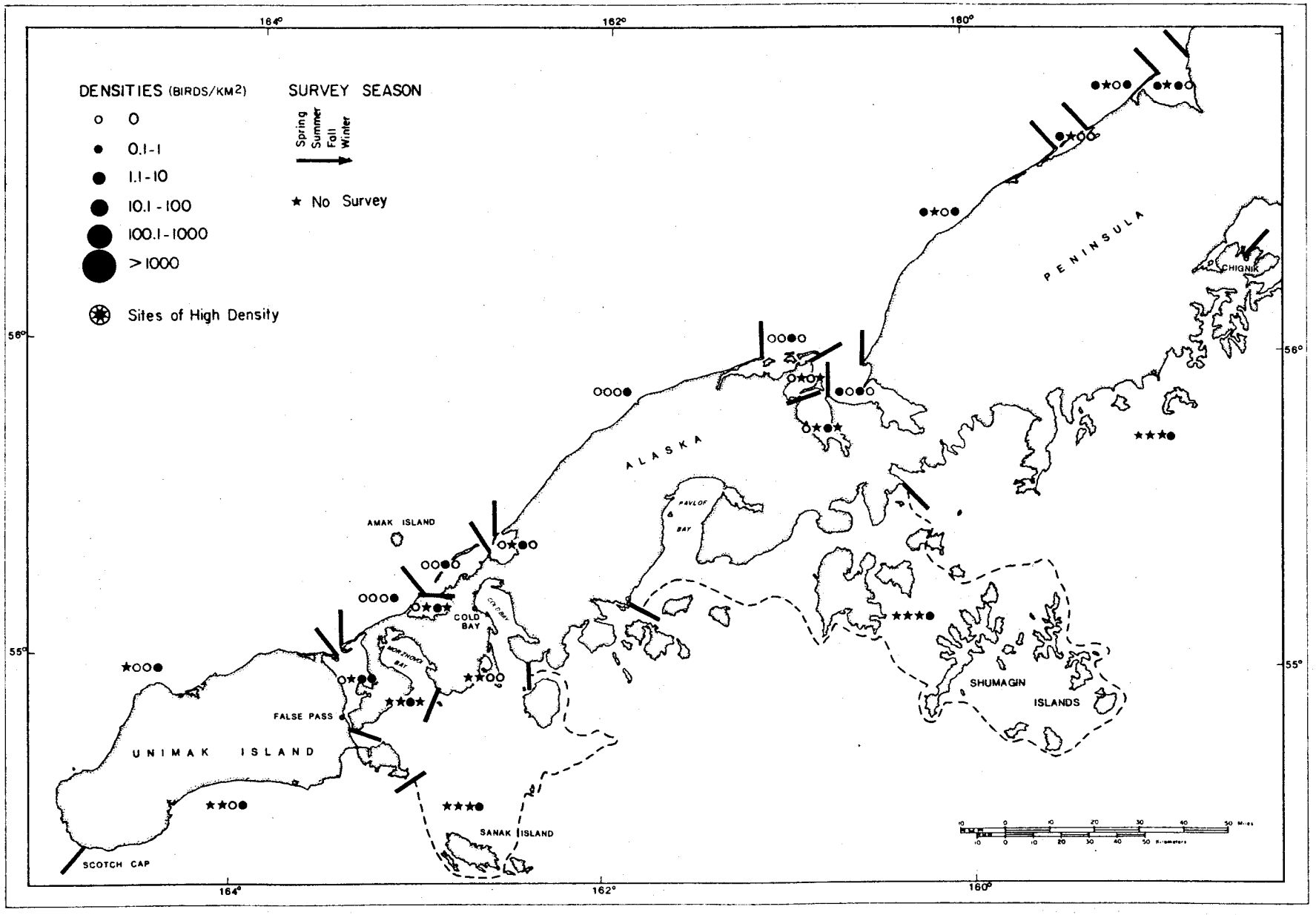


Fig. 108 (cont.). Grebe density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

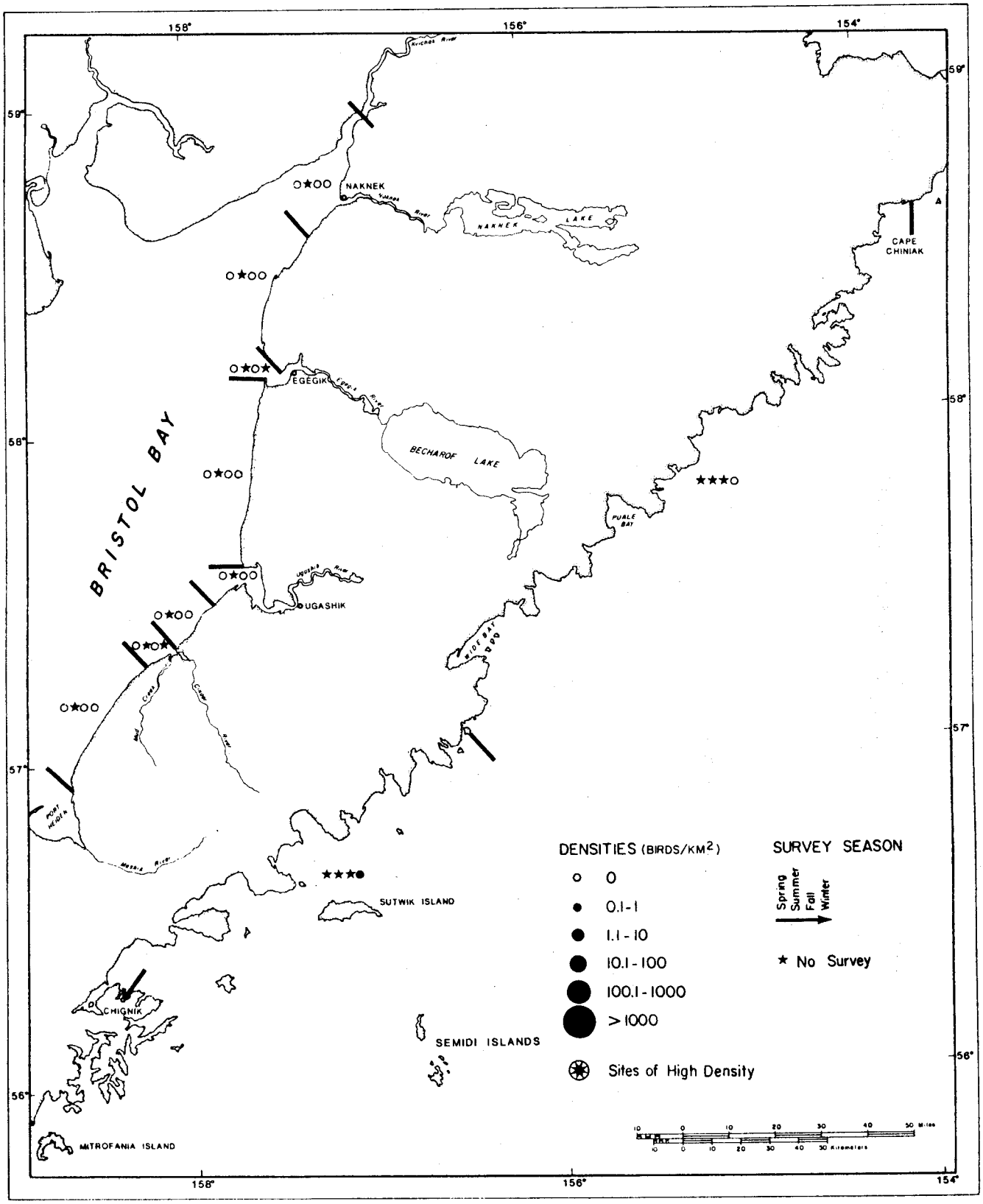


Fig. 109. Tubenose density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

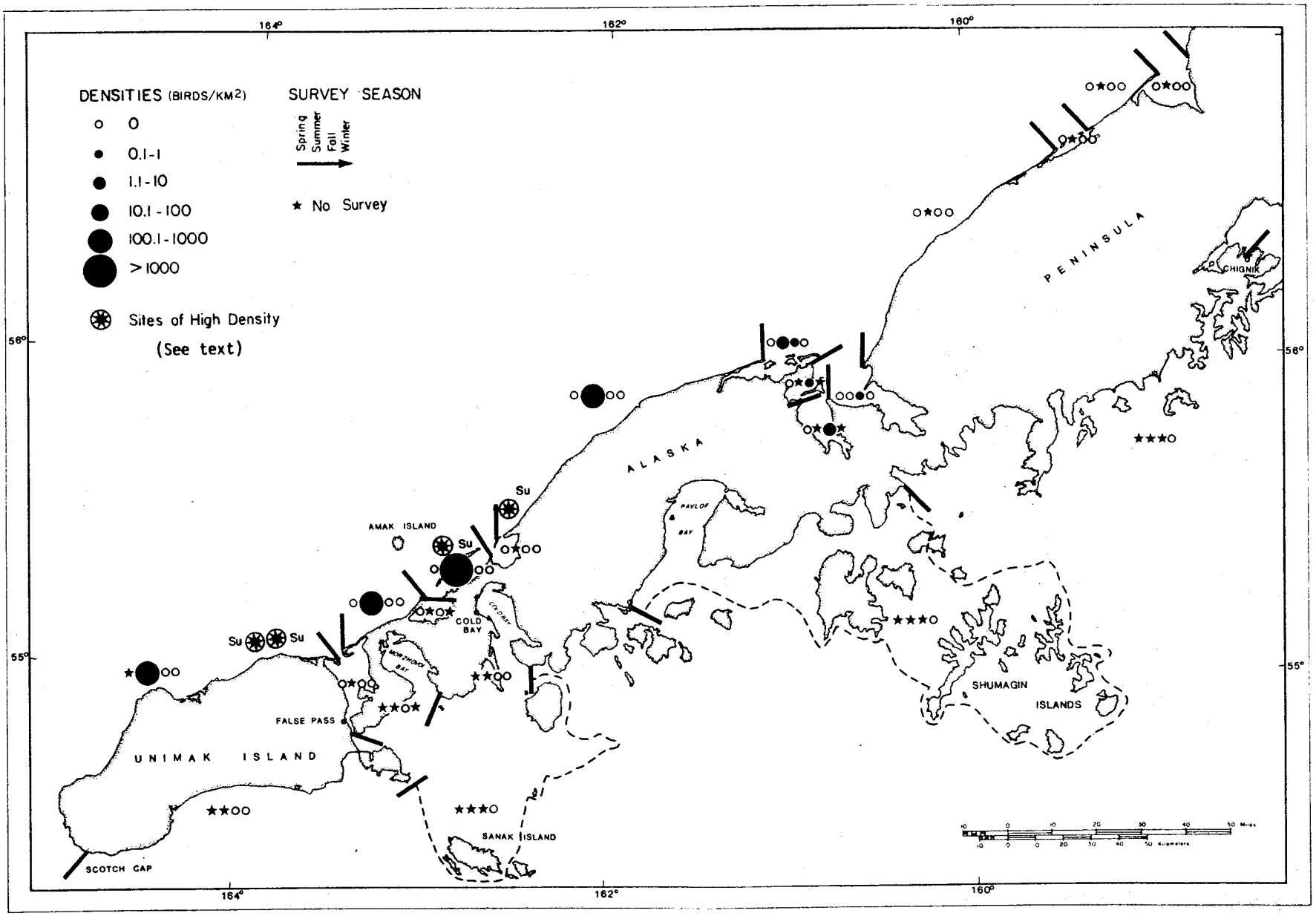


Fig. 109 (cont.). Tubenose density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

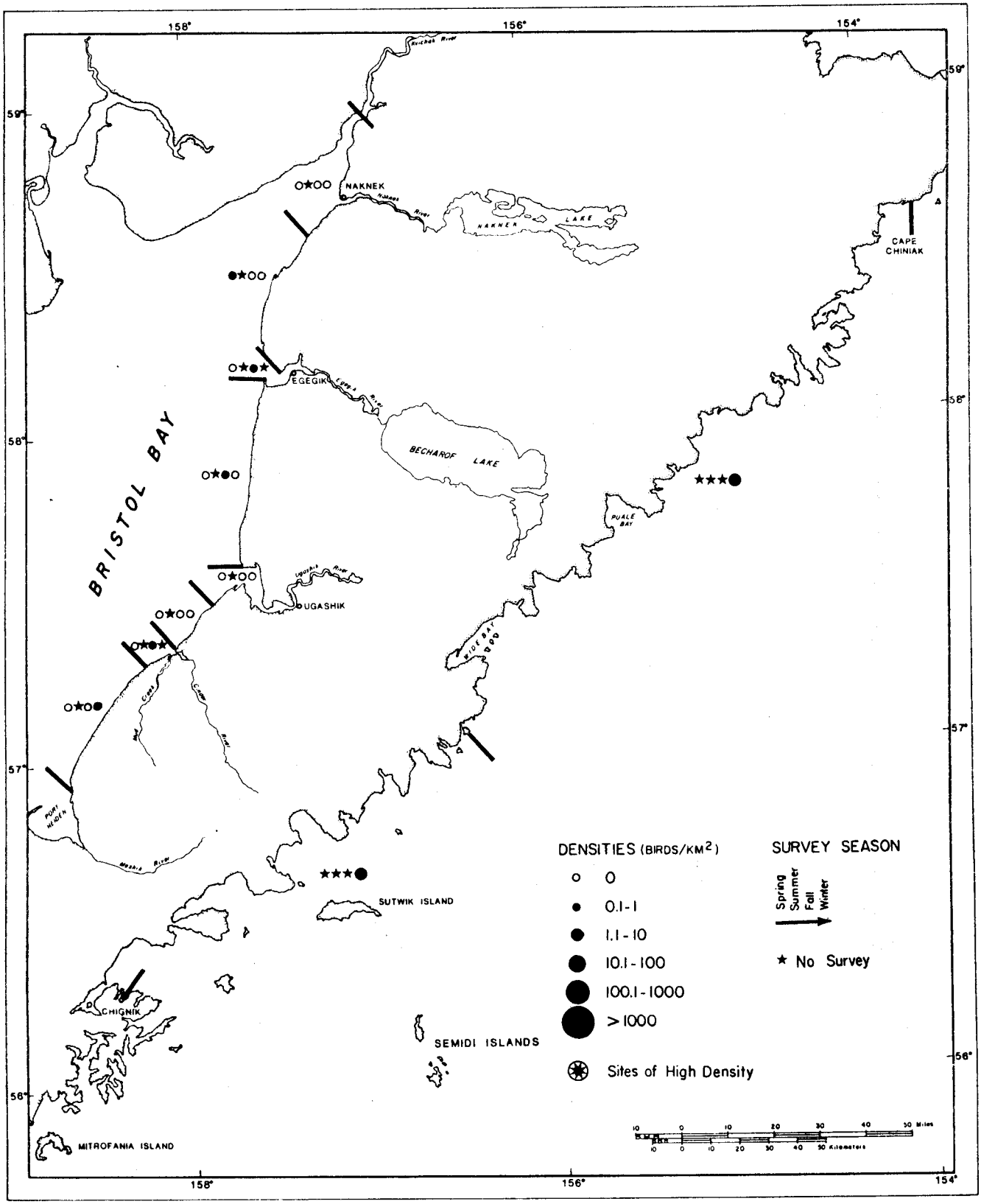


Fig. 110. Cormorant density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

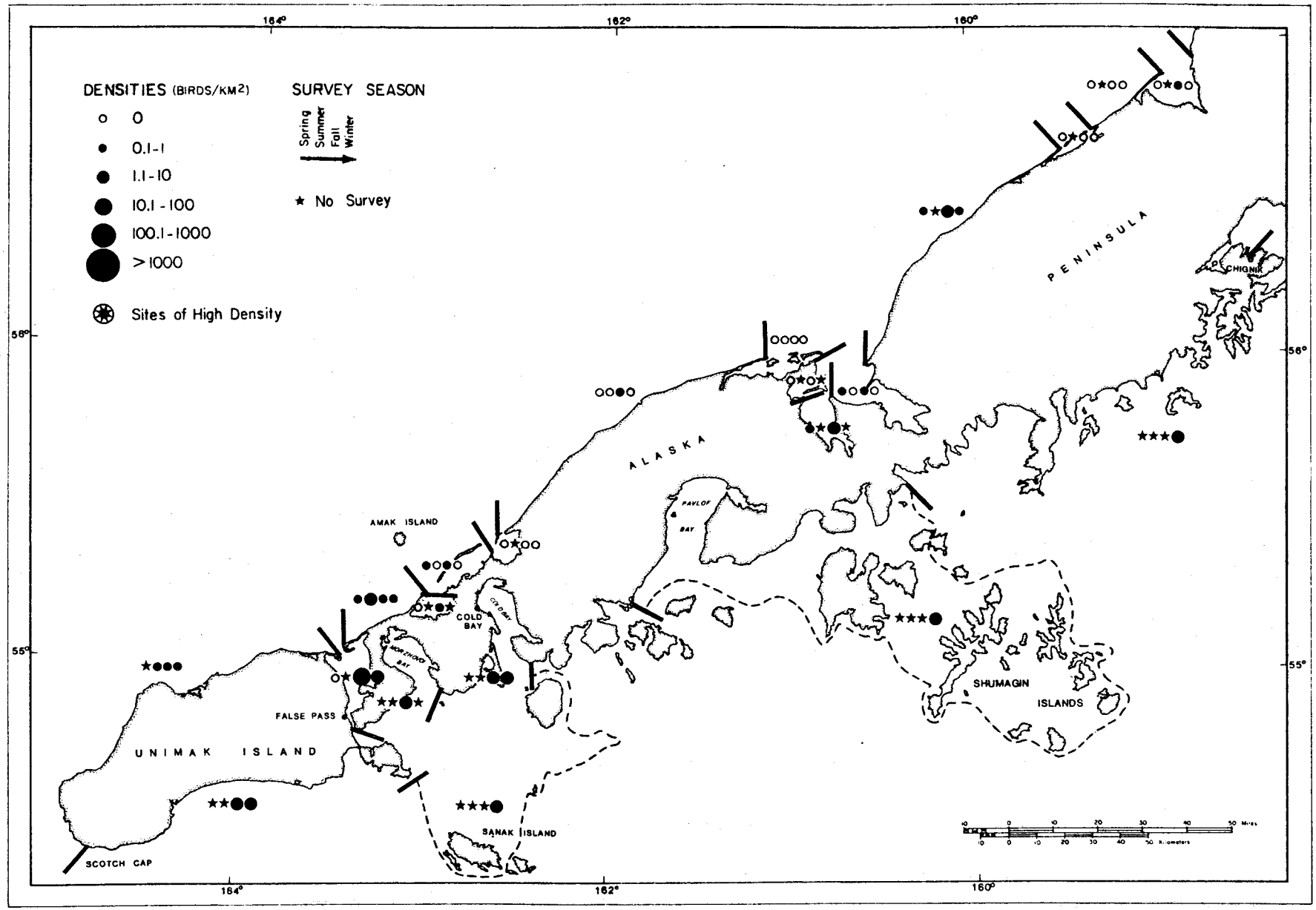


Fig. 110 (cont.). Cormorant density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

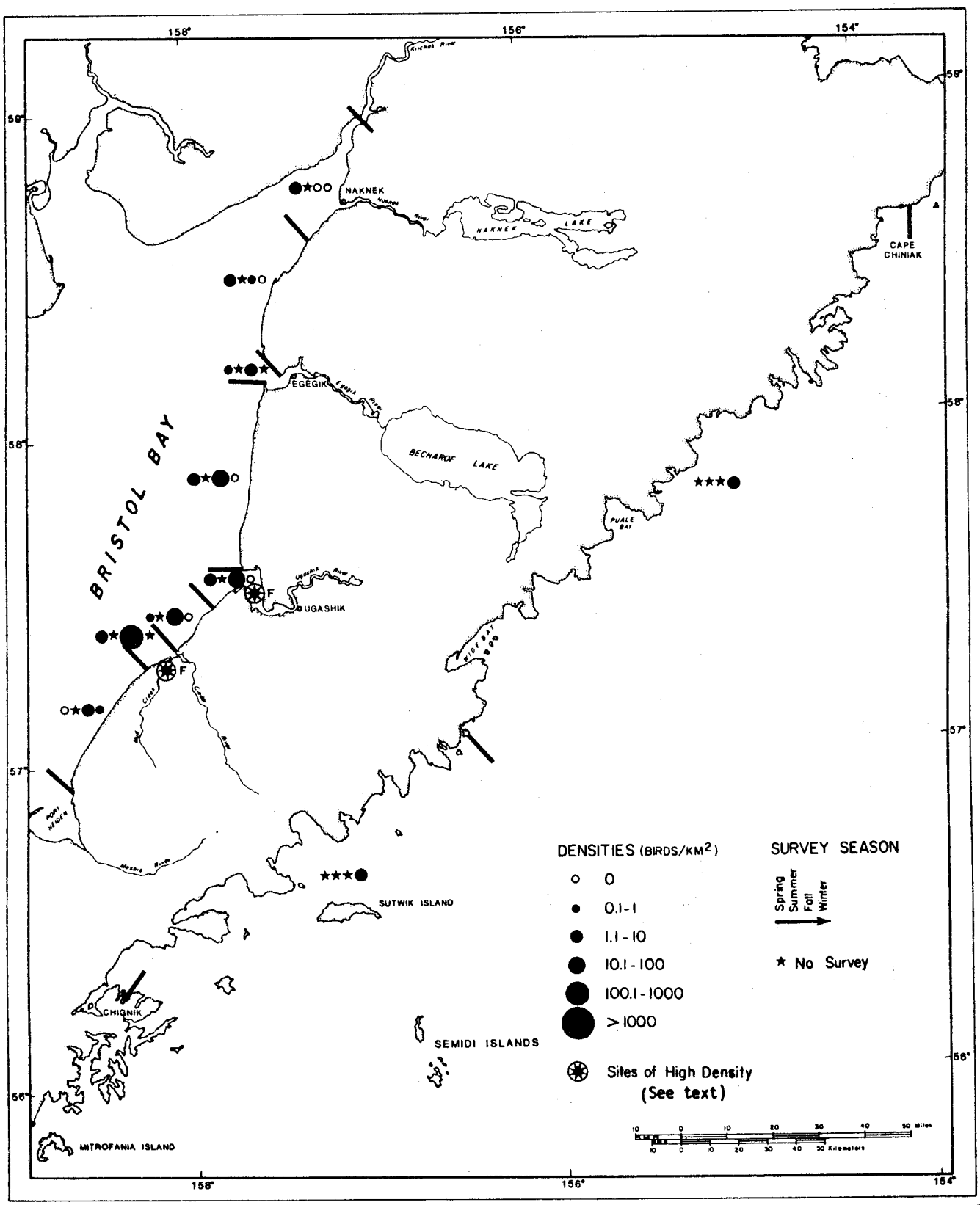


Fig. 111. Goose and swan density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

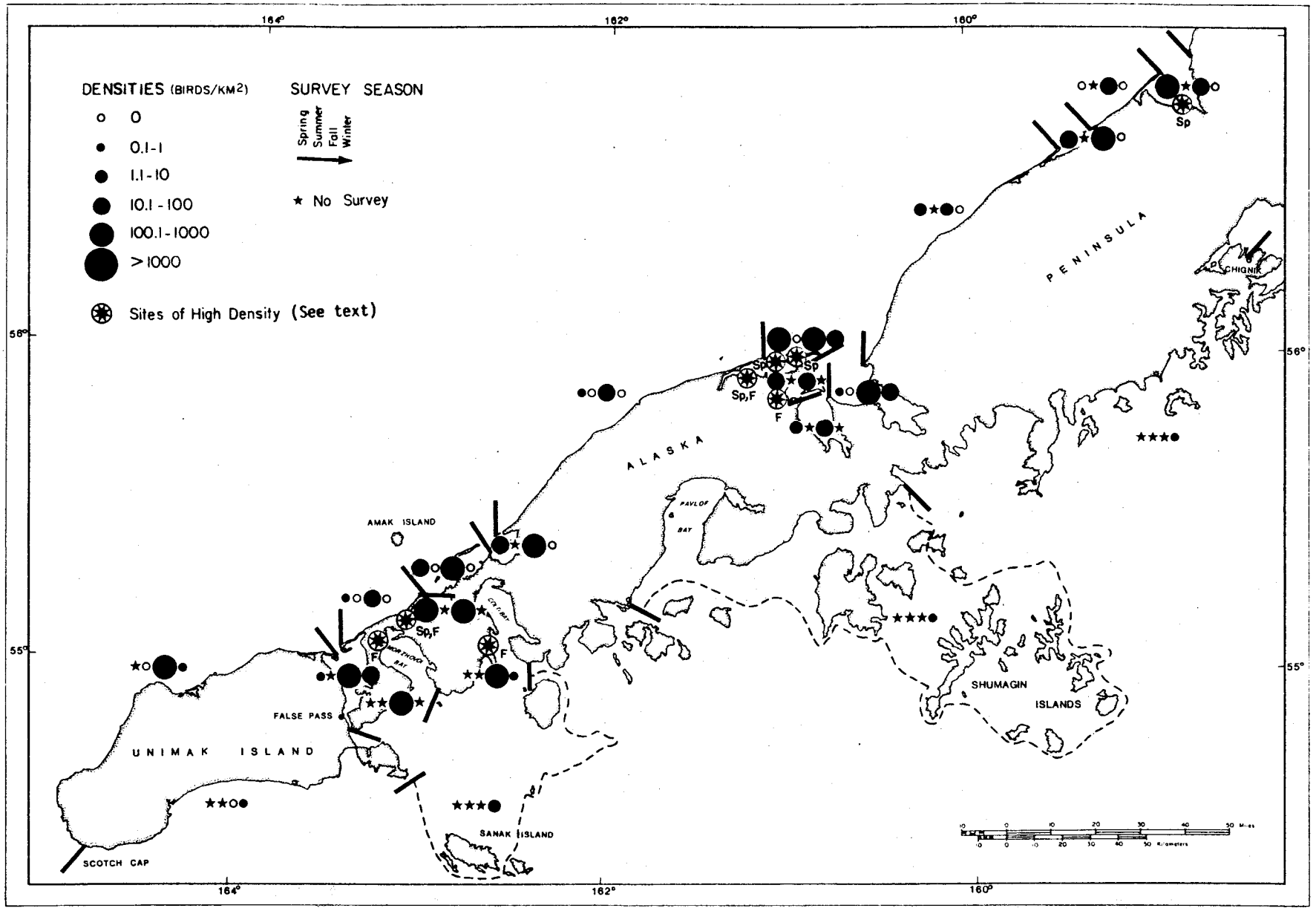


Fig. 111 (cont.). Goose and swan density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

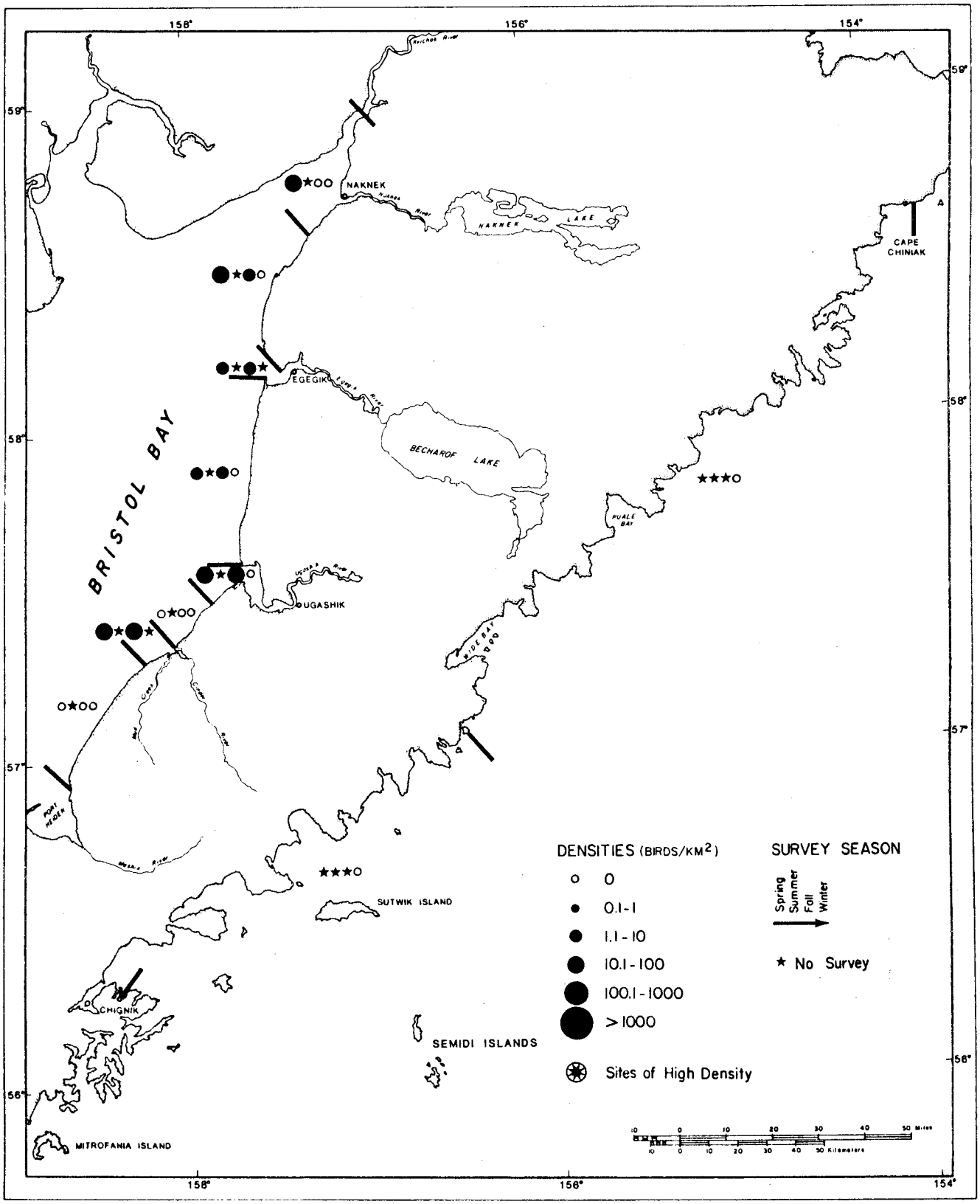


Fig. 112. Dabbling duck density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

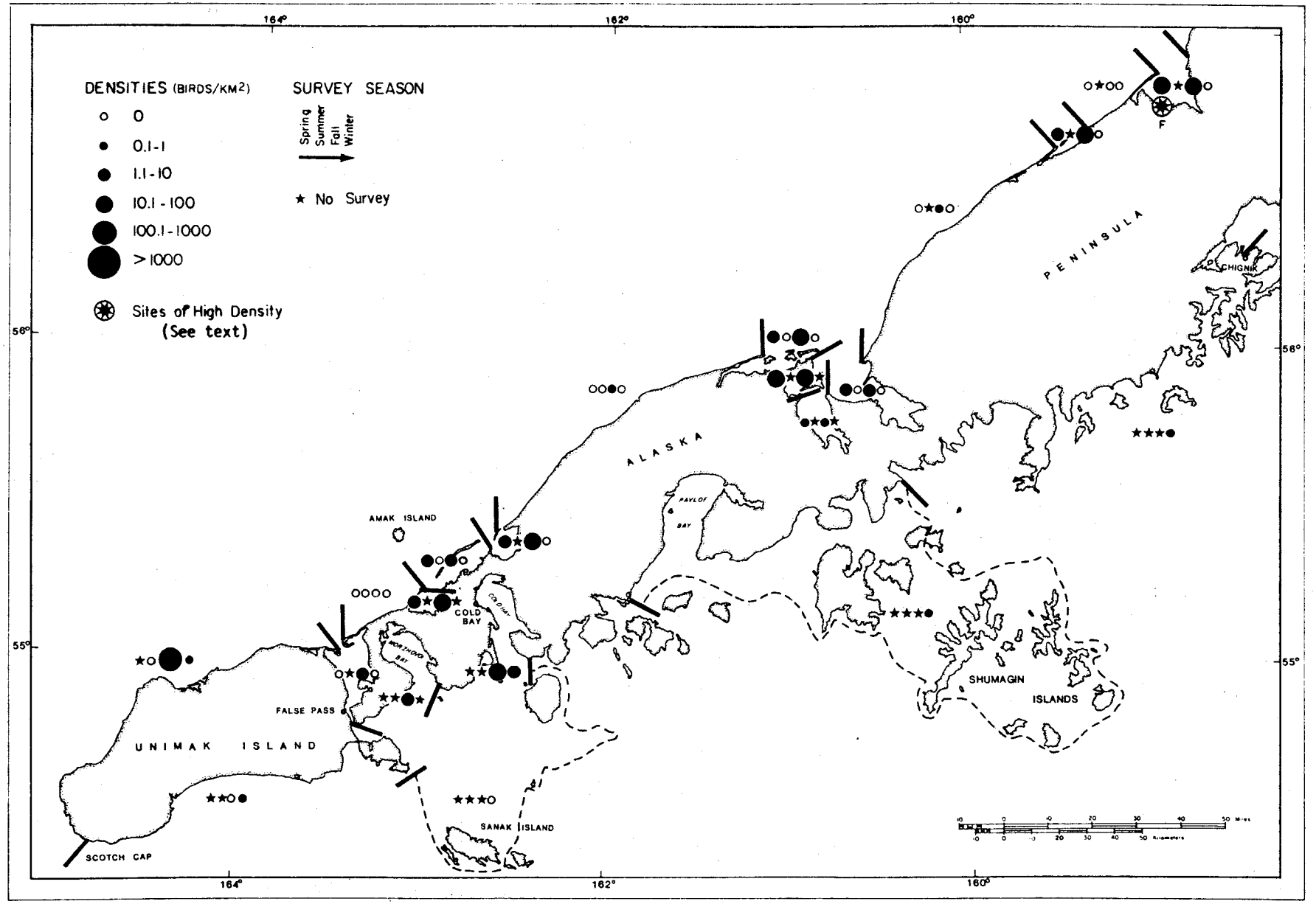


Fig. 112 (cont.). Dabbling duck density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

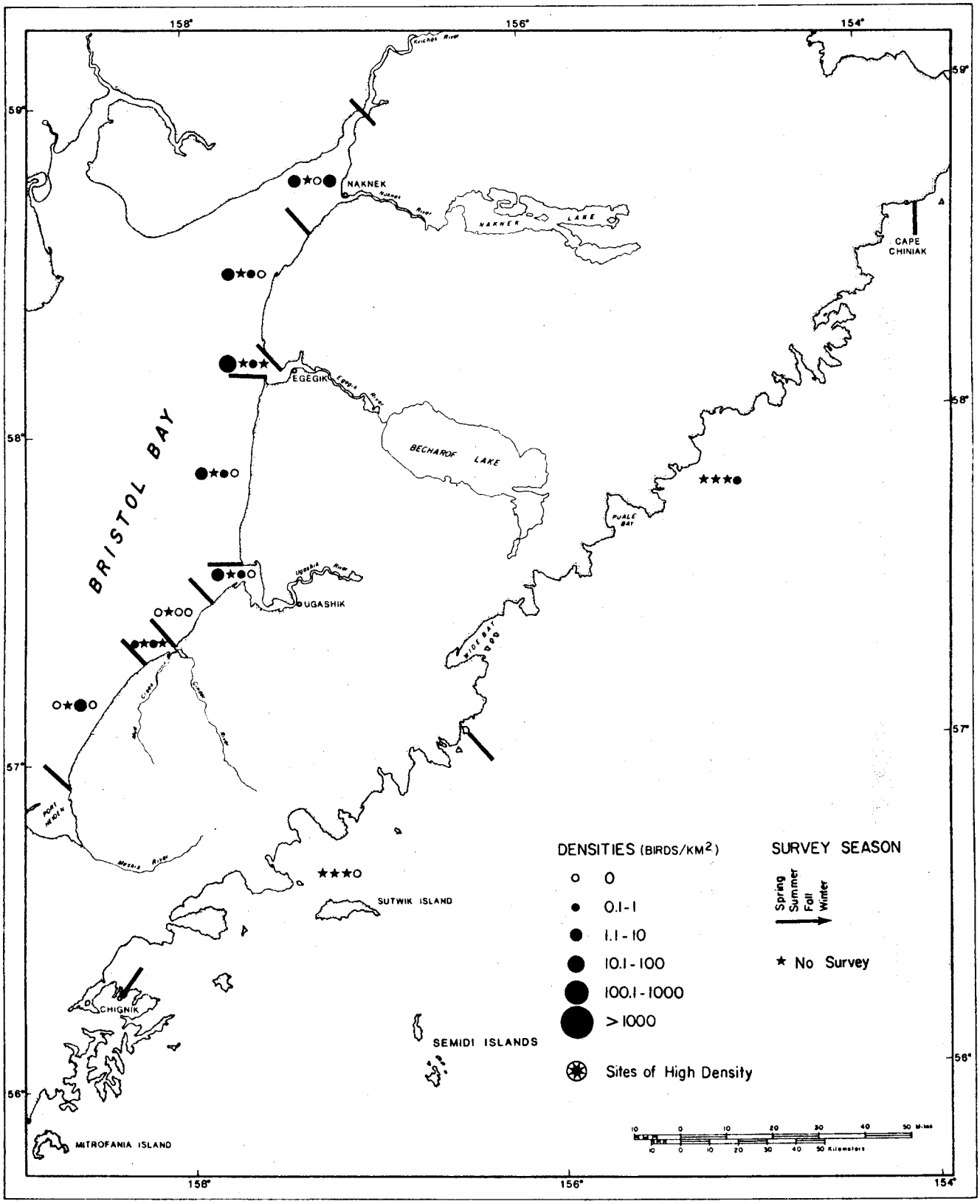


Fig. 113. Diving duck density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

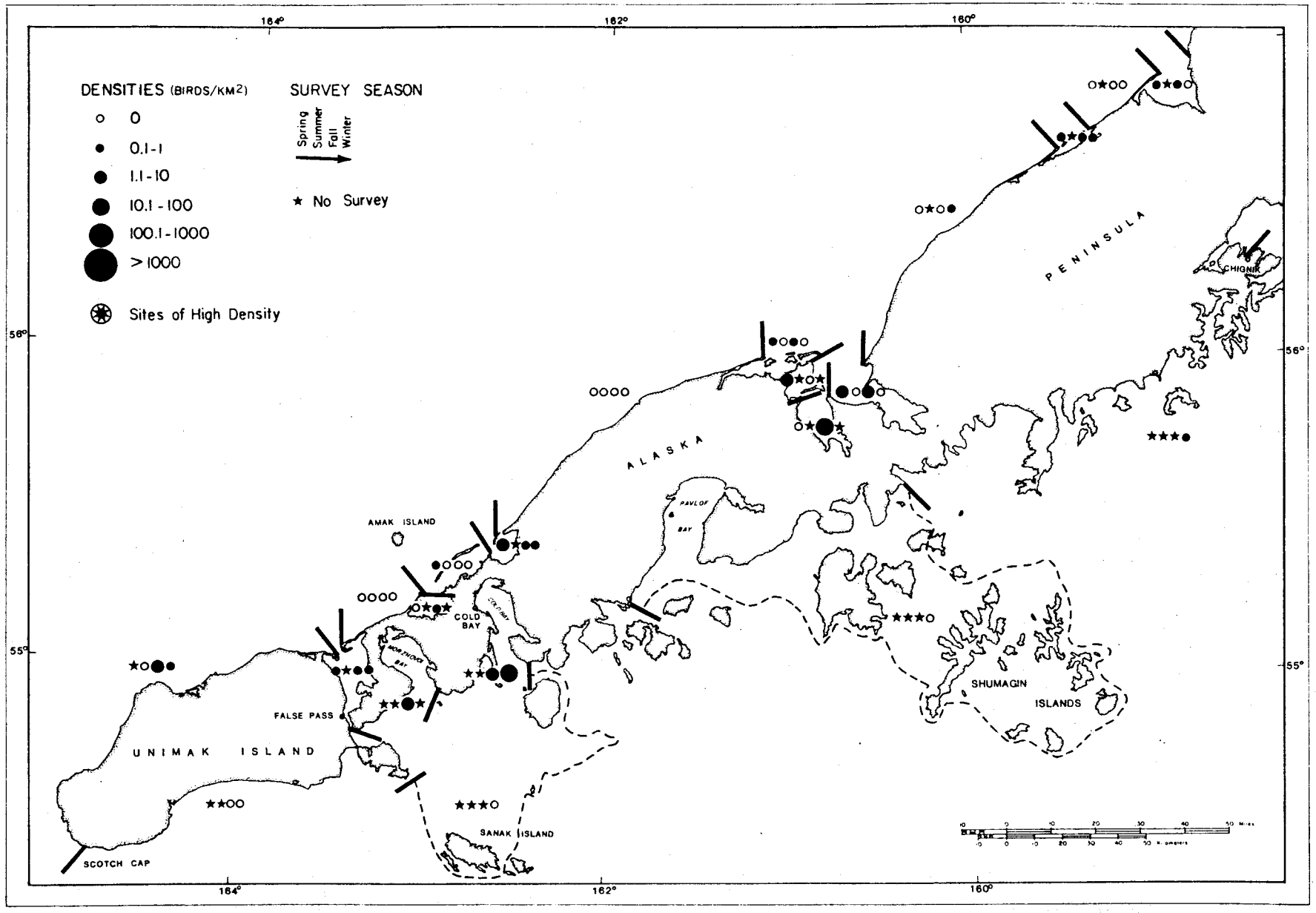


Fig. 113 (cont.). Diving duck density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

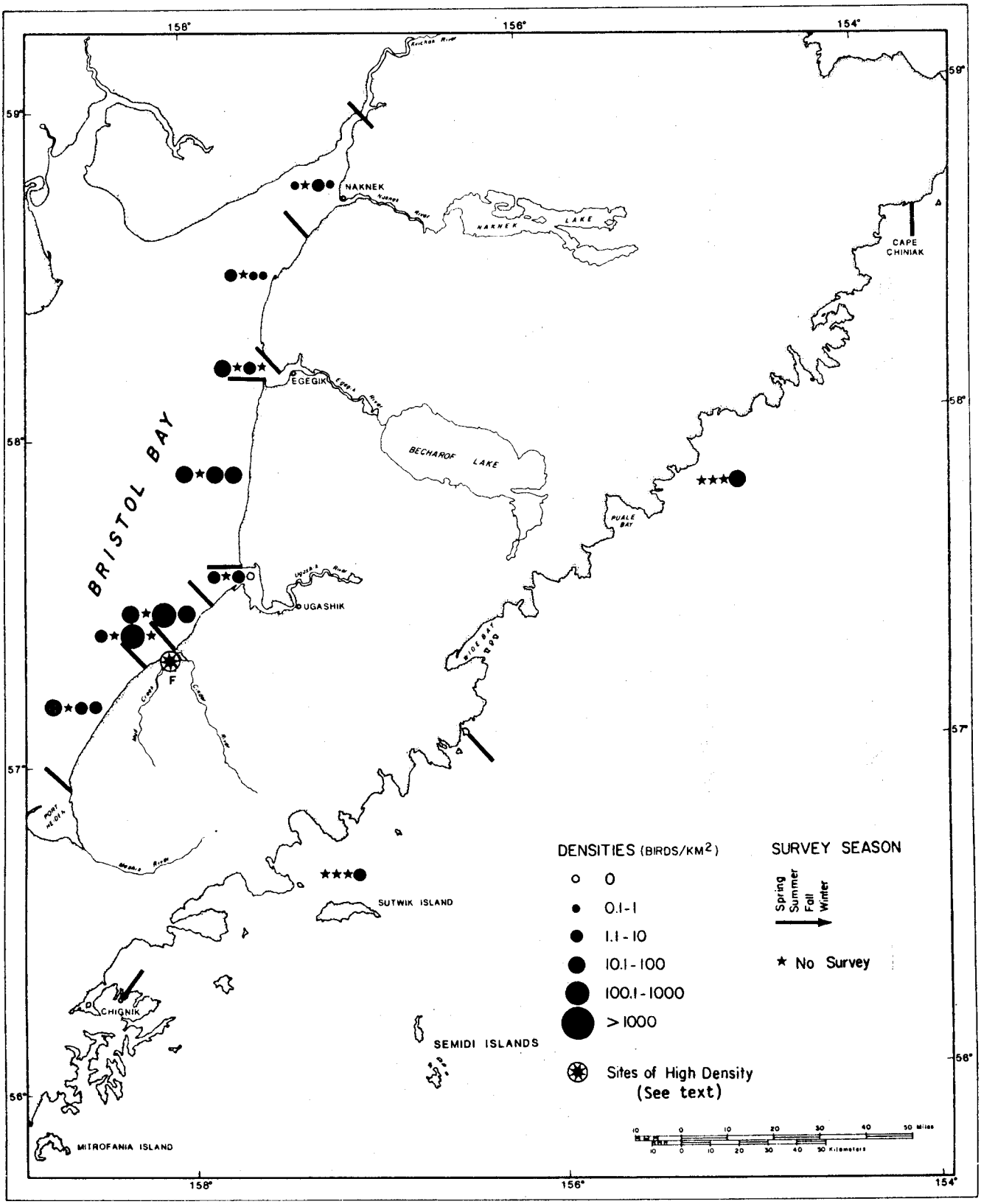


Fig. 114. Sea duck density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

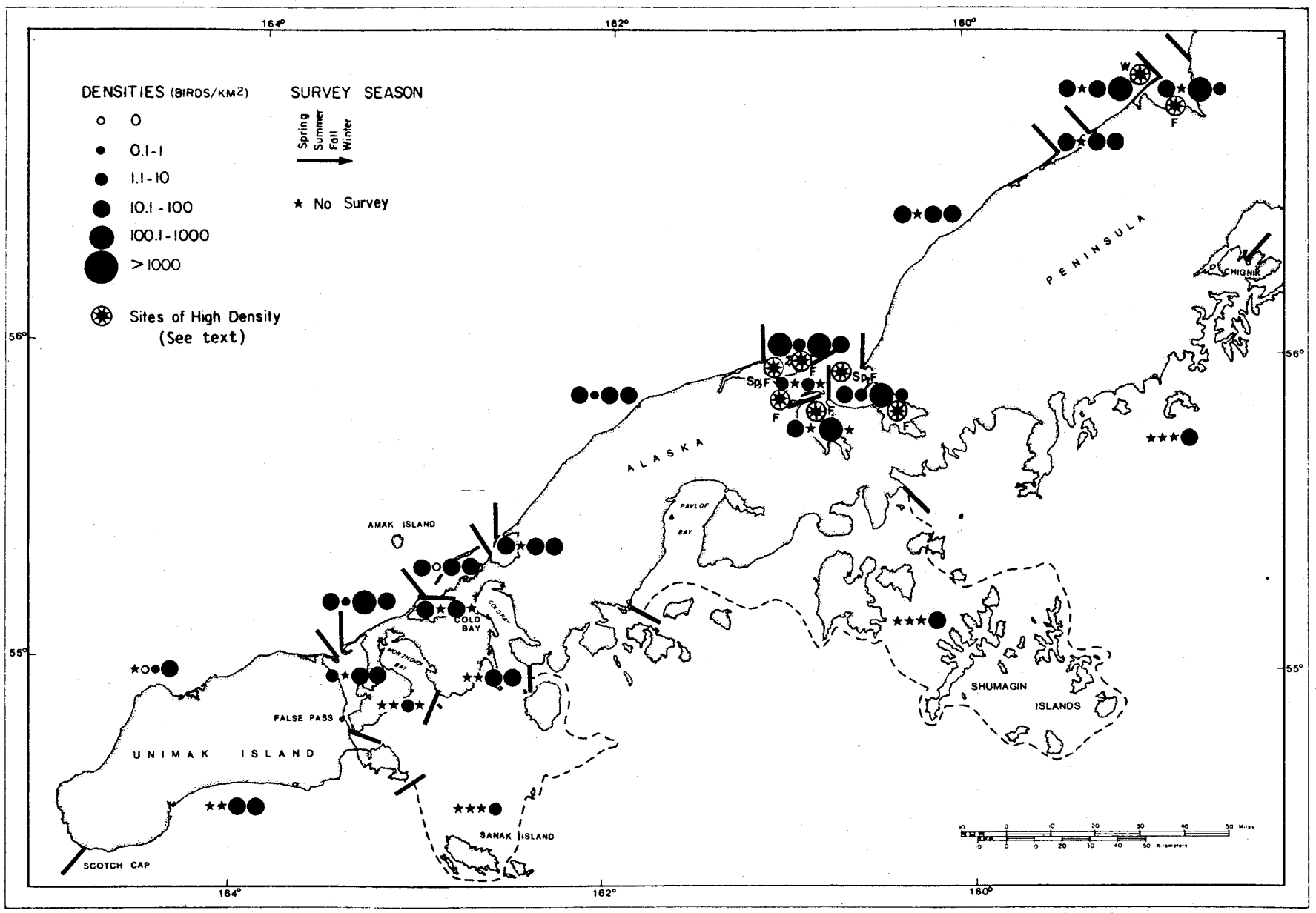


Fig. 114 (cont.). Sea duck density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

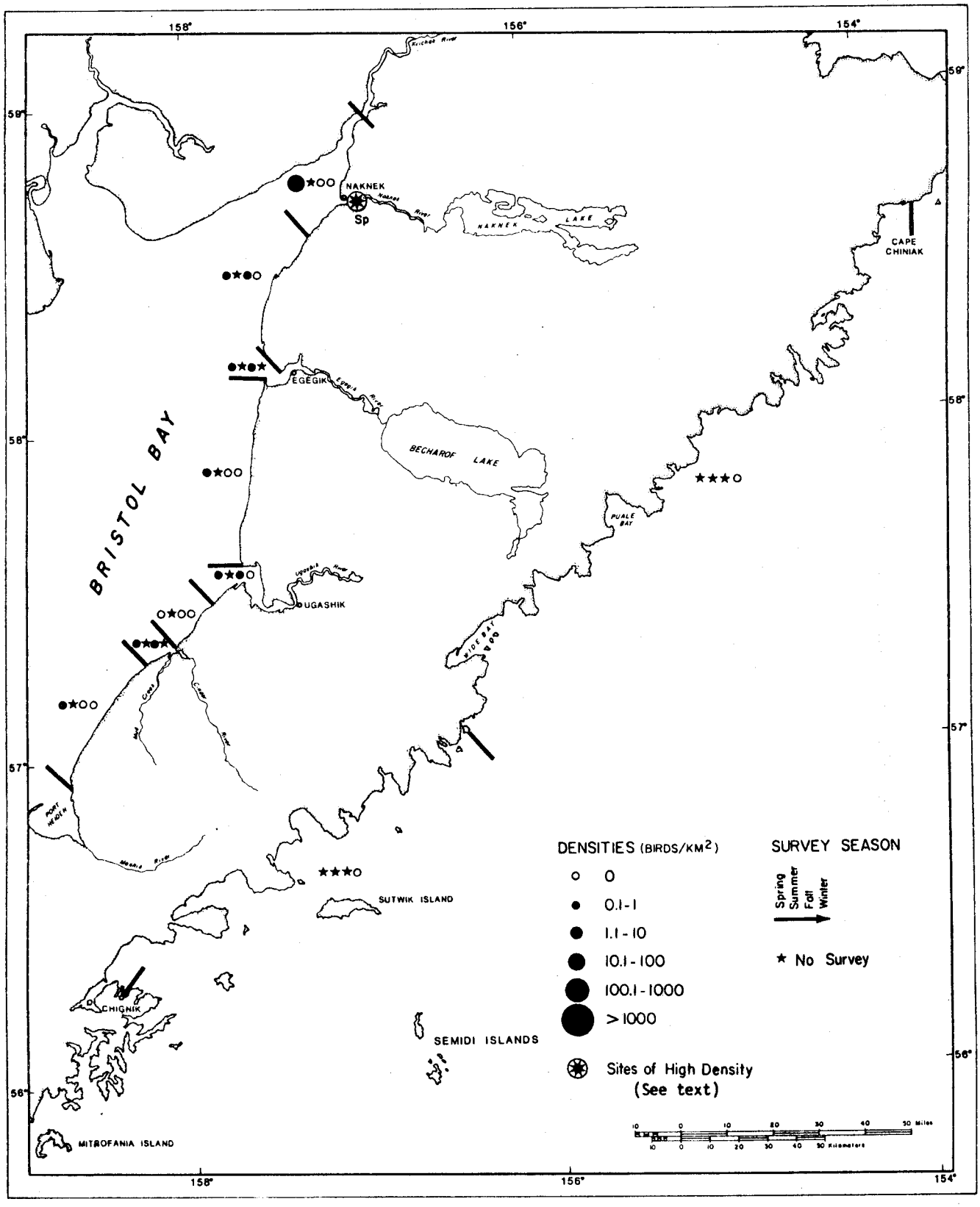


Fig. 115. Merganser density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

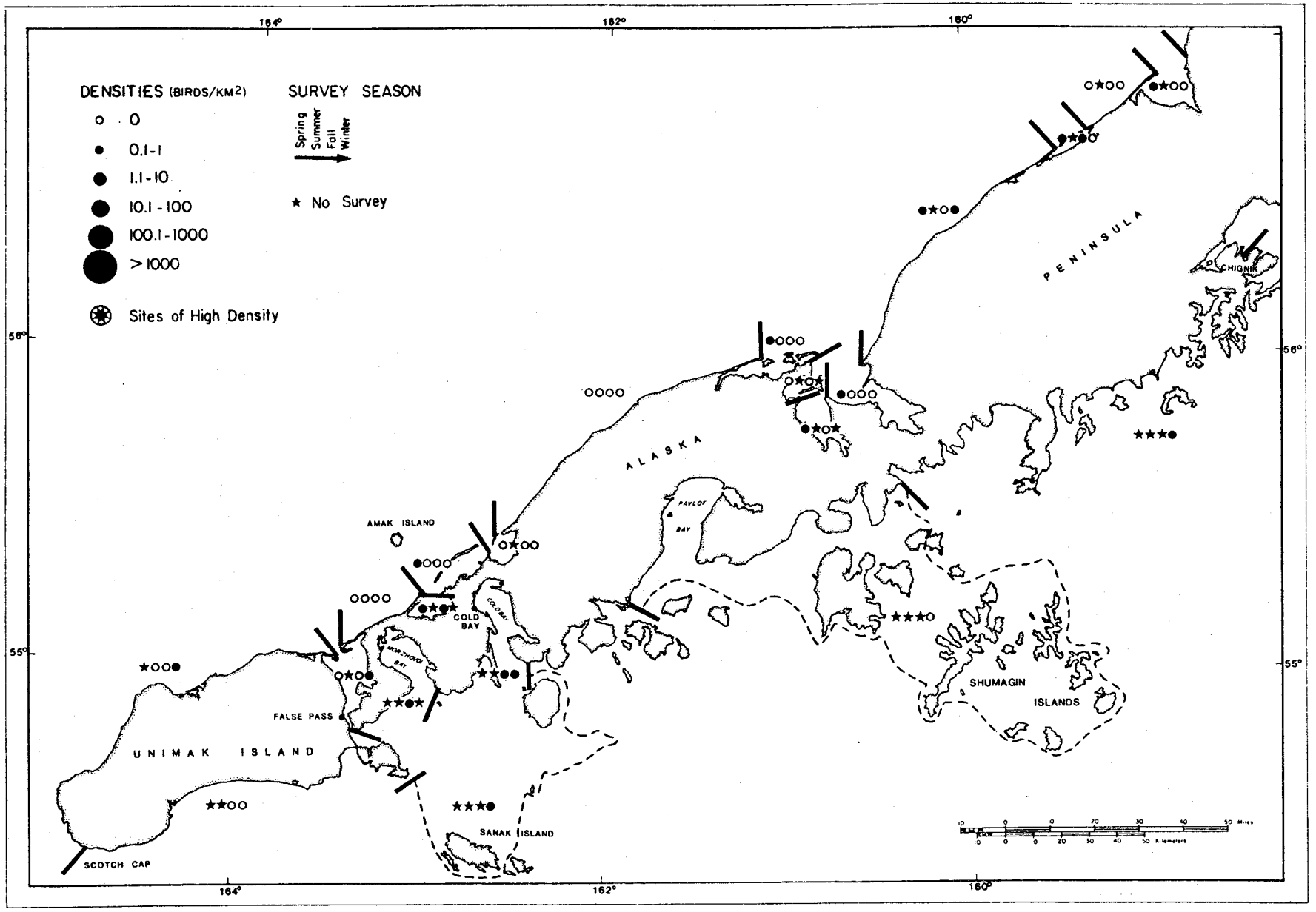


Fig. 115 (cont.). Merganser density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

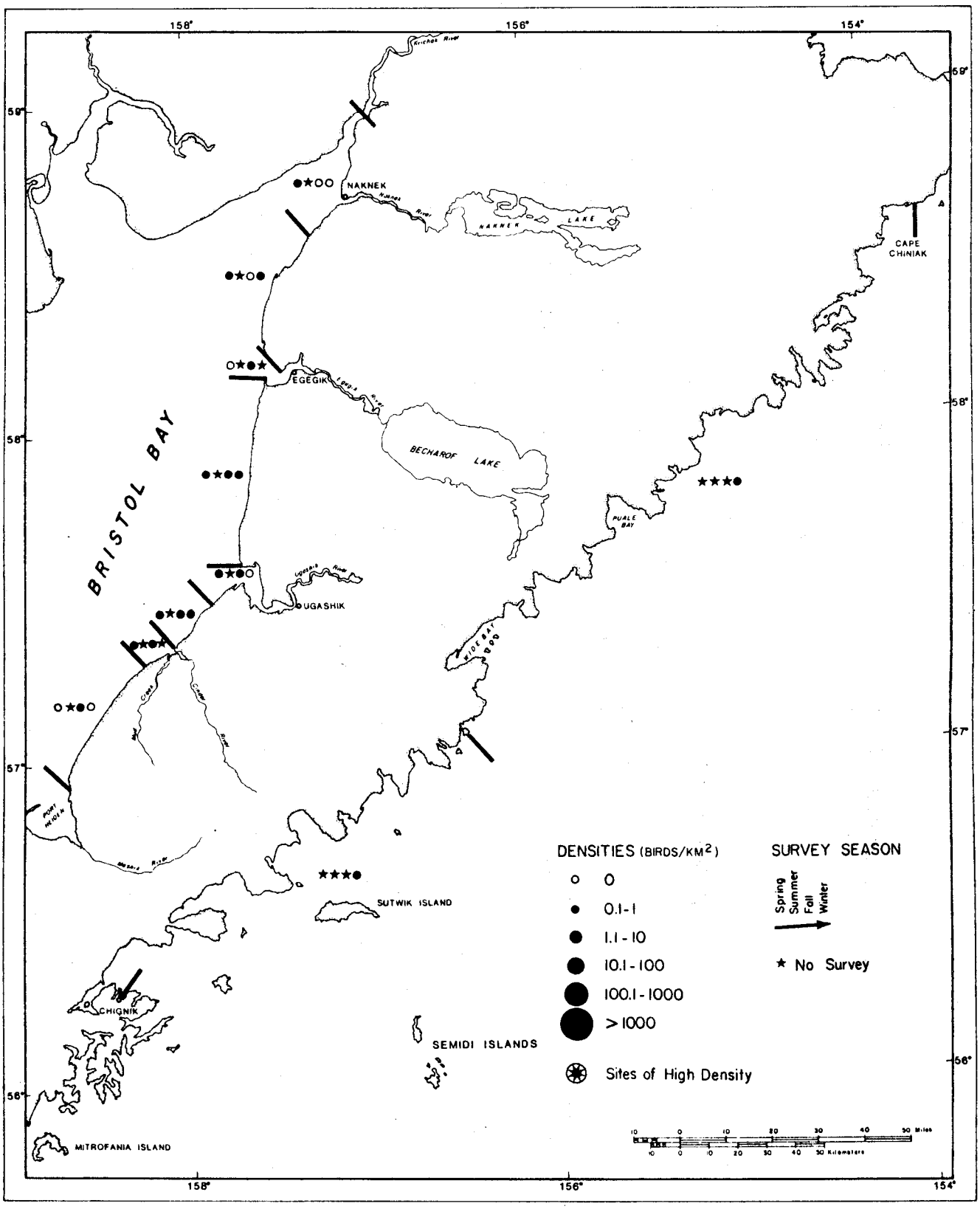


Fig. 116. Raptor density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

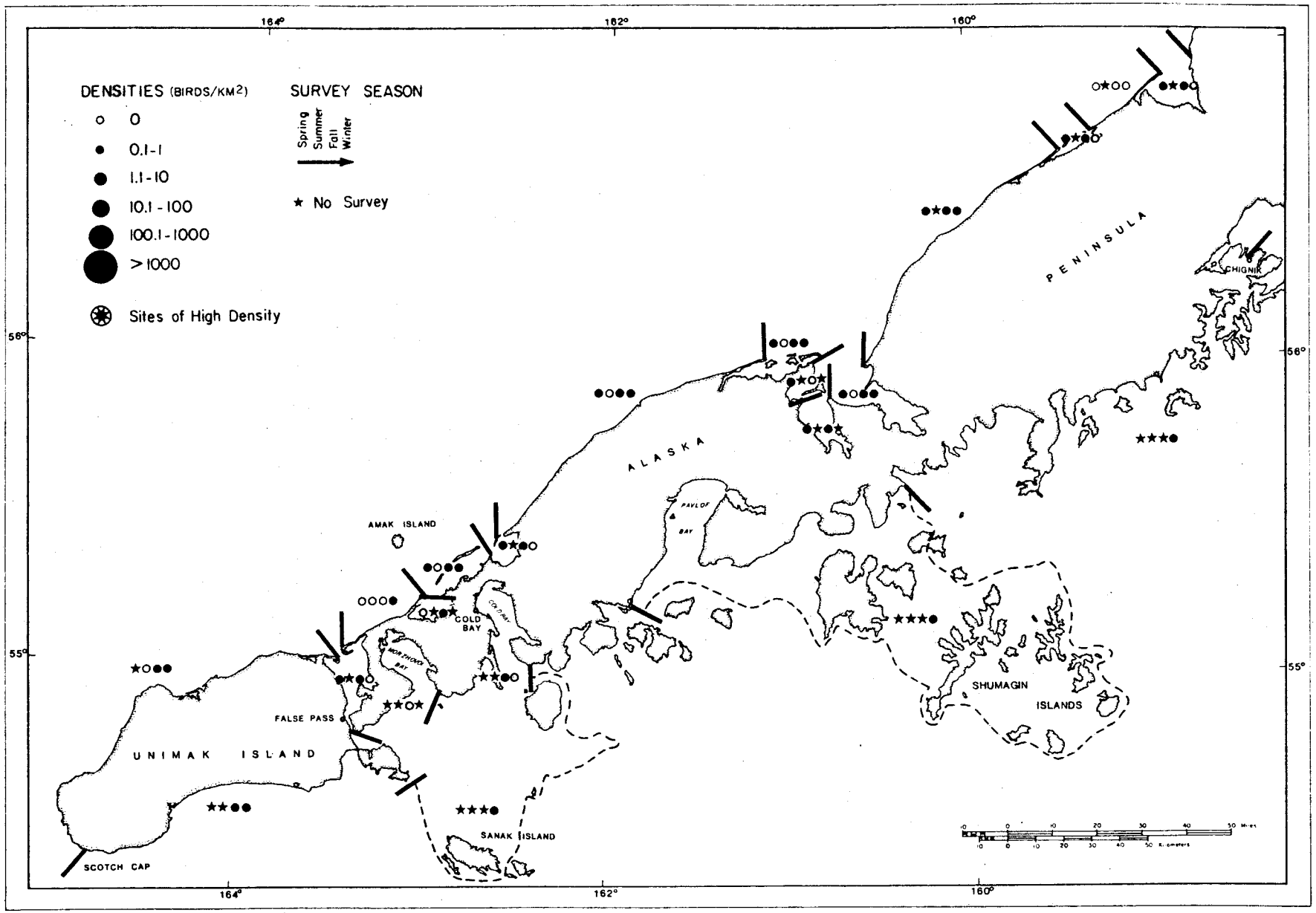


Fig. 116 (cont.). Raptor density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

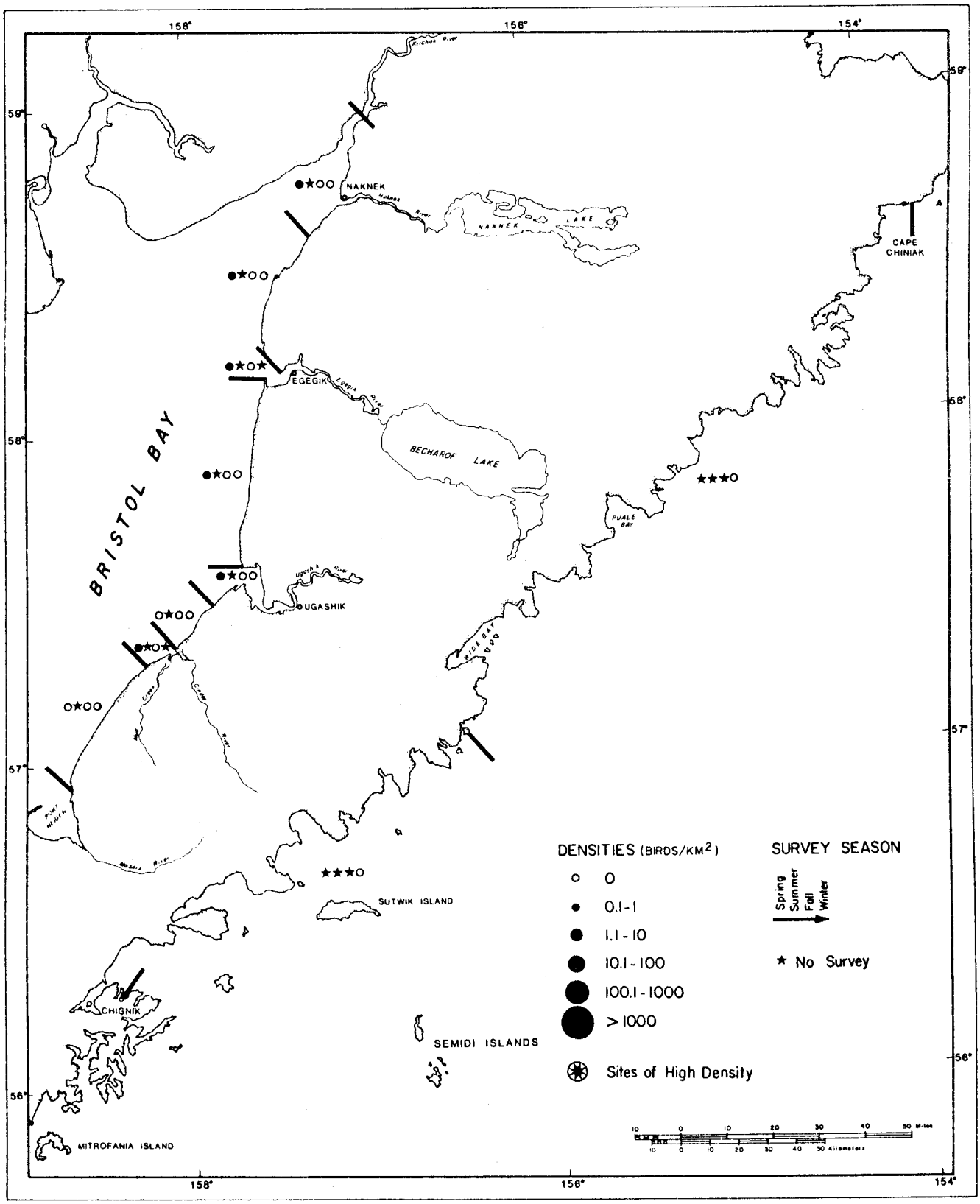


Fig. 117. Crane density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

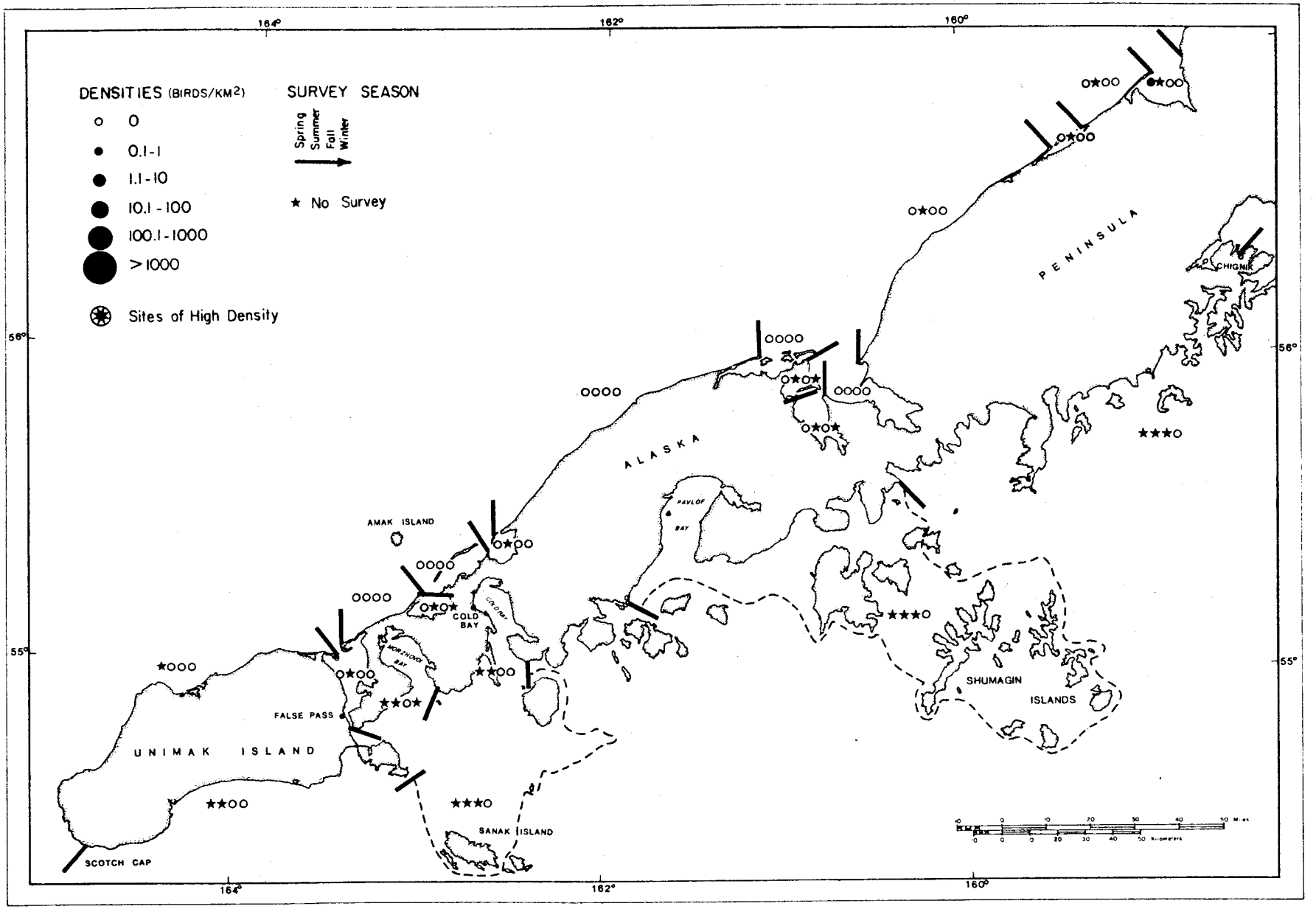


Fig. 117 (cont.). Crane density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

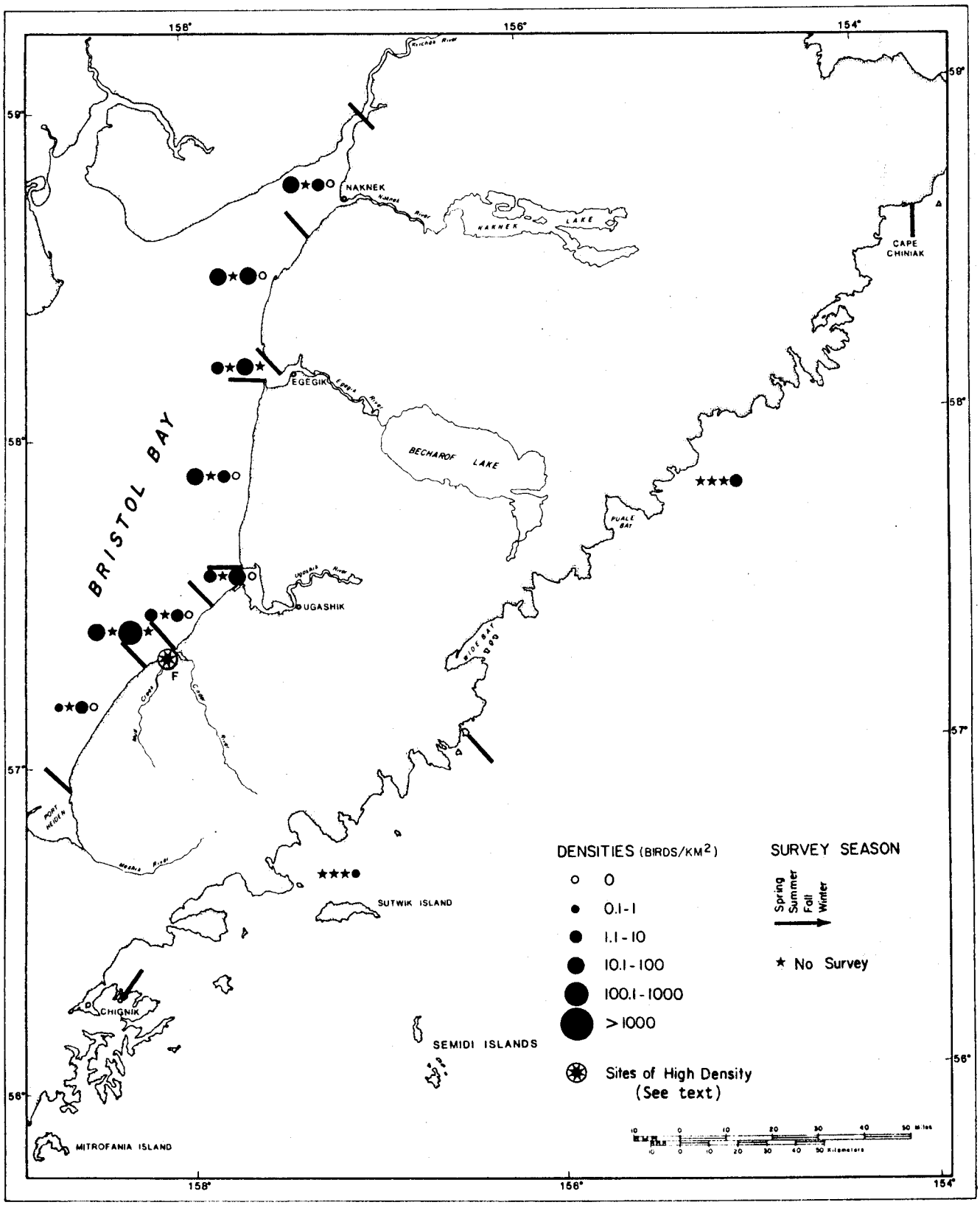


Fig. 118. Shorebird density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

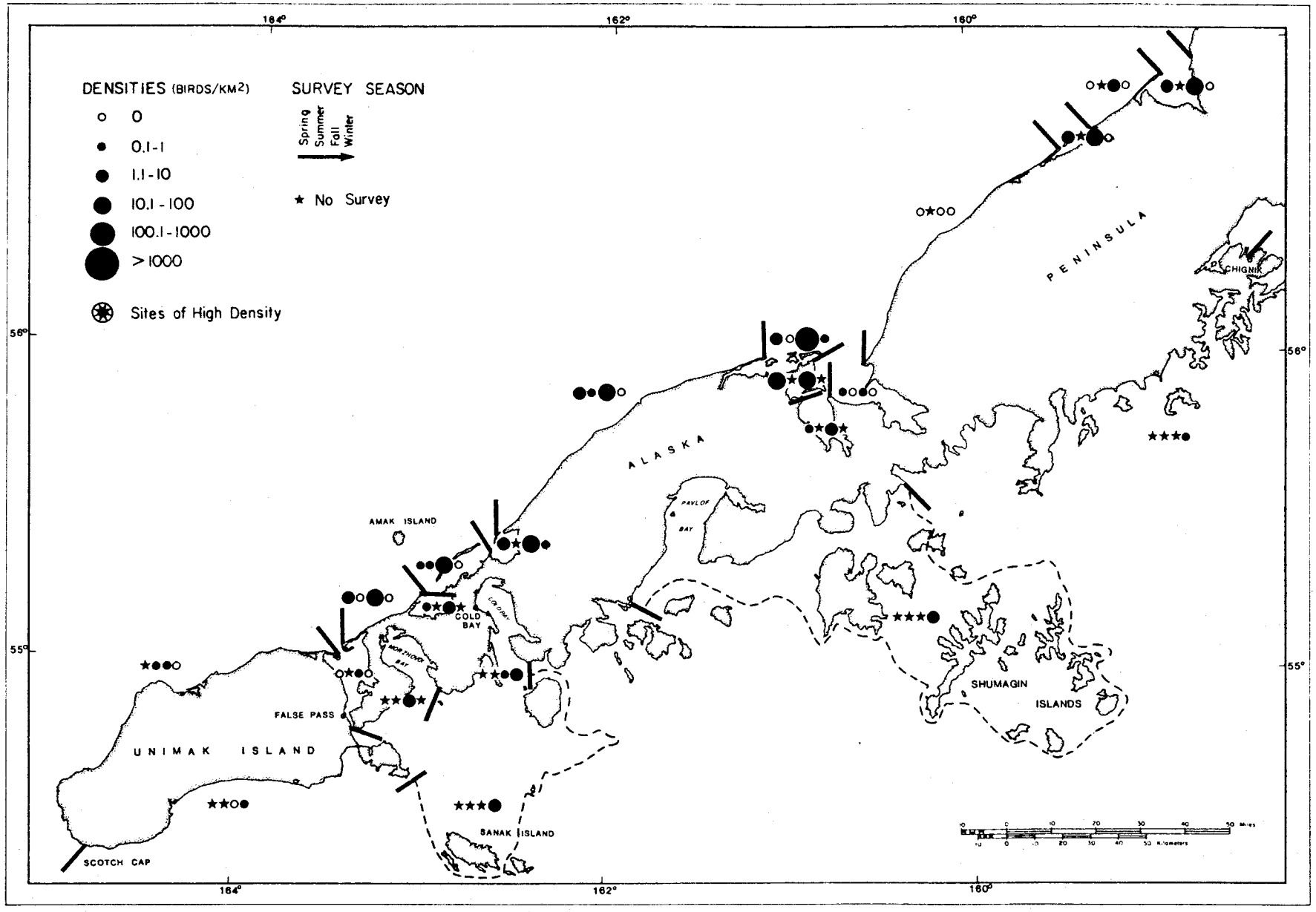


Fig. 118 (cont.). Shorebird density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

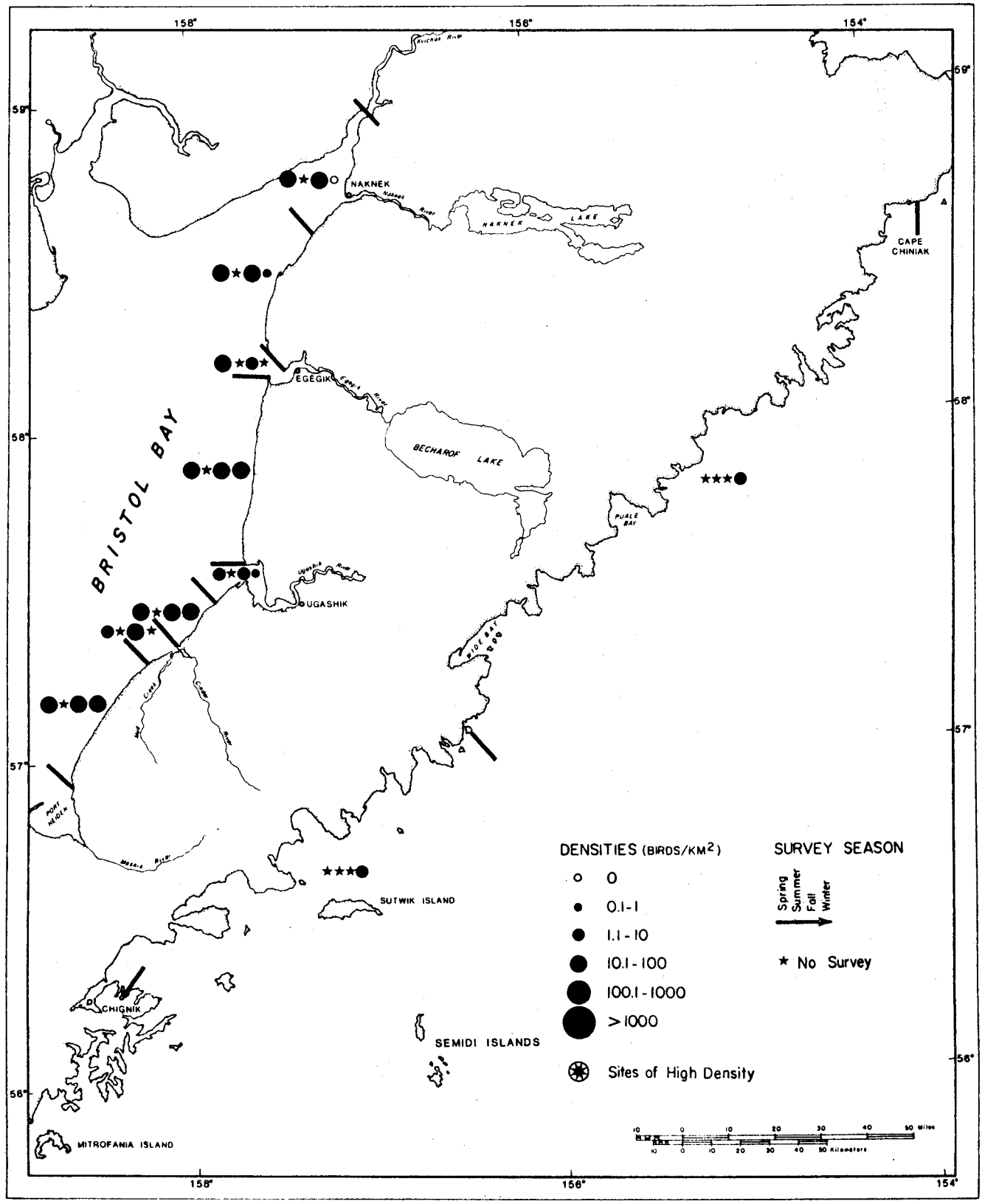


Fig. 119. Gull and jaeger density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

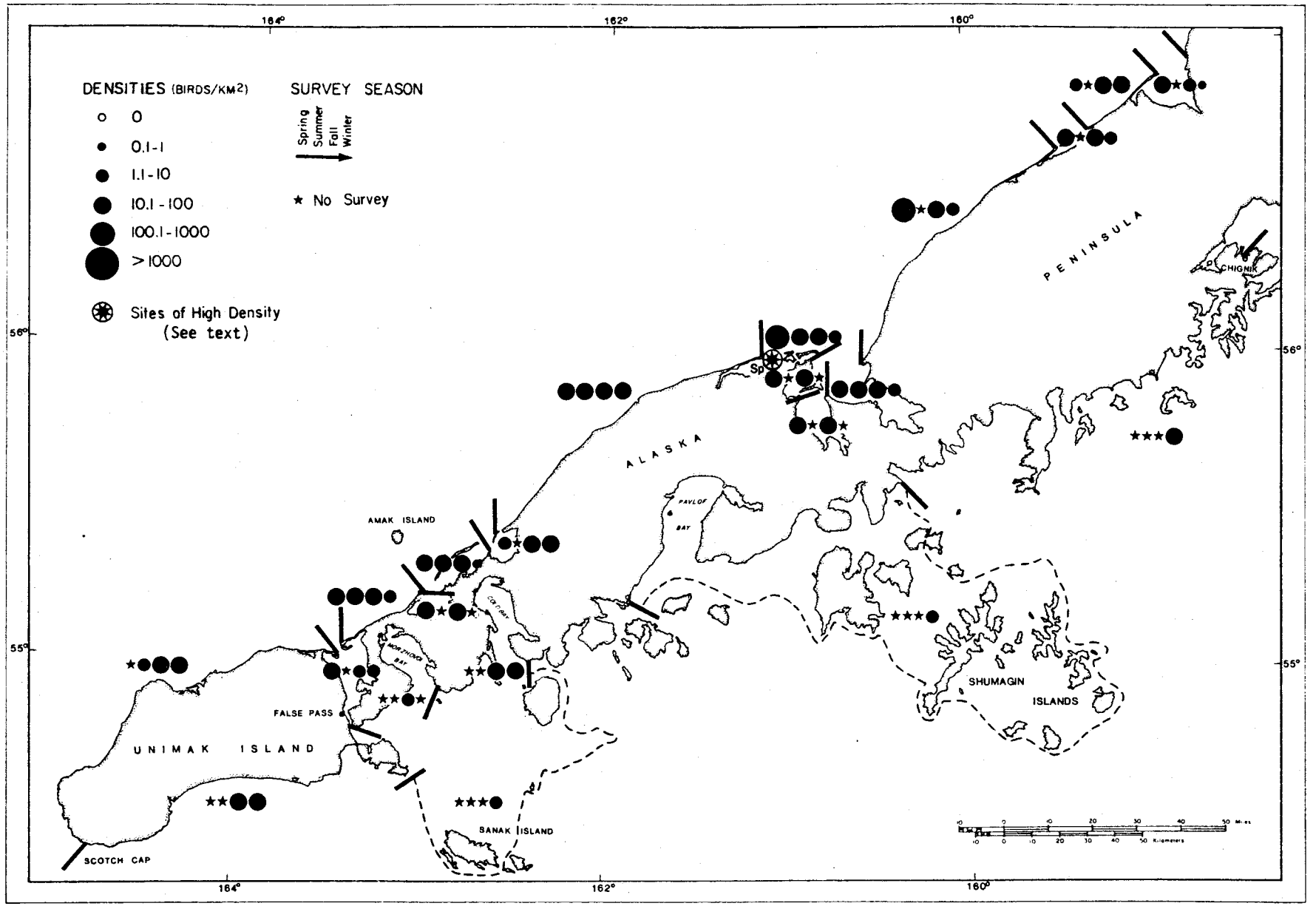


Fig. 119 (cont.). Gull and jaeger density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

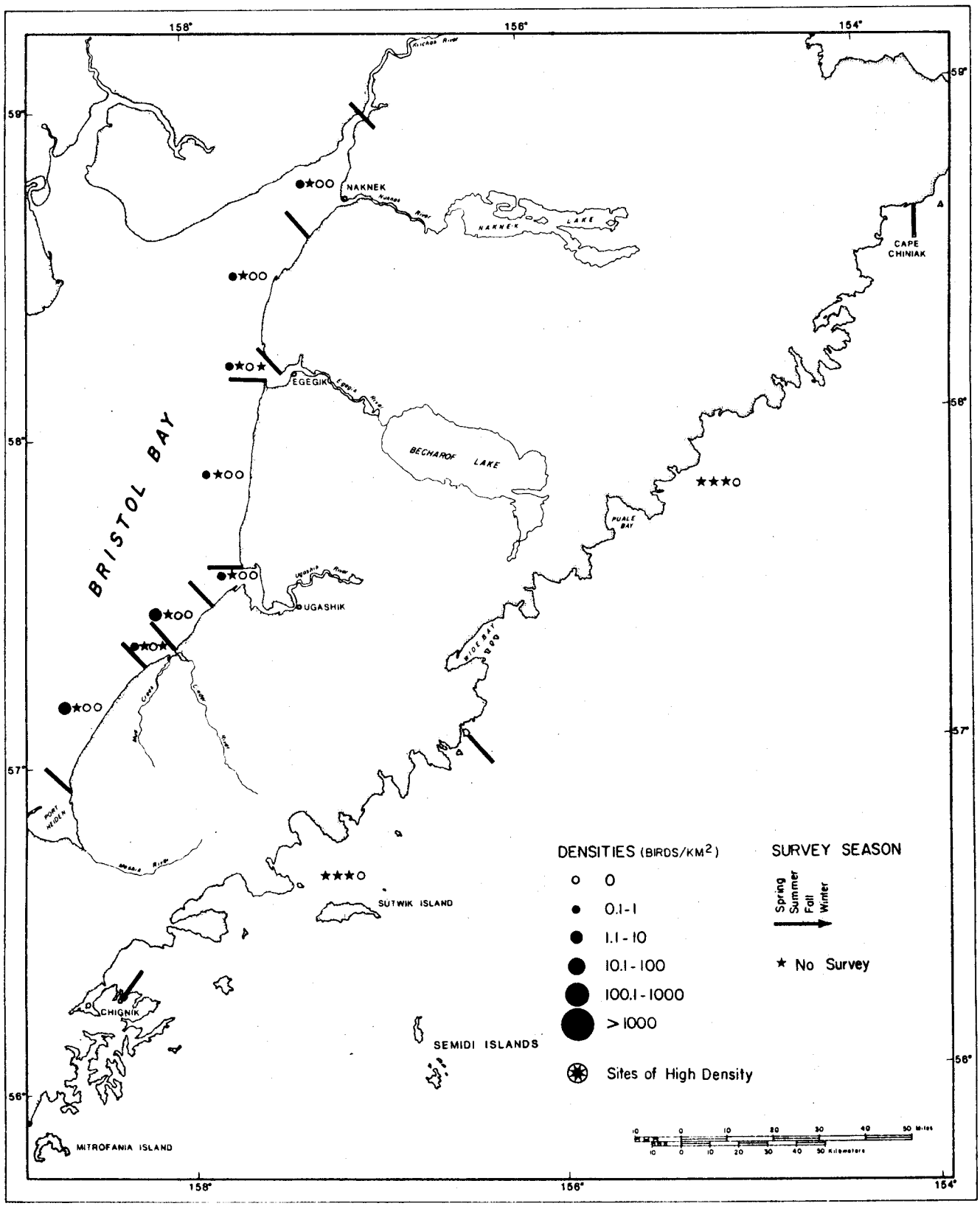


Fig. 120. Tern density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

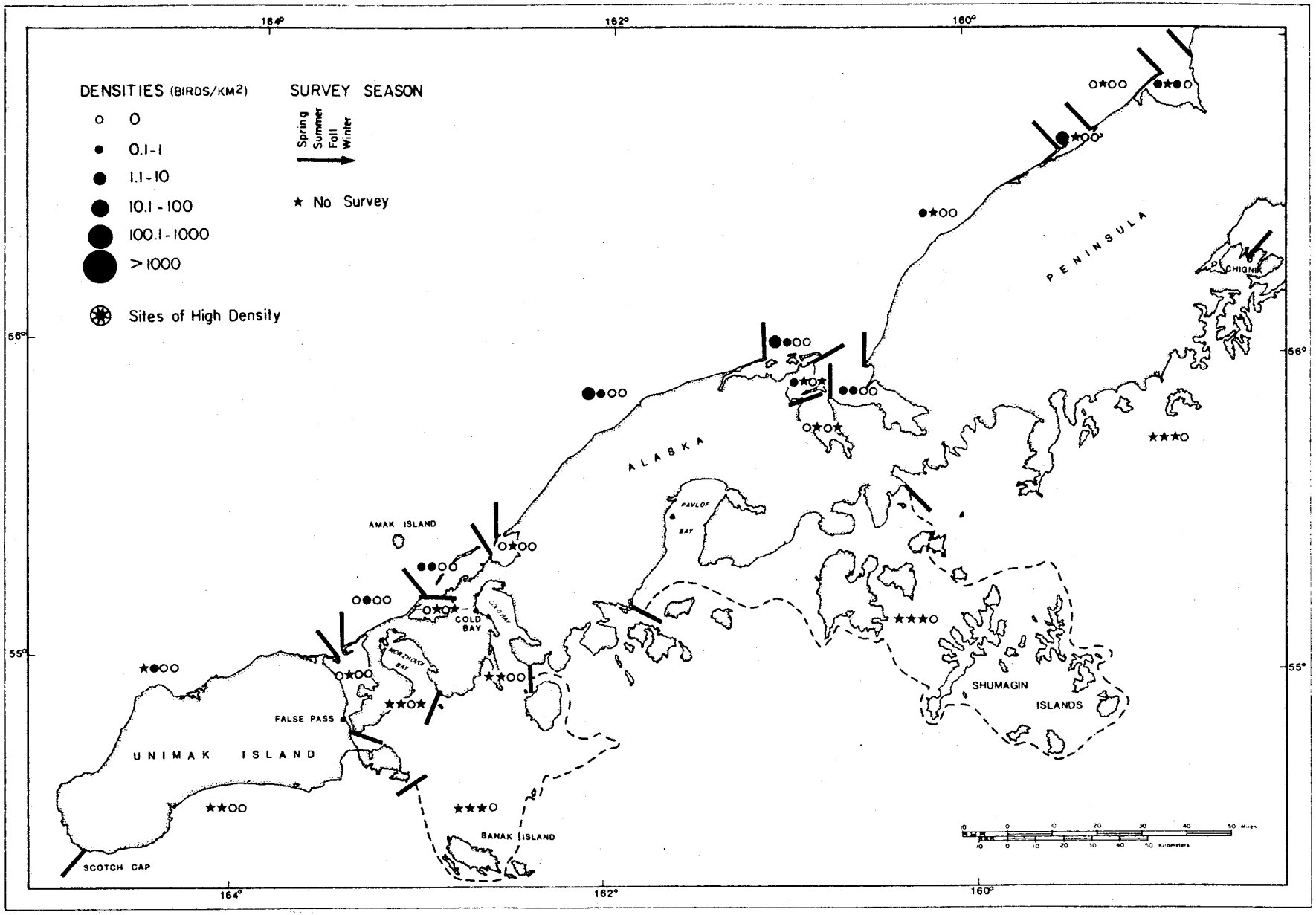


Fig. 120 (cont.). Tern density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

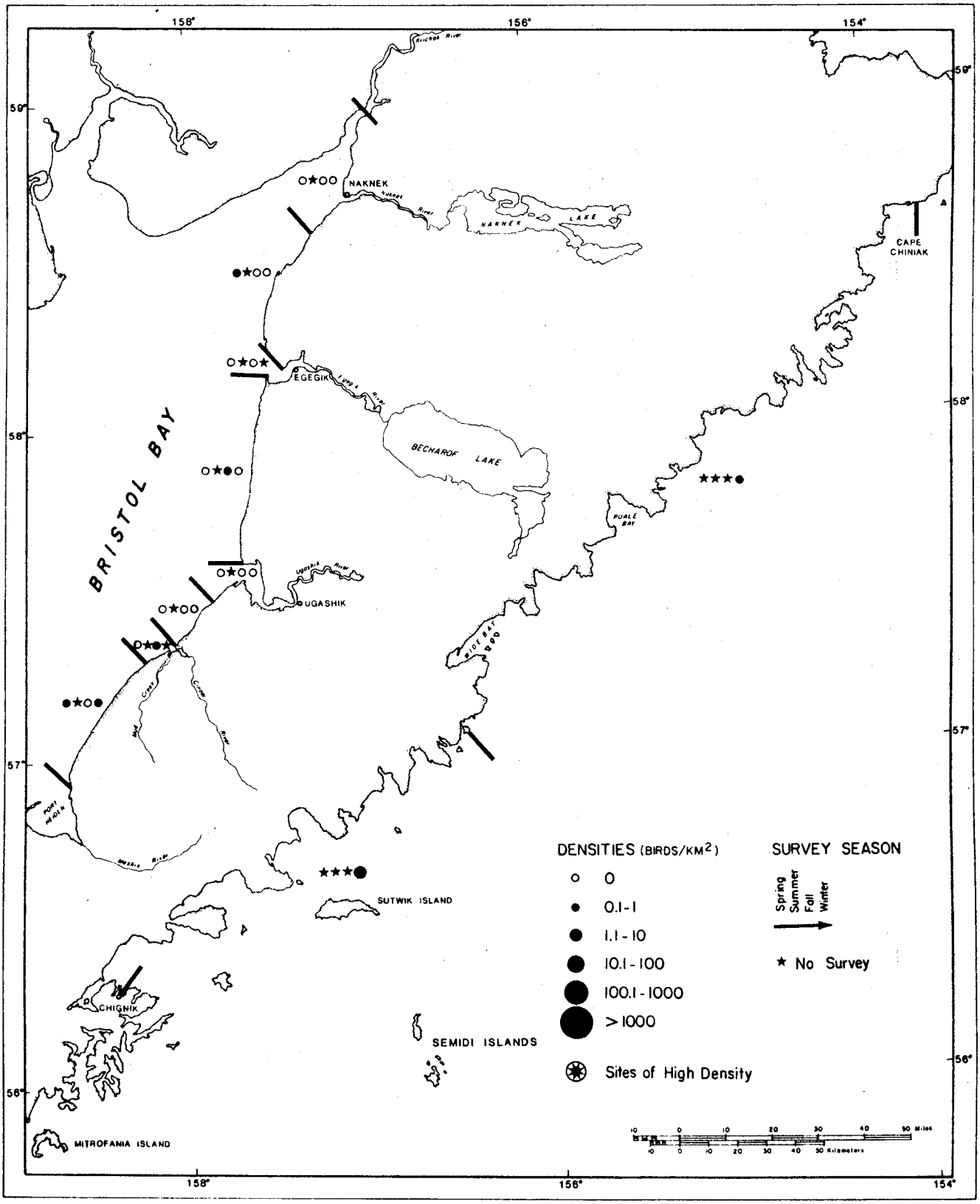


Fig. 121. Alcid density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

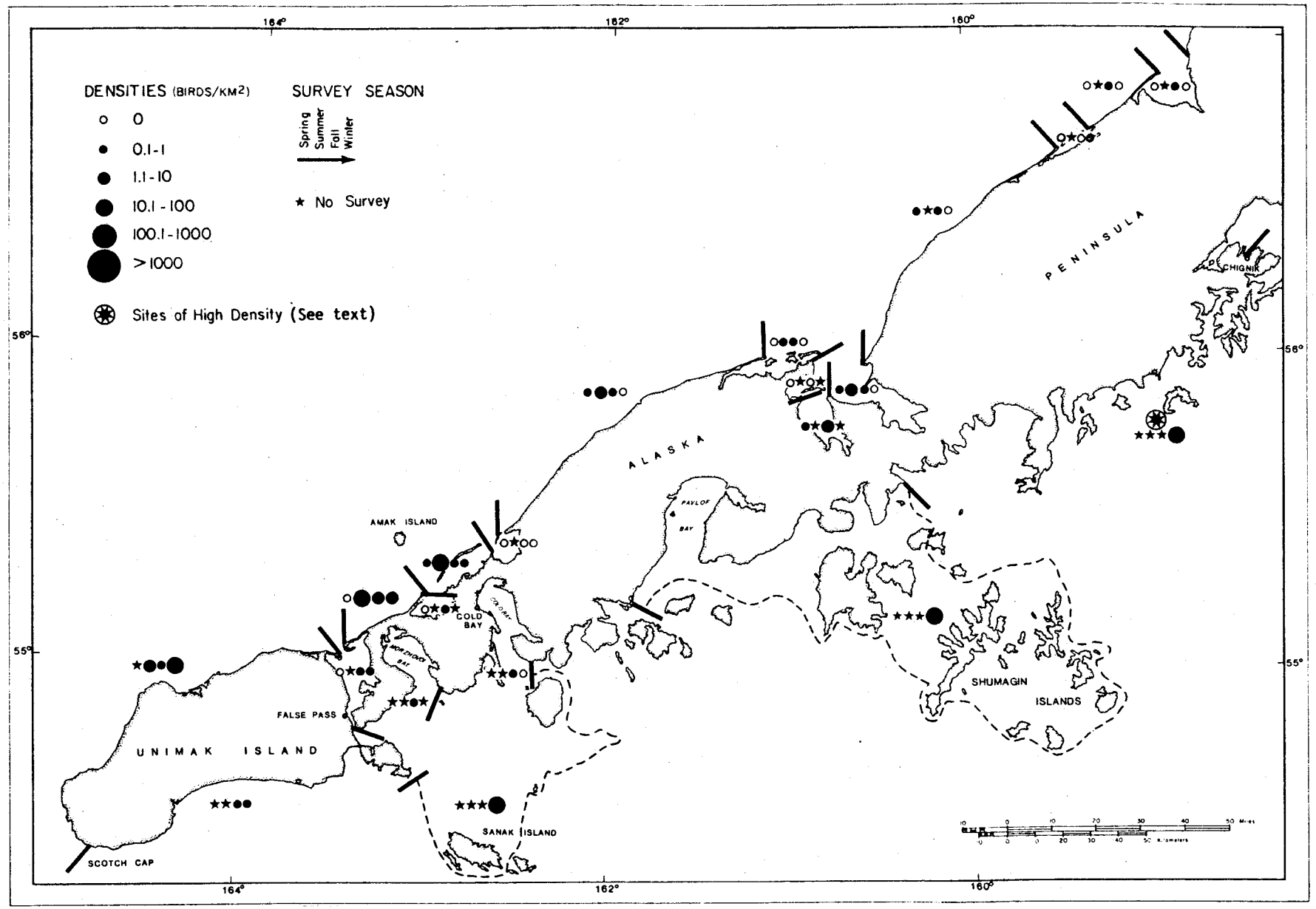


Fig. 121 (cont.). Alcid density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

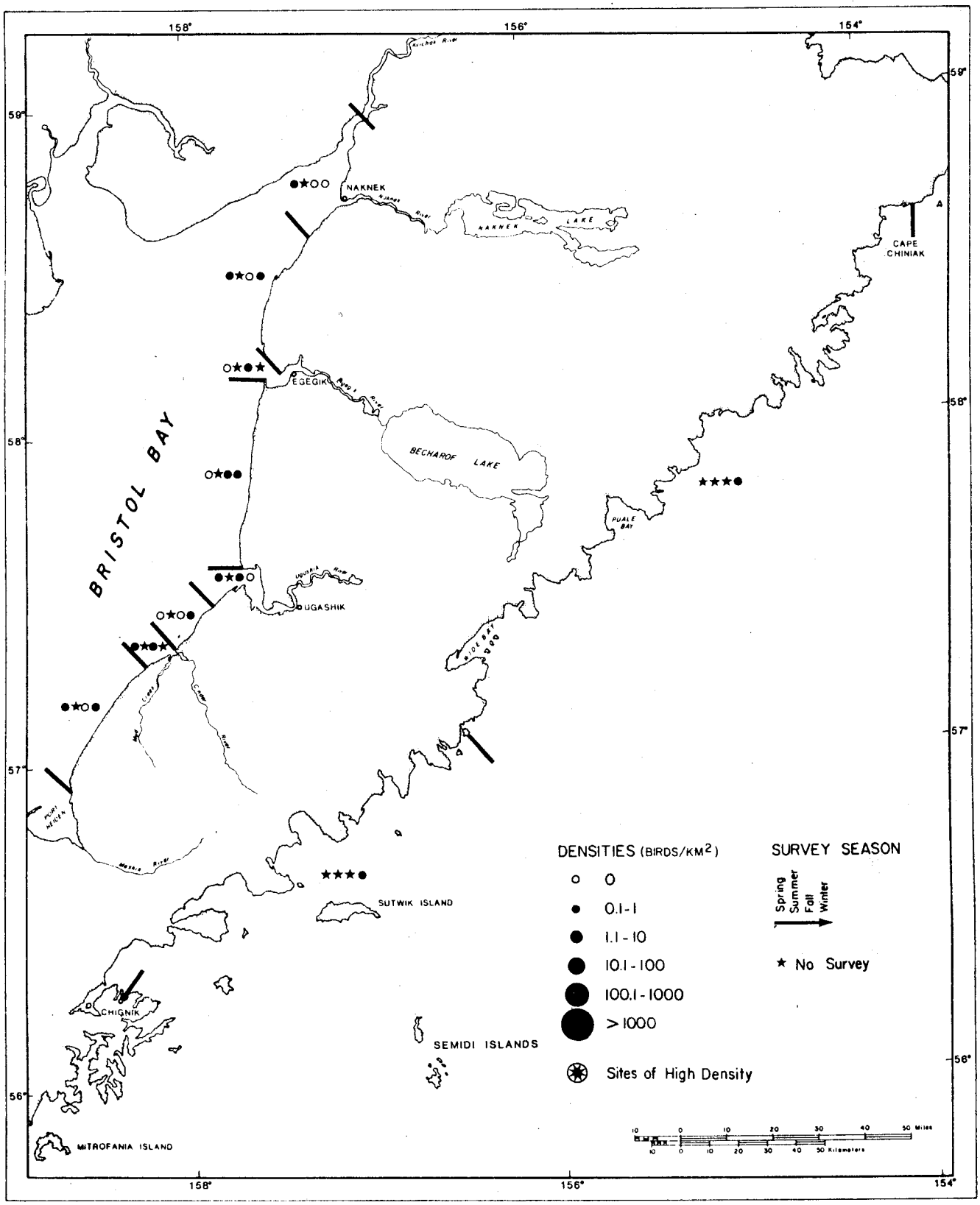


Fig. 122. Corvid density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic. (Figure continued on next page.)

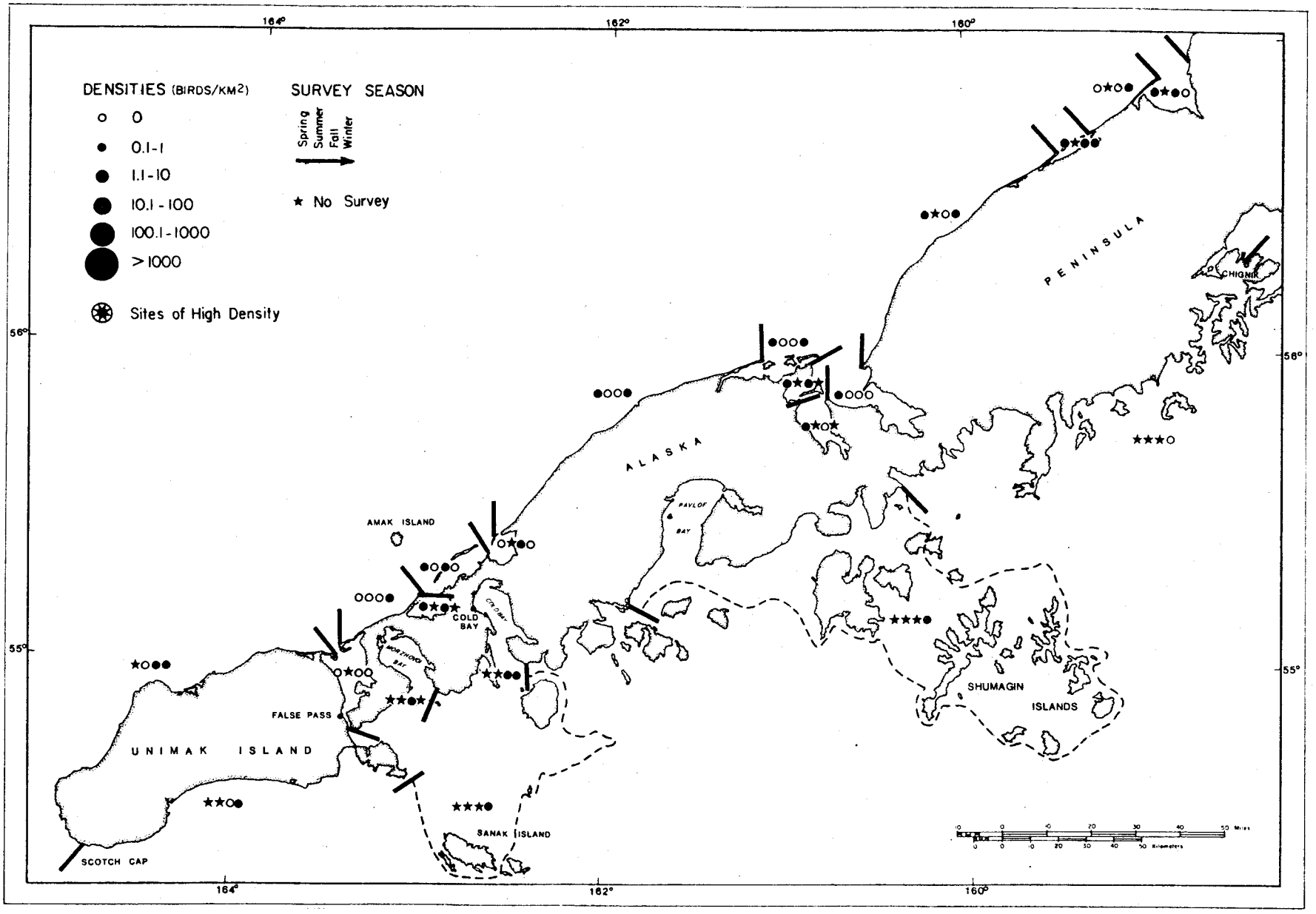


Fig. 122 (cont.). Corvid density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

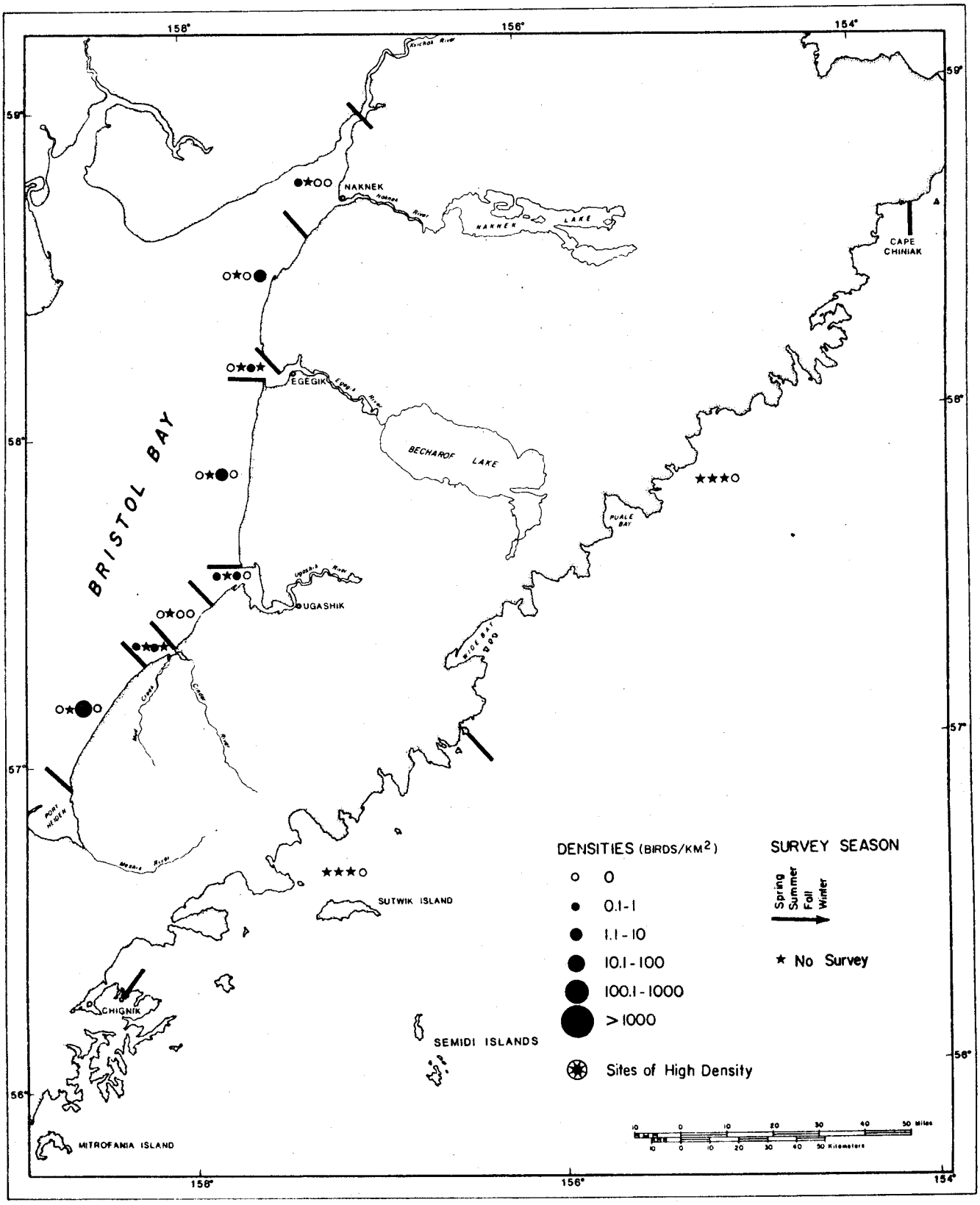


Fig. 123. Passerine (other than corvid) density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.
(Figure continued on next page.)

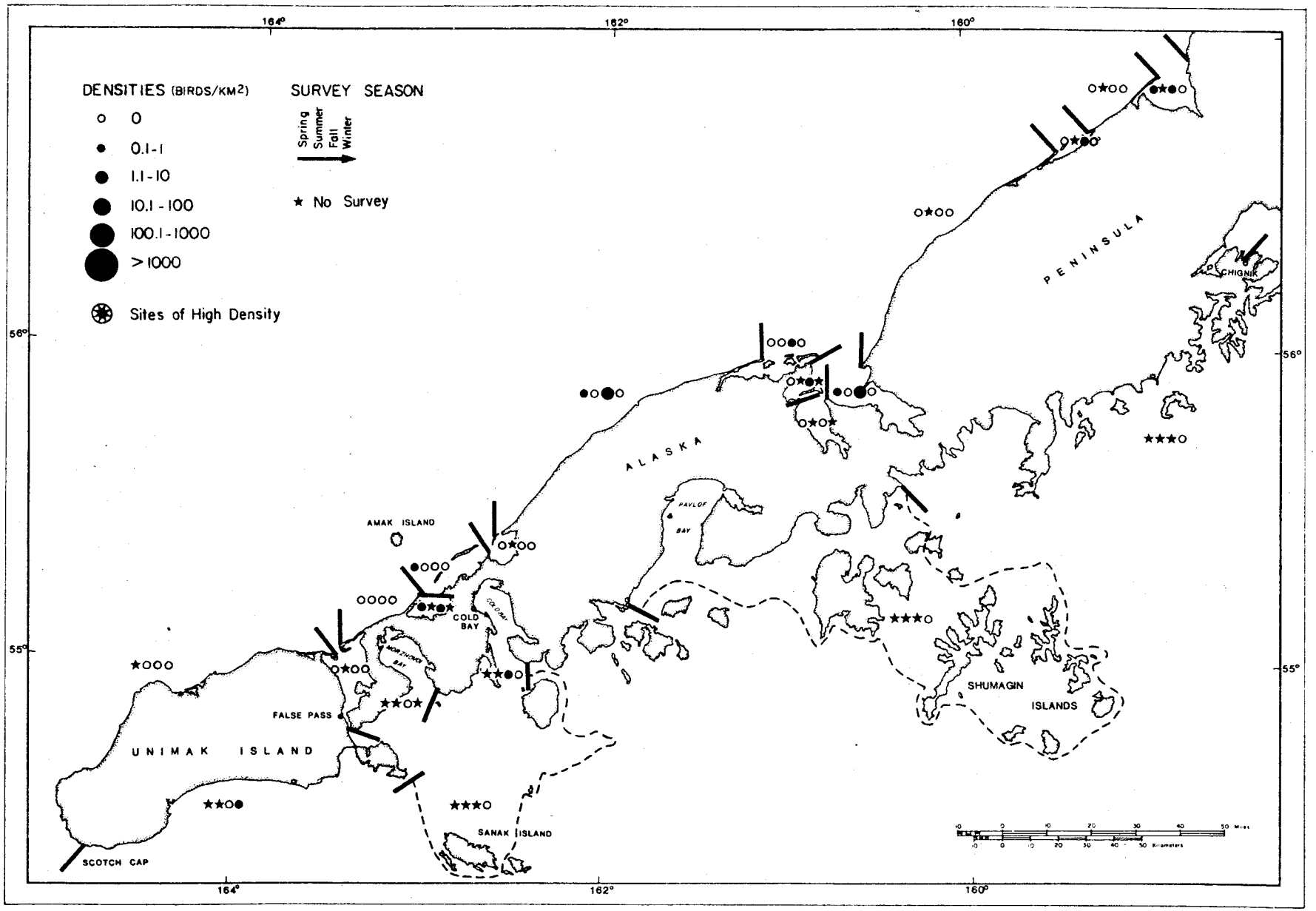
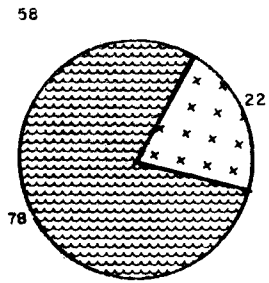
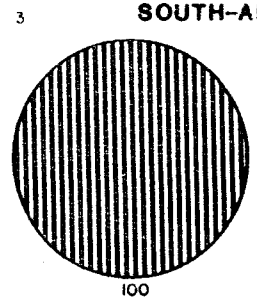


Fig. 123 (cont.). Passerine (other than corvid) density by section along North- and South-Alaska Peninsula during four seasons as determined by aerial surveys. Densities read from left to right: spring, summer, fall, winter. Spring, fall and winter were coastal surveys; summer surveys were pelagic.

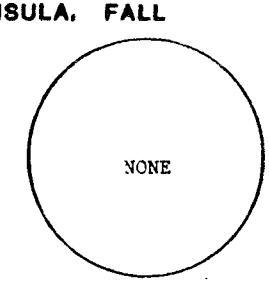
SOUTH-ALASKA PENINSULA, FALL



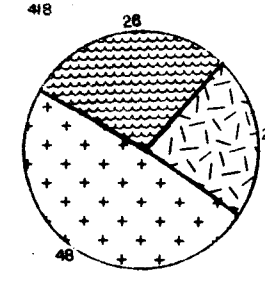
Loons



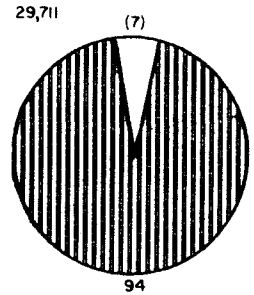
Grebes



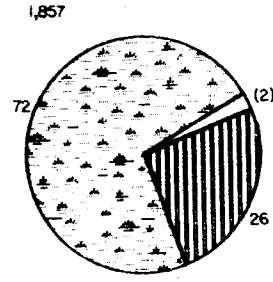
Tubenoses



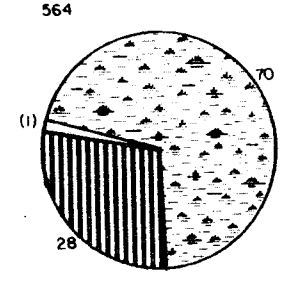
Cormorants



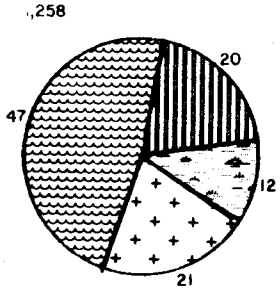
Swans and Geese



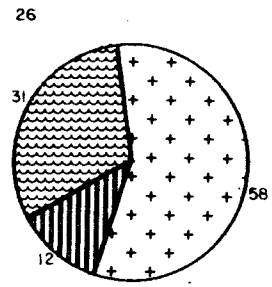
Dabblers



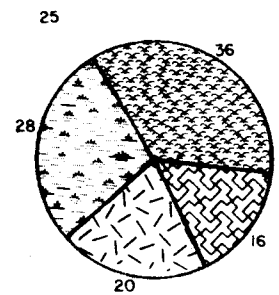
Divers



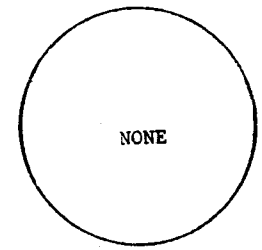
Sea Ducks



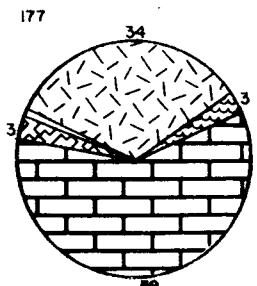
Mergansers



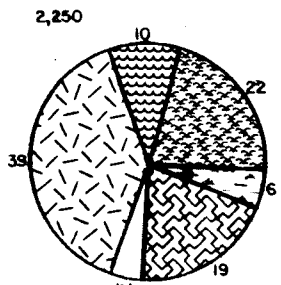
Raptors



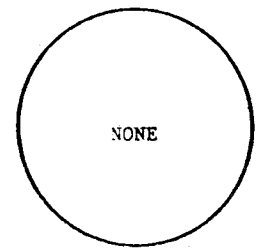
Cranes



Shorebirds



Jaegers and Gulls



Terns

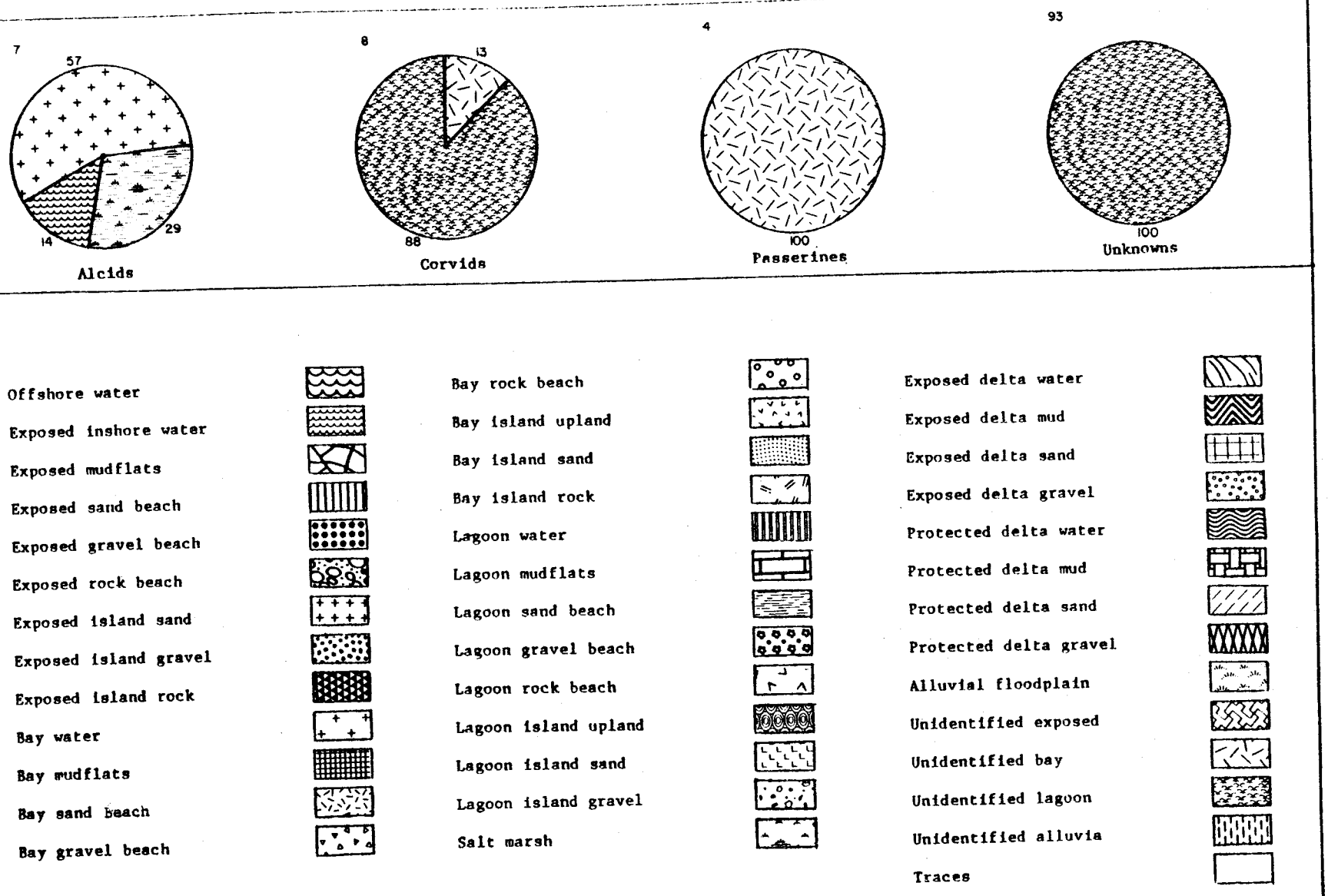
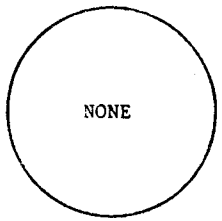
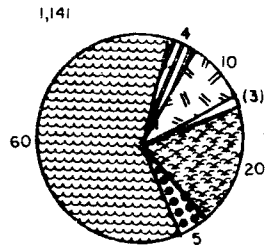


Fig. 124. South-Alaska Peninsula, Fall, 1975. Habitat preference of marine birds as determined by aerial survey. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

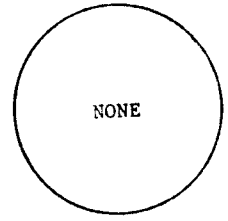
SOUTH-ALASKA PENINSULA. FALL



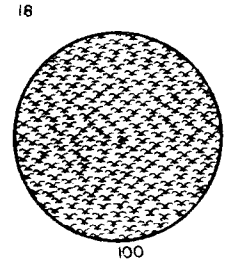
Offshore water



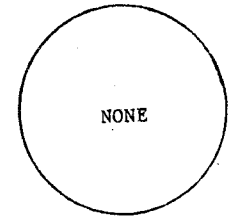
Exposed inshore water



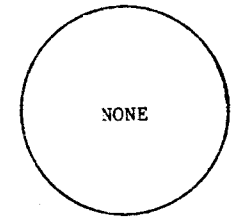
Exposed mudflats



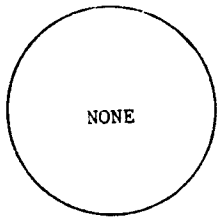
Exposed sand beach



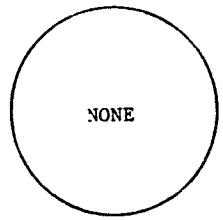
Exposed gravel beach



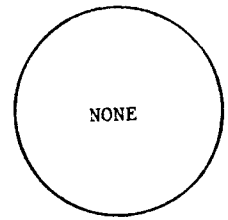
Exposed rock beach



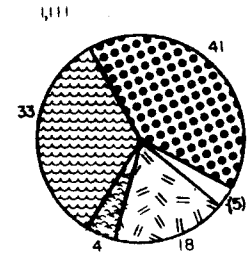
Exposed island sand



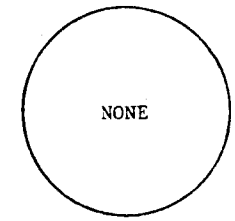
Exposed island gravel



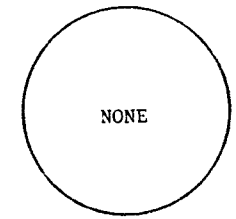
Exposed island rock



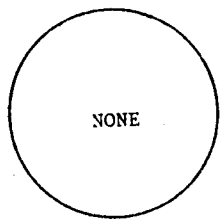
Bay water



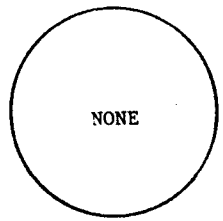
Bay mudflats



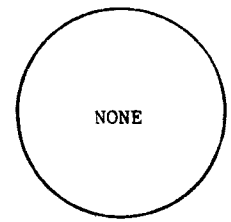
Bay sand beach



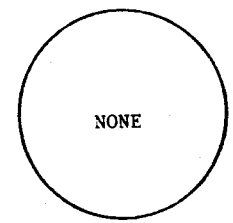
Bay gravel beach



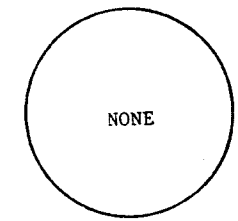
Bay rock beach



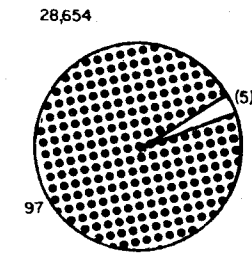
Bay island upland



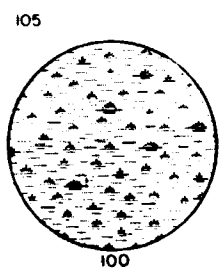
Bay island sand



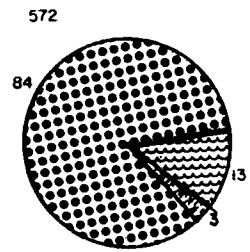
Bay island rock



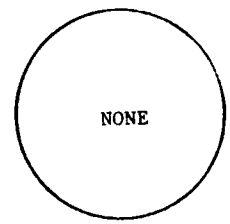
Lagoon water



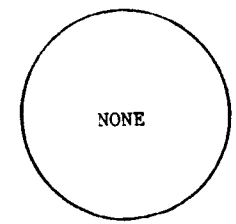
Lagoon mudflats



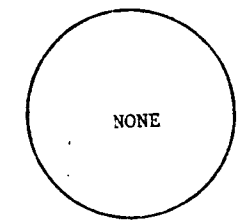
Lagoon sand beach



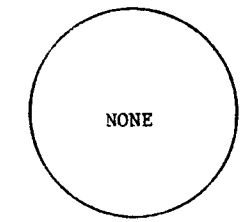
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

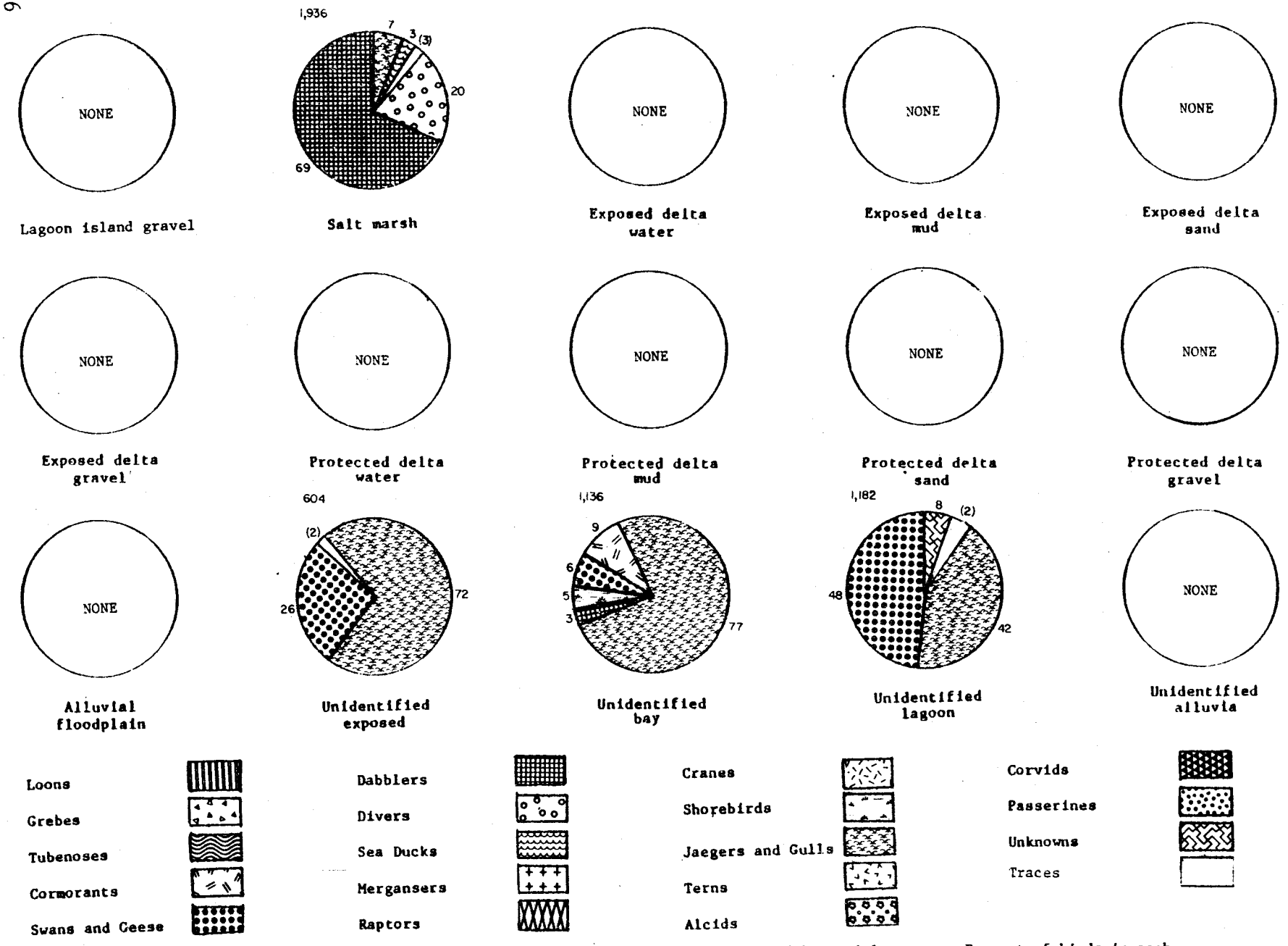


Fig. 125. South-Alaska Peninsula, Fall, 1975. Marine bird usage of habitats as determined by aerial survey. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

percent were geese, 33 percent sea ducks and 18 percent cormorants. Most of the birds on saltmarshes were dabbling ducks (69%) diving ducks (20%) and gulls (7%). Sixty percent of the birds on exposed inshore waters were sea ducks, 20 percent were gulls and 10 percent cormorants.

Habitat preferences of birds are discussed for only those seven groups with sample sizes over 100 individuals. Of 418 cormorants, 72 percent were in bay habitats and the rest (28%) were on exposed inshore waters. Ninety-four percent of the geese used lagoon waters while 72 percent of the dabblers were in saltmarshes and 26 percent on lagoon waters. Similarly, diving ducks mostly used saltmarsh habitats (70%) and lagoon water (28%). Sea ducks were divided among four habitats: 47 percent on exposed inshore water, 21 percent on bay water, 20 percent on lagoon water and 12 percent on saltmarsh. Few shorebirds were seen, but of those recorded 59 percent were on lagoon mudflats and 34 percent on unspecified bay habitats. Most habitats on which gulls were found were not classified to substrate. Forty-one percent were on bay habitats, 30 percent on exposed habitats, 23 percent on lagoon habitats and 6 percent on saltmarsh.

WINTER

Density - Sixty-seven birds/km^2 were found on exposed portions of the south side of the Alaska Peninsula in winter 1977 (Table 13). Alcids comprised 44 percent of the total, sea ducks 26 percent, gulls 14 percent, geese and cormorants 5 percent each and shorebirds 4 percent. Two subdivisions of the trackline (Sections 3 and 4) had over 100 birds/km^2 and one, Section 6, had 99 birds/km^2. Most of the 138 birds/km^2 in Section 3 were alcids (92 birds/km^2). Nearly all were murres near the colony on Spitz Island where 200,000 murres breed in summer months (Sowls et al. 1978). The 90 alcids/km^2 in Section 4 were found mainly in four locations. Rafts of murres containing up to 3,000 birds were found at The Haystacks, Murre Rocks, Chernabura Island and Bird Island (all in the Shumagin Islands). Both sea ducks and gulls had densities of 20 birds/km^2 in Section 3, abd their densities were 18 and 6 birds/km^2, respectively, in Section 4. Other bird groups had similar but lower densities on these two high density sections.

Sea ducks densities were highest (41 birds/km^2) in Section 6, the Cold Bay area, followed by 26 birds/km^2 south of Unimak Island (Section 8). There was a significant increase in densities of sea ducks in Section 6 and 8 between fall and winter (13 and 11 birds/km^2 in fall to 41 and 26 birds/km^2 in winter). Of sea ducks identified at least to genus on South-Alaska Peninsula, 69 percent were scoters, 12 percent both eiders and Oldsquaw and 6 percent Harlequin Ducks. Over 80 percent of identified scoters were Black, 11 percent were White-winged and 7 percent Surf. Most of the identified eiders were Steller's (57%) and King (32%).

Densities of gulls were highest in Section 6, the Cold Bay area, at 26 birds/km^2. In Section 8 there was a large drop in density between fall and winter (69 to 12 birds/km^2). Geese (all Emperors) reached highest densities in Section 1, the Shelikof Strait area, where 10 birds/km^2

were found. Cormorants were found in almost equal densities (2-4 birds/km^2) in all sections surveyed. Shorebirds and loons were found in all sections; shorebirds in densities up to 7 birds/km^2 and loons only in trace amounts. Dabblers were found in only four of the sections, but 9 birds/km^2 wintered in Section 6. Bald Eagles were regularly seen on small islands offshore but never in high densities.

Habitat Usage - Based on our survey, nothing definite can be said about habitat preferences of birds on South-Alaska Peninsula in winter because of the type of survey conducted. The nature of the survey was to search exposed rocky habitats and, therefore, most birds were found there. Winter habitat usage data are presented in Figs. 126 and 127. Only 16 habitat types were recorded. Eighty-five percent of the birds were on exposed habitats. Most (68% of total) were on exposed water while 7 percent were on exposed island rock and 5 percent on exposed rock beach. On exposed inshore water over one-half (55%) the birds were alcids, 32 percent sea ducks and 9 percent gulls. On exposed island rock, the majority of birds were Emperor Geese, and on rock beaches cormorants predominated. Gulls and shorebirds also were common on rocky habitats.

Seven percent of the total birds were on offshore waters, of which 88 percent were alcids and 8 percent sea ducks. The percentage of birds observed on this habitat appeared inordinately low considering the amount of time spent and distance covered in pelagic waters.

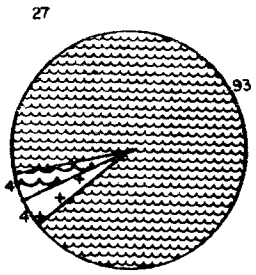
On this survey, bay habitats had 5 percent of the birds. Over 70 percent of these birds were sea ducks and over one-fourth were Emperor Geese. Sixty-five percent of the birds on lagoon waters were sea ducks while on saltmarshes most birds were diving and dabbling ducks.

Sample sizes were relatively large for six species groups, and this gave the best indication of habitat selection by these bird groups. Cormorants utilized exposed inshore water (32%) and exposed rock beach (31%) to the same extent, and 23 percent were on exposed island rock. Geese (all Emperors) were mostly on exposed island rock (46%) but also on bay waters (24%) and exposed inshore water (9%). Eighty-three percent of the sea ducks were on exposed inshore waters and 13 percent were on bay water. Shorebirds were found most often on exposed island rock (39% of total) and on exposed rock beach (36%). Eleven habitats were used by gulls, but the majority were on four types: exposed inshore water (45%), exposed sand beach (14%), exposed island rock (13%) and exposed rock beach (10%). Almost 86 percent of the alcids were on exposed inshore water and the remainder were on offshore water.

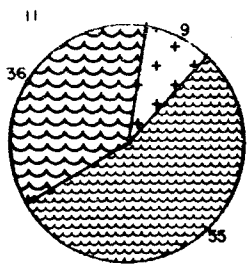
NORTH - ALASKA PENINSULA

Nine separate surveys were conducted in the North-Alaska Peninsula region, each with varying amounts of coverage and with variable types of habitats searched. Two spring surveys were completed in 1977: the first was an abbreviated survey by helicopter covering only the northwestern 14 stations from Cape Horn to Egegik Bay; the second, by fixed-wing

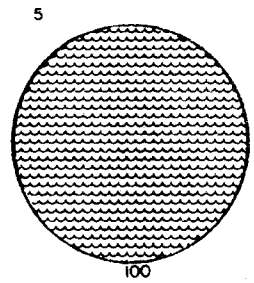
SOUTH-ALASKA PENINSULA. WINTER



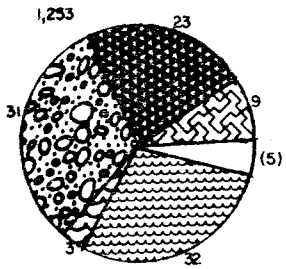
Loons



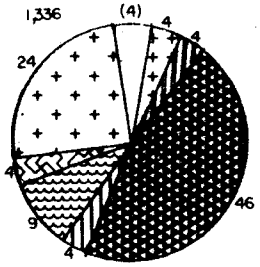
Grebes



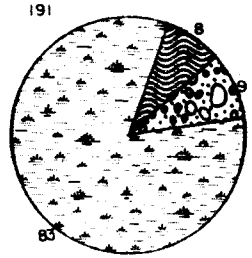
Tubenoses



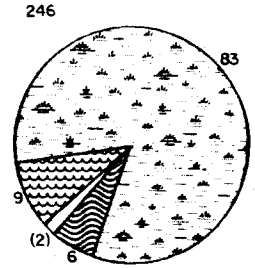
Cormorants



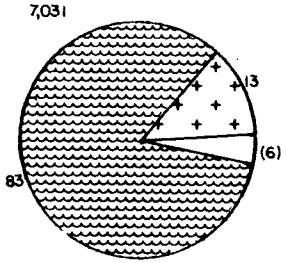
Swans and Geese



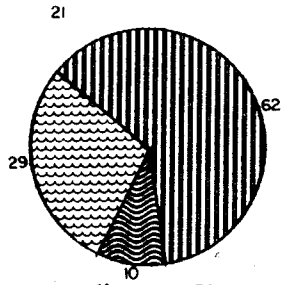
Dabblers



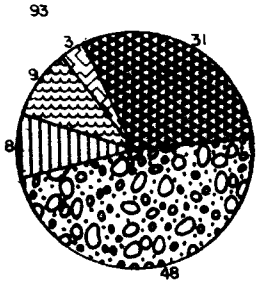
Divers



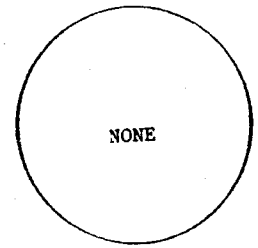
Sea Ducks



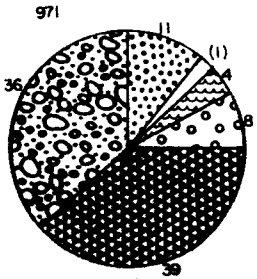
Mergansers



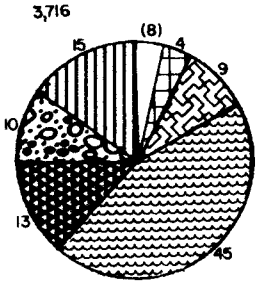
Raptors



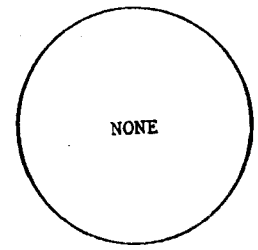
Cranes



Shorebirds



Jaegers and Gulls



Terns

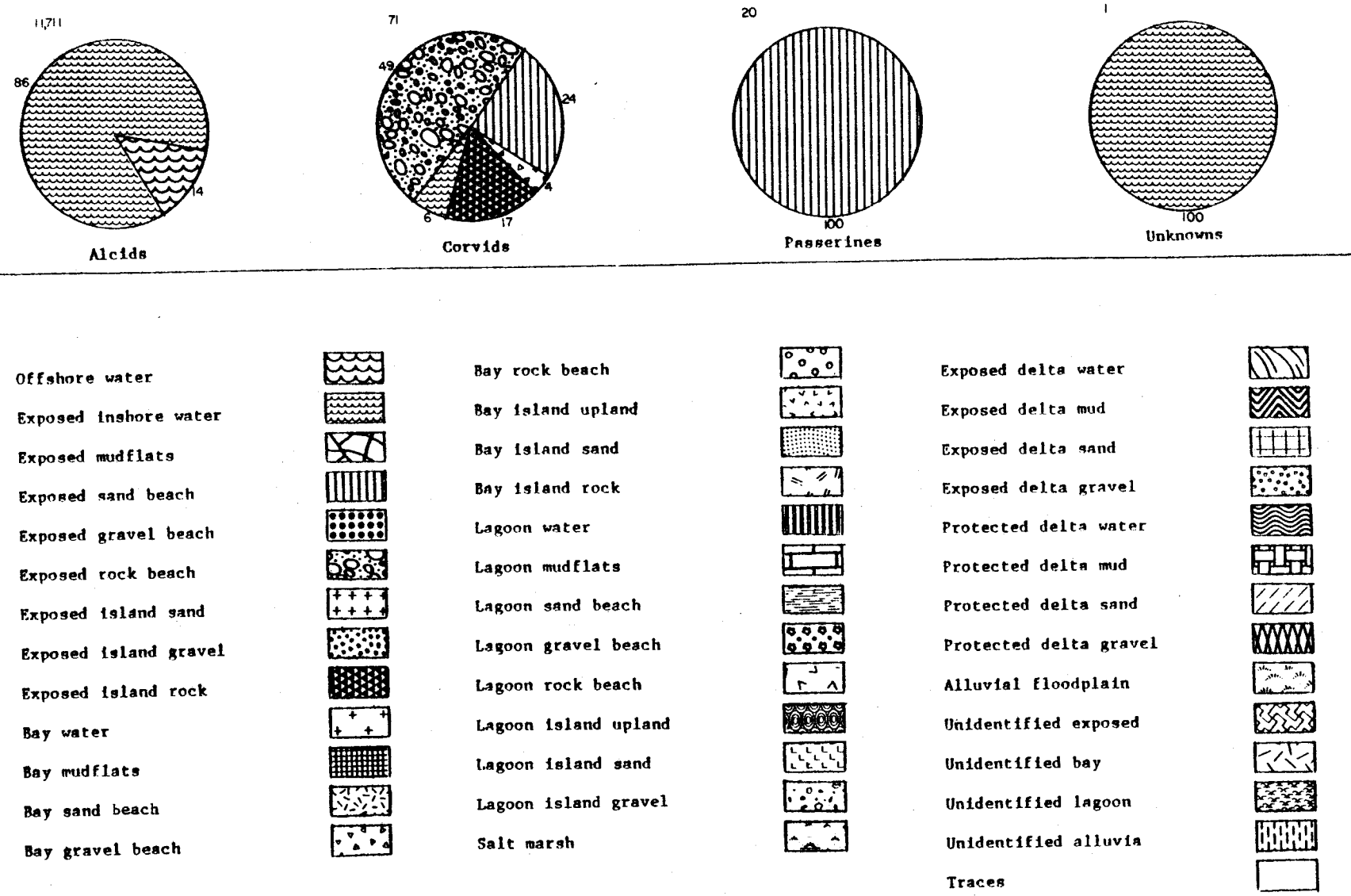
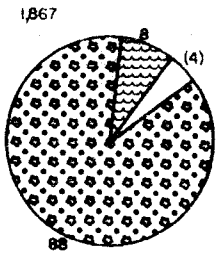
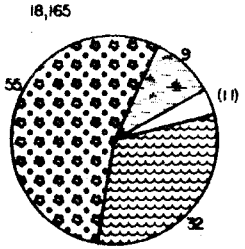


Fig. 126. South-Alaska Peninsula, Winter, 1977. Habitat preference of marine birds as determined by aerial survey. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

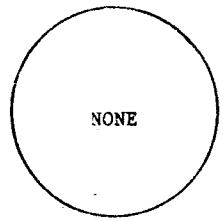
SOUTH-ALASKA PENINSULA. WINTER



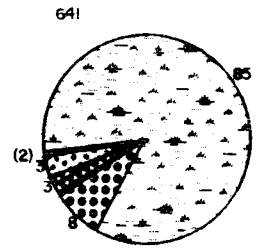
Offshore water



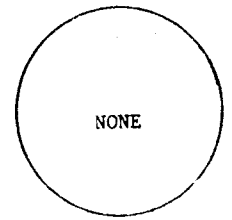
Exposed inshore water



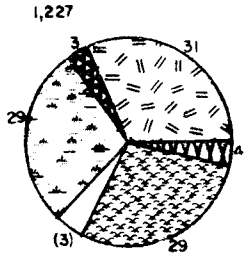
Exposed mudflats



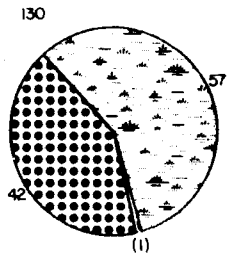
Exposed sand beach



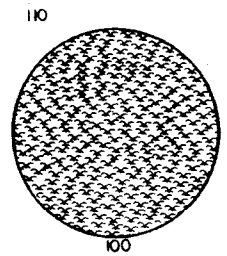
Exposed gravel beach



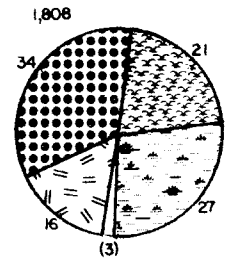
Exposed rock beach



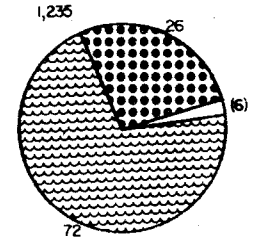
Exposed island sand



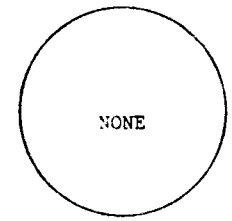
Exposed island gravel



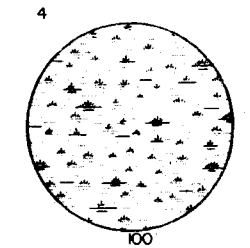
Exposed island rock



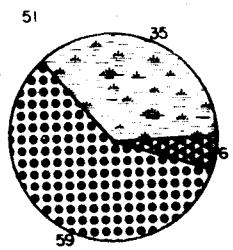
Bay water



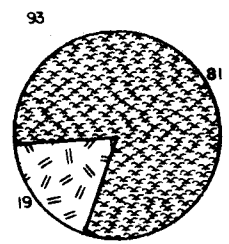
Bay mudflats



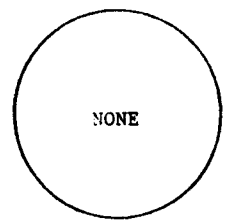
Bay sand beach



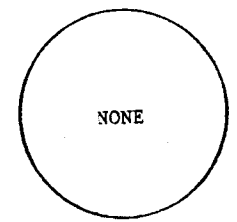
Bay gravel beach



Bay rock beach



Bay island upland



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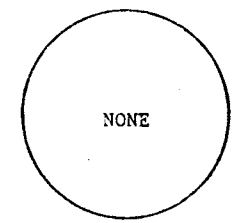

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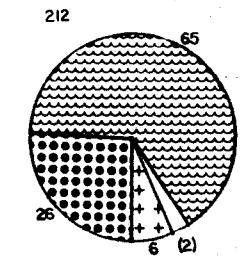
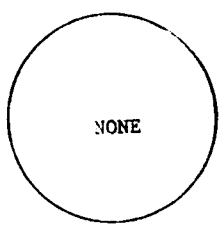
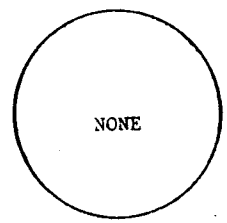


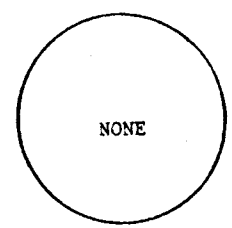
Lagoon water



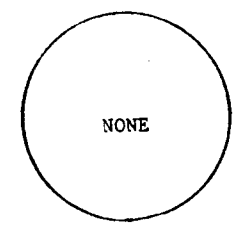
Lagoon mudflats



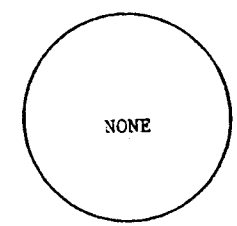
Lagoon sand beach



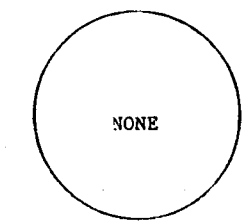
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

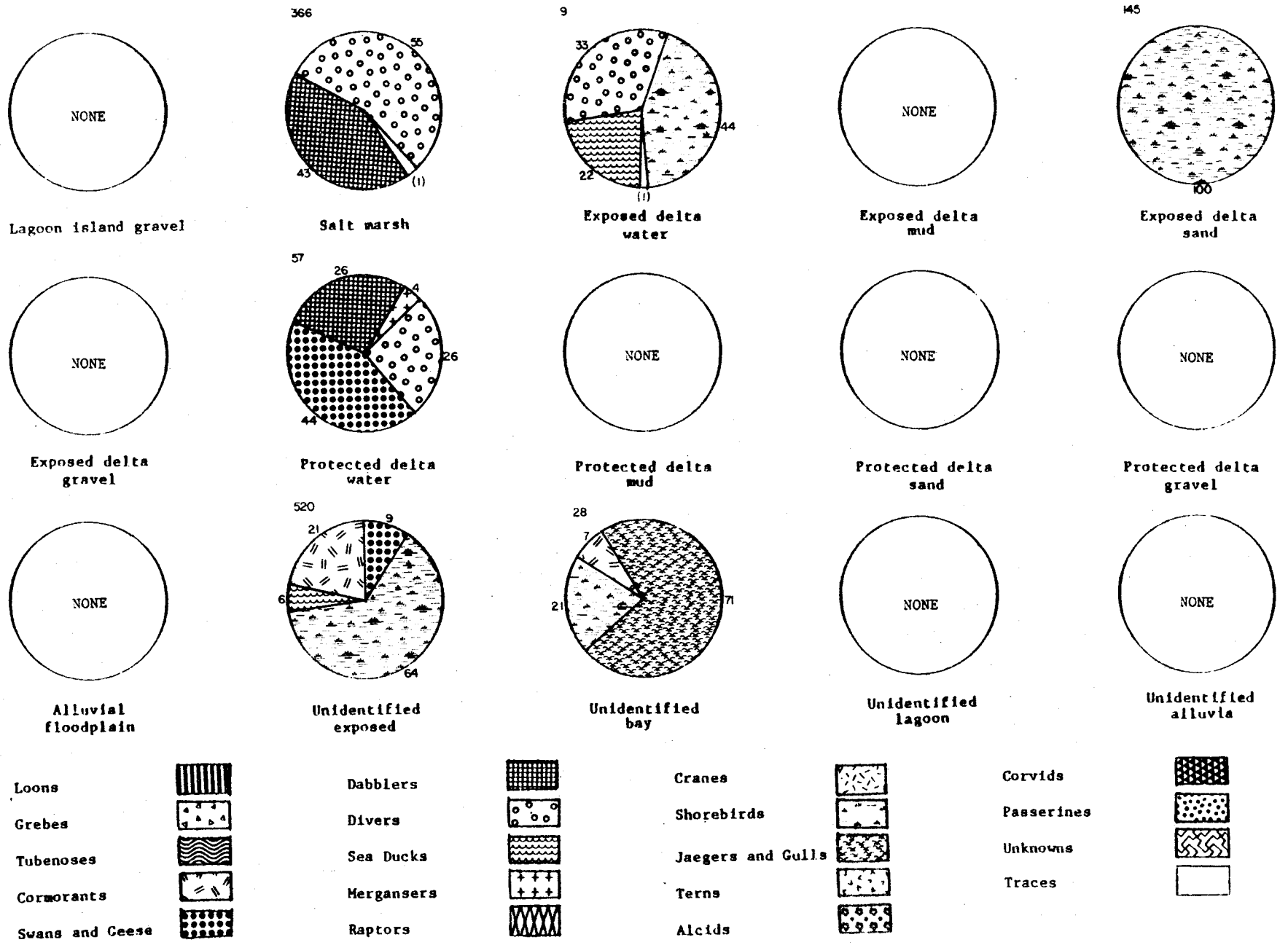


Fig. 127. South-Alaska Peninsula, Winter, 1977. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

aircraft, covered the entire shoreline to St. Catherine Cove in Bechevin Bay. Both summer surveys were pelagic and both were conducted in conjunction with marine mammal surveys. In fall, two surveys were conducted, one in October 1975 and one in October 1976. The first covered most of the coast from Naknek River to Otter Point on Unimak Island including the estuaries. On the second survey, estuaries were covered from Egegik to Bechevin Bay. Three partial winter surveys were conducted and, in general, only coastal areas and not estuaries were searched for birds. Some offshore water was surveyed on one winter survey.

For data summary, the coast from Cape Horn in the Kvichak River to Scotch Cap on Unimak Island was subdivided into 23 sections (Fig. 105). Section boundaries changed when there was a major change in physiographic features. In general, sections denoted exposed coast and various types of estuaries. Bird density data for all seasons are shown by section in Figs. 106-123.

SPRING

Density - The mean density for North-Alaska Peninsula in spring was 141 birds/km^2 (Table 14). Highest density (849 birds/km^2) was in Section 16, Nelson Lagoon followed distantly by Section 20, Applegate Cove of Izembek Lagoon, with 358 birds/km^2. Eleven sections had densities over 100 birds/km^2. The lowest section (No. 22) had a density of 44 birds/km^2. Section 23 was not surveyed in spring.

Geese had the highest overall density - 60 birds/km^2. Next were gulls (31 birds/km^2) and sea ducks (26 birds/km^2), both of which were observed in all sections. Dabblers numberd 11 birds/km^2, shorebirds 9 birds/km^2 and the rest were 2 birds/km^2 or less. Only tubenoses were not observed.

Nelson Lagoon had the highest densities for three bird groups: geese (388 birds/km^2), sea ducks (233 birds/km^2) and gulls (208 birds/km^2). All geese were Emperors and sea duck species composition was 88 percent Steller's Eider, 9 percent Black Scoter and 3 percent Common Eider.

Applegate Cove in southwestern Izembek Lagoon had a goose density of 319 birds/km^2; however, almost 100 percent were Brant and a trace were Emperors. Section 9, Port Heiden, was the only other area with goose densities over 100 birds/km^2 at 118 birds/km^2. Emperor Geese made up 98 percent, Canada Geese 1 percent and Brant 1 percent of these birds.

Dabbling ducks densities were highest at Port Heiden (Section 9) at 40 birds/km^2 and in Section 1 at the mouth of Kvichak River with 34 birds/km^2. Ugashik Bay (Section 5) and Mud Bay (Section 15) were next highest with 24 and 22 dabblers/km^2, respectively. Pintails comprised 91 percent of the total identified dabblers. Diving ducks were most common on the north end of the region.

Densities of shorebirds were greatest on four sections. Sections 1, 3, 7 and 15 had 26, 33, 23 and 20 birds/km^2, respectively. A rapid change

Table 14. Bird density by section of coastline in North-Alaska Peninsula, spring 1977. See Figure 105 for section boundaries. (T=trace).

Spring Densities (birds/km^2)

Bird Group	Section of Coastline 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
Loon	T	T	T	T	T	T	T	T	T	T	T	T	T	T		T	T							T
Grebe	T	T	T	T	T				T	T	T	T	T											T
Tubenose																								0
Cormorant		T										1	T	T					T		1			T
Goose and Swan	8	2	T	2	3	T	8		118		45	3	1	5	62	388	1	16	78	319	T	1		60
Dabbler	34	12	3	9	24		15		40		8		2	1	22	6		2	2	2				11
Diver	10	3	11	6	2		1		1		T		3		2	1		2	T			T		2
Sea Duck	1	7	20	19	4	33	3	30	13	59	24	53	73	28	5	233	25	50	20	26	28	5		26
Merganser	12	1	T	1	T		T	1	T		T	T	T	T		T			T	T				1
Raptor	T	T		T	T	T	T		T		T	T	T	T	T	T	T	T	T			T		T
Crane	1	T	T	T	T		T		T															T
Shorebird	26	33	6	16	7	4	23	T	10		5		1	T	20	8	8	3	1	T	3			9
Gull and Jaeger	30	45	12	14	8	39	8	13	20	7	38	167	76	31	31	208	48	5	22	11	87	38		31
Tern	T	T	T	1	1	6	1	9	1		2	1	T		T	5	4		1					1
Alcid		T						T				1	T	T			T		T					T
Corvid	T	T			T		T	T	T		T	T	T	T	T	T	T		T	T				T
Other Passerine	T				T		T		1				T				T		T	T				T
Other Bird	1	T	T	1	1		T		T		T		T					T						T
TOTAL	123	103	53	69	49	82	60	53	205	66	124	227	155	66	143	849	86	79	124	358	119	44	*	141

* No survey.

in species composition was noted between the helicopter and fixed-wing surveys that were only days apart. Black-bellied plovers (*Pluvialis squatarola*), common on 6 May 1977, were absent on 10 May 1977. Few shorebirds were seen on 10 May in the stations duplicating the 6 May survey.

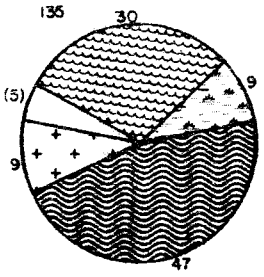
Other than at Nelson Lagoon, gulls were abundant only in Section 12 where 167 birds/km^2 were found. Many of these were kittiwakes at Cape Seniavin. In most cases, higher gull densities occurred on sections with exposed beaches rather than protected estuaries. Tern migration was just beginning an upswing and highest recorded densities were 9, 6, 5 and 4 birds/km^2 in Sections 8, 6, 16 and 17, respectively.

Loons, Bald Eagles and Common Ravens were observed in most sections but only in trace densities. Sandhill Cranes were found only on the northern half of the region, and with measurable amounts (1 bird/km^2) only in Section 1.

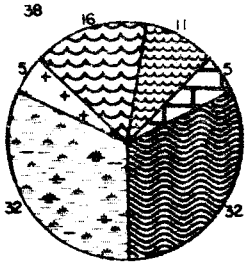
Habitat Usage - Birds on North-Alaska Peninsula during spring were distributed on a variety of habitats. Information on habitat usage by birds in spring is presented in Figs. 128 and 129. Of the 30 identified habitats on which birds were found in spring, nine habitats had 5,000 or more birds. The most used habitat was lagoon water where 28 percent of the birds were found. Almost 80 percent of the birds on this habitat were geese and most of the remainder (16%) were sea ducks. Lagoon mudflats were the next most used areas, and 12 percent of the birds were found there. Fifty-four percent of the birds on lagoon mudflats were geese, 20 percent sea ducks, 13 percent dabblers, 7 percent gulls and 5 percent shorebirds. Protected delta mudflats, used by 10 percent of the birds, supported mostly geese (65%), plus many gulls (15%) and dabblers (14%). Lagoon island sand, fourth in percent usage with 8 percent, was used most commonly by geese (49%). Additionally, 29 percent of the birds were gulls and 20 percent sea ducks on this habitat. The fifth most used habitat at just under 8 percent of the total, protected delta water, was used most by sea ducks (47%), dabblers (27%) and gulls (10%). Exposed inshore water and exposed sand beach each had 5 percent of the birds. On exposed water 69 percent of the birds were sea ducks and 19 percent gulls. On sand 86 percent were gulls and 9 percent shorebirds. Three percent of the birds were on bay water, most were sea ducks (73%) plus 10 percent each for diving ducks and gulls.

Of the over 200,000 birds recorded on spring surveys in the region, only eight species groups numbered over 1,000. Geese comprised 43 percent of the total and were found on principally four habitats. Over half (52%) were on lagoon water, 15 percent on lagoon mudflats, 15% on protected delta mud and 10 percent on lagoon island sand. Dabblers were most commonly found on protected delta water (28%), lagoon mud (20%), protected delta mud (17%) and saltmarsh (16%). Twenty-eight percent of diving ducks were on bay water, 27 percent on protected delta water, 19 percent on exposed inshore water and 16 percent on saltmarsh. Sea ducks also were found on a variety of habitats: 24 percent on lagoon water, 20

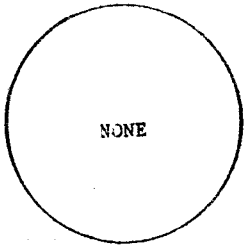
NORTH-ALASKA PENINSULA, SPRING



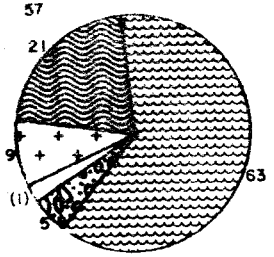
Loons



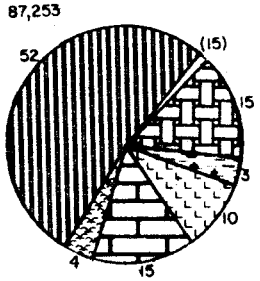
Grebes



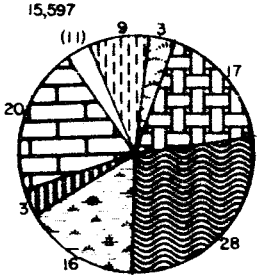
Tubenoses



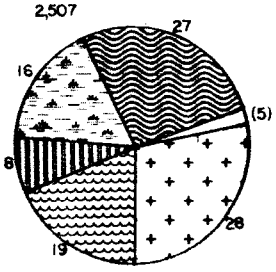
Cormorants



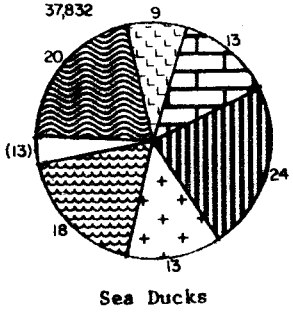
Swans and Geese



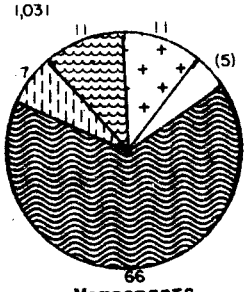
Dabblers



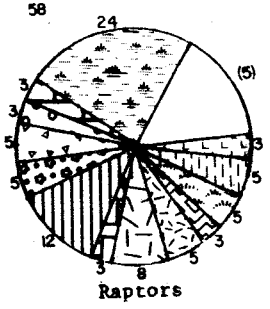
Divers



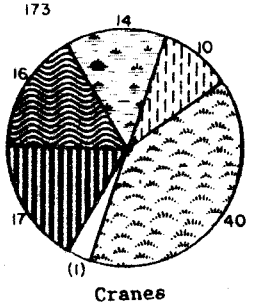
Sea Ducks



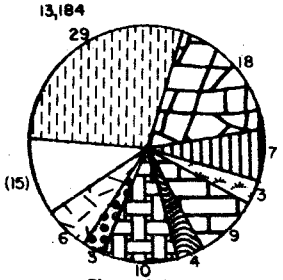
Mergansers



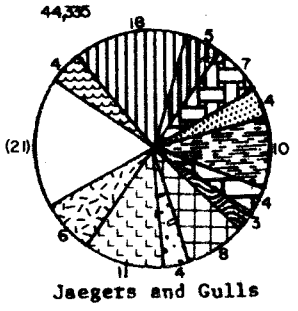
Raptors



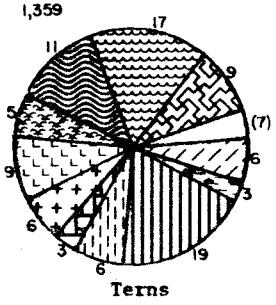
Cranes



Shorebirds

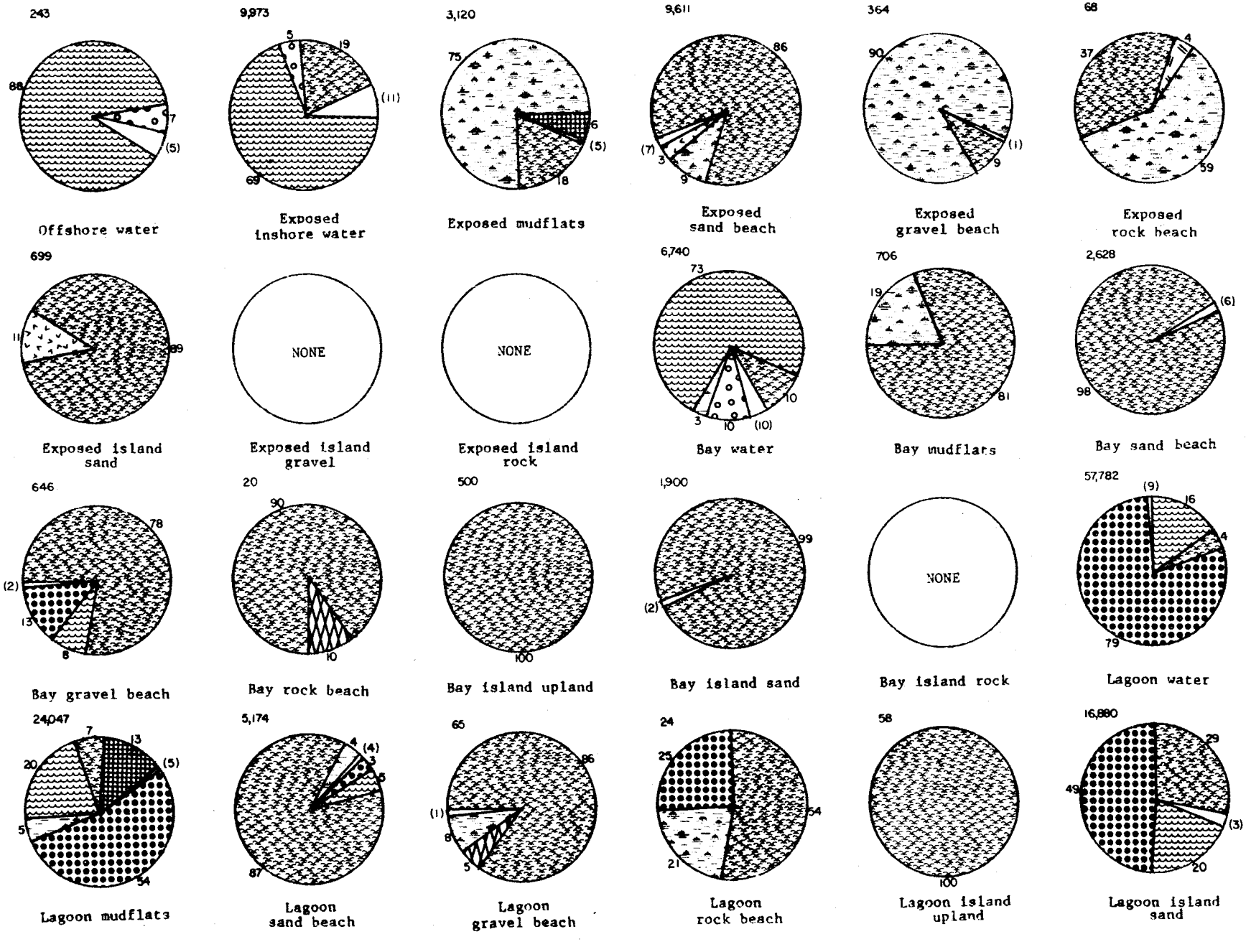


Jaegers and Gulls



Terns

NORTH – ALASKA PENINSULA. SPRING



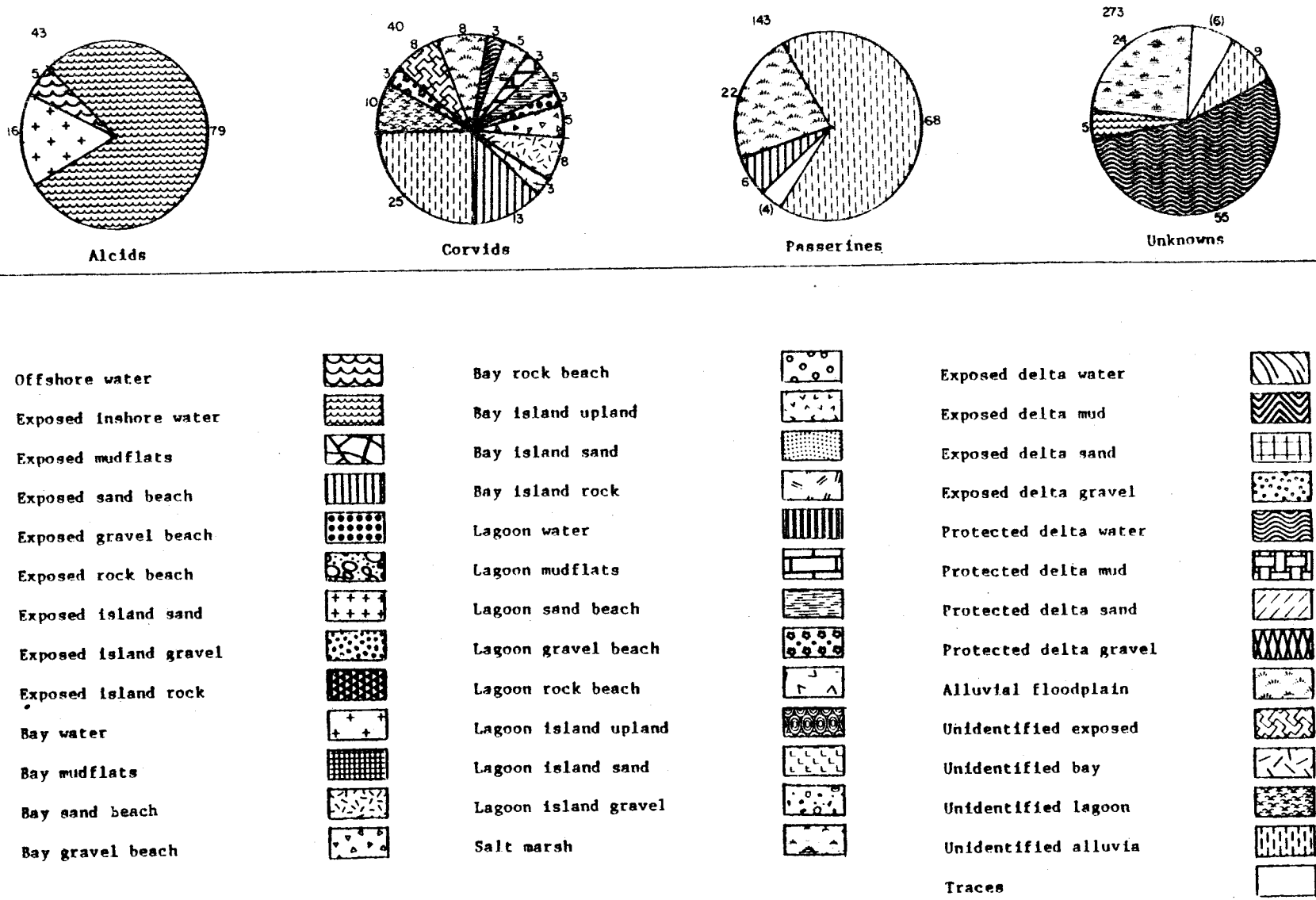


Fig. 128. North-Alaska Peninsula, Spring, 1977. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

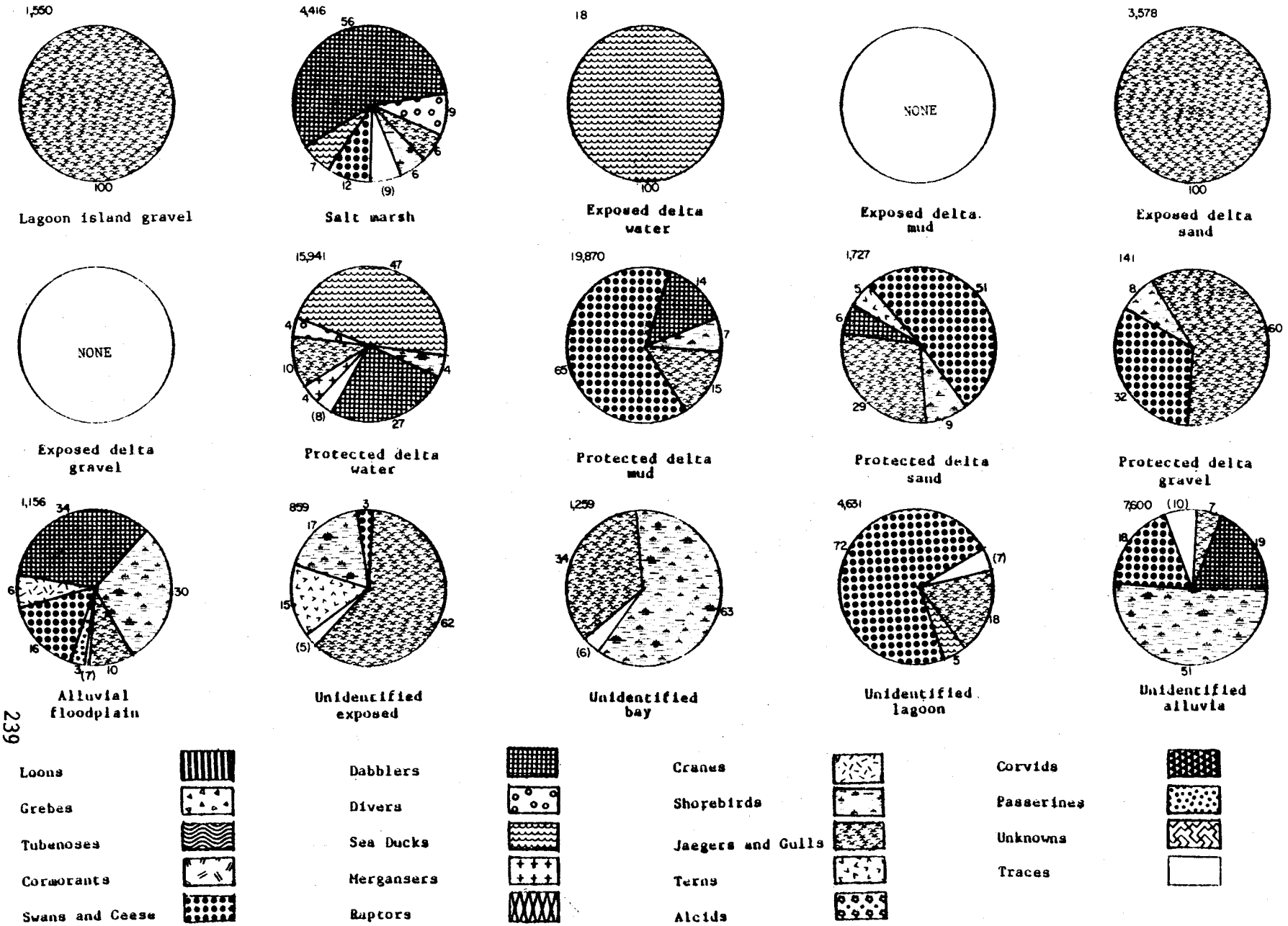


Fig. 129. North-Alaska Peninsula, Spring, 1977. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

percent on protected delta water, 18 percent on exposed inshore water, 13 percent on each of bay water and lagoon mudflats and 9 percent on lagoon island sand. Sixty-six percent of the mergansers were on protected delta water plus 11 percent each on exposed inshore and bay water.

Shorebirds and gulls were found in small percentages on the greatest diversity of habitats. Shorebirds were found in twenty habitats but most often used protected delta areas (48% of the birds). Gulls were found in 30 of 31 habitats, with exposed sand beach being the predominant habitat (19% of the birds on it) followed by lagoon island sand (11%) and lagoon sand beach (10%). In all, 60% of the gulls were recorded on sand substrate in exposed and protected areas. Nineteen percent of the terns were also on, or flying over, exposed sand beaches. The second most frequently used habitat by terns was exposed inshore water (17%), followed by protected delta water (11%) and lagoon island sand (9%).

Overall, birds selected lagoon habitats 54 percent of the time, protected deltas 23 percent, exposed habitats 12 percent, bays 7 percent, and both saltmarshes and exposed delta habitats 2 percent.

SUMMER

Pelagic Density - The brief survey in June 1976 covered only seven stations offshore from Section 17, and the 39 pelagic transects in July were nearest the six exposed sections from Port Moller to Unimak Pass. The overall summer bird density in these waters was 432 birds/km^2 (Table 15). Over 90 percent of the birds, or 402 birds/km^2, were shearwaters. At the time of the survey in late July, the waters northeast and southwest of Amak Island supported scattered, large flocks of these birds. A small percentage of the total population was enumerated in the transect width, and it was assumed that several million shearwaters were present. Sectional breakdown of shearwater densities was likely not a true indicator of bird distribution, but pelagic waters off Section 19 (on the east side of Amak Island) had 1375 shearwaters/km^2. Numbers of shearwaters dropped off as we proceeded up the coast from Moffett Lagoon.

Gulls were the next most abundant group with 16 birds/km^2. The high density area was just north of Nelson Lagoon with 65 birds/km^2. Large gulls predominated in Section 16, whereas farther south kittiwakes were as abundant as Glaucous-winged Gulls. Murres were the predominant alcid and the greatest density occurred southwest of Amak Island at 33 birds/km^2. Sea duck densities were highest near Port Moller but only 4 and 5 birds/km^2 were recorded for the two sections 13 and 16, respectively. Terns were observed in all sections but only in trace amounts.

Habitat Usage - Except for a few birds on the inshore portion of the transects, all birds were in offshore waters.

Table 15. Pelagic densities of birds by section of coastline in North-Alaska Peninsula, summer 1976. See Figure 105 for section boundaries. (T=trace).

	Summer Densities (birds/km^2)						
	Section of Coastline						
Bird Group	13	16	17	19	21	23	Total
Loon			T				T
Grebe							0
Tubenose		4	133	1375	431	426	402
Cormorant					2	T	T
Goose and Swan							0
Dabbler							0
Diver							0
Sea Duck	4	5	1		T		1
Merganser							0
Raptor							0
Crane							0
Shorebird			T	T		T	T
Gull and Jaeger	13	65	17	11	20	6	16
Tern	1	T	T	T	T	T	T
Alcid	5	1	7	11	33	9	12
Corvid							0
Other Passerine							0
Other Bird							0
TOTAL	22	76	158	1397	486	442	432

FALL

Density - The north side of the Alaska Peninsula, in fall, provided ideal staging habitat for waterfowl and other bird groups. The mean fall density was 453 birds/km^2 and of that number 268 birds/km^2 were geese (Table 16). Over one-half of the geese were Brant (59%), 23 percent Canada Geese and 17 percent Emperor Geese. Only a trace of Snow Geese and no White-fronted Geese were seen on the October surveys. Mean densities for sea ducks were 97 birds/km^2, shorebirds 41 birds/km^2, dabblers 23 birds/km^2 and gulls 19 birds/km^2. Remaining bird groups had densities of 1 bird/km^2 or less.

Seventeen sections had densities of over 100 birds/km^2, and on one, densities exceeded 1,000 birds/km^2. The latter section was No. 20, the Applegate Cove portion of Izembek Lagoon. Geese (mostly Brant) accounted for 932 of 1044 birds/km^2 in Section 20.

On the first survey in October 1975, it was found that Brant were difficult to census because they frequently flushed upon approach of the aircraft and flew to areas not yet counted, potentially being counted repeatedly. For that reason, Brant numbers from the first survey may be exaggerated to some extent but this did not greatly affect mean densities when lumped with such large numbers. Section 20 would still remain the one with the highest bird density in the region. In Applegate Cove 76 percent of the geese were Brant, 20 percent Canada Geese and 4 percent Emperor Geese. Almost all of the sea ducks (66 birds/km^2) in Section 20 were Steller's Eiders.

The section with the second highest bird density was Nelson Lagoon (No. 16) with a density of 746 birds/km^2. In this area sea ducks were the most abundant bird group at 420 birds/km^2. Species composition was 55 percent Steller's Eiders, 2 percent large eiders (King and Common) and 42 percent scoters (99% Black). The goose density was 168 birds/km^2 with almost all Emperors and only a trace of Canadas. High shorebird densities were also noted, 100 birds/km^2. In October, most of the shorebirds were likely Rock Sandpipers. Section 13, Port Moller, had a bird density of 618 birds/km^2, the majority of which were sea ducks (360 birds/km^2). However, 156 geese/km^2 were observed (most of which were Emperors), and the highest gull density (86 birds/km^2) for fall in the region was recorded in Section 13.

Three other sections supported bird densities over 400 birds/km^2. Section 6, 7 and 14 had densities of 428, 499 and 451 birds/km^2, respectively. In Sections 6 and 14 sea ducks were the predominant bird group with 369 and 321 birds/km^2, respectively. In Section 7, three groups comprised the largest percentages of the total: shorebirds (164 birds/km^2), geese (156 birds/km^2) and sea ducks (113 birds/km^2).

Second highest goose densities were found in Section 19, the central portion of Izembek Lagoon, with 256 birds/km^2. Next was Section 23 with 198 geese/km^2. One-hundred dabblers/km^2 were also found in Section 23, but densities of both geese and dabblers largely represent Swanson

Lagoon densities because the trackline did not go beyond Otter Point on Unimak Island. Other high dabbler densities were found in Section 11, Seal Islands, with 49 birds/km^2 and Section 5, Ugashik Bay, with 41 birds/km^2. Diving ducks were abundant only in Section 14, Herendeen Bay, at a density of 15 birds/km^2.

About the only birds in Section 1 were gulls, and the second highest density for that bird group was found there (81 birds/km^2). Other high gull densities were recorded in Sections 14 and 21 with 65 and 64 birds/km^2, respectively. Of the identified gulls in fall, the majority were Glaucous-winged (93%). Low percentages of kittiwakes (4%) and Mew Gulls (2%) were recorded. During a mapping flight in October 1976, while I was not specifically recording bird numbers, 11,500 gulls (both kittiwakes and large gulls) were observed in Bechevin Bay and Isantoski Straits of Section 22.

Section 8 had the lowest fall density with 39 birds/km^2. The bird group, Other Passerines, had its highest density in that section - 11 birds/km^2. Most passerines on the coast in fall were Snow Buntings (*Plectrophenax nivalis*) which fed in beach rye (*Elymus* sp.) along sand beaches.

Loons were found in most sections, but only occurred in a measurable amount (1 bird/km^2) in Section 14. Tubenoses were only found in the Port Moller complex (Sections 13-16), and were measurable only in Section 14 (3 birds/km^2). Cormorants were widely scattered but reached a density of 20 birds/km^2 in Section 22, Bechevin Bay. Raptors were recorded in almost all sections but only in trace amounts. Bald Eagles were the most common raptor but Gyrfalcons (*Falco rusticolus*), Marsh Hawks and Short-eared Owls were also observed. Alcids were recorded in 14 sections and reached their highest density (3 birds/km^2) in Section 14.

Habitat Usage - Because the second fall survey of North-Alaska Peninsula primarily covered estuarine habitats, 70 percent of the total birds were found on lagoon habitats, 21 percent on protected delta habitats and 5 percent in bays. Only 3 percent were on exposed habitats and 2 percent on saltmarshes. On the October 1975 survey, most habitat delineations had not been finalized, and therefore, a large percentage of birds were recorded as using unidentified habitats. Almost 90 percent of the 400,000 birds in unidentified lagoon habitats were geese. Most of these geese were found in Izembek Lagoon, but at the time of the survey a substrate was not specified, and, therefore, they were put into an unidentified category. Information on fall habitat usage by birds is diagrammed in Figs. 130 and 131.

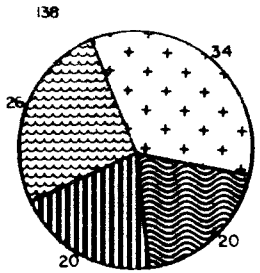
Lagoon water was the most used habitat identified. Twenty-one percent of the birds were found there; 62 percent were geese and 31 percent sea ducks. Brant remained over water at all times and fed on eelgrass (*Zostera marina*). Canada Geese roosted on lagoon water but frequently fed on nearby tundra. Lagoon water also was used by Emperor Geese for roosting when disturbed from their usual beach habitats. Large rafts of feeding and roosting sea ducks were often observed on the lagoon/embayment water just inside sand/gravel spits.

Table 16. Bird density by section of coastline in North-Alaska Peninsula, fall 1975, 1976. See Figure 105 for section boundaries. (T=trace).

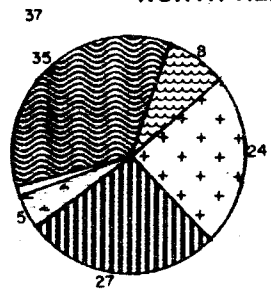
Fall Densities (birds/km^2)

Bird Group	Section of Coastline 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
Loon		T	T	T	T		T	T	T		T	T	T	1		T	T	T	T	T		T		T
Grebe		T	T	T	T		T		T				T	T		T		T	T	T		T		T
Tubenose													T	3	T	T								T
Cormorant			T	T			T		T			7	1	4			T		T	T	1	20	T	1
Goose and Swan		T	10	15	95	33	156	3	39	26	149	3	156	35	62	168	17	113	256	932	47	143	198	268
Dabbler		9	8	7	41		38		30		49	T	3	1	13	17	T	11	5	25		6	100	23
Diver		1	T	T	1		1	2	T		T		5	15		T		1		1		T	5	1
Sea Duck	2	1	7	42	8	369	113	5	111	23	37	38	360	321	5	420	49	45	45	66	123	28	1	97
Merganser		T	1		T		T				T									T				T
Raptor			T	T	T	T	T	T	T		T	T	T	T		T	T	T	T	T		T	T	T
Crane																								0
Shorebird	3	53	85	2	15	4	164	5	39	2	52		T	4	45	110	71	46	24	7	11	1	T	41
Gull and Jaeger	81	47	6	22	6	21	19	14	5	46	37	16	86	65	14	31	19	32	13	13	64	10	26	19
Tern									T															T
Alcid				T			T		T	T		T	1	3		T	T		T	T	2	T	T	T
Corvid			T	T	T		T		T		T				T			T	T	T			T	T
Other Passerine			T	4	T		1	11	T		T		7		T	T	2			T				1
Other Bird	T	1	1	1	3		7			T	1				T	1			5	T		T		1
TOTAL	86	111	119	96	171	428	499	39	225	96	327	65	618	451	139	746	160	249	348	1044	247	209	332	453

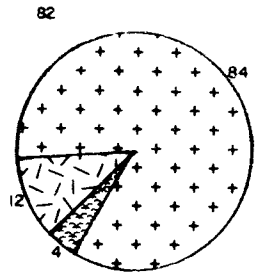
NORTH-ALASKA PENINSULA, FALL



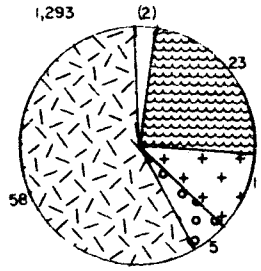
Loons



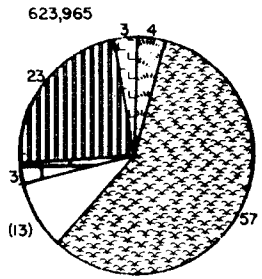
Grebes



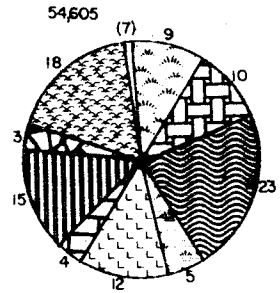
Tubenoses



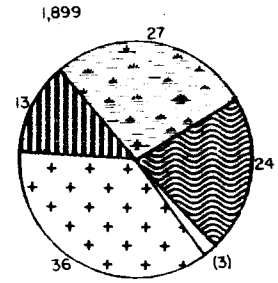
Cormorants



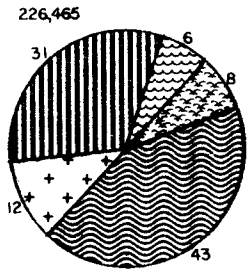
Swans and Geese



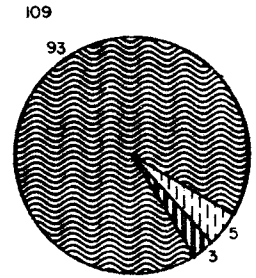
Dabblers



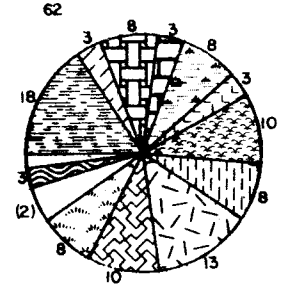
Divers



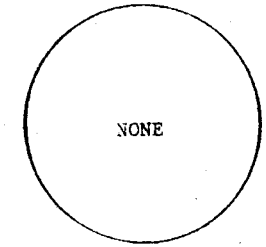
Sea Ducks



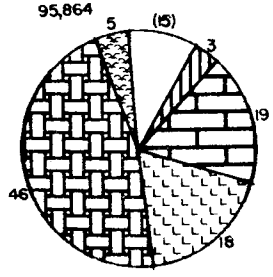
Mergansers



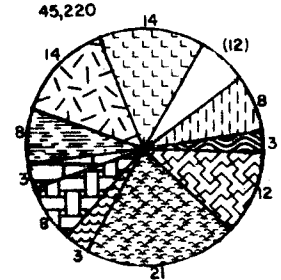
Raptors



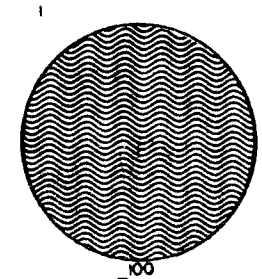
Cranes



Shorebirds



Jaegers and Gulls



Terns

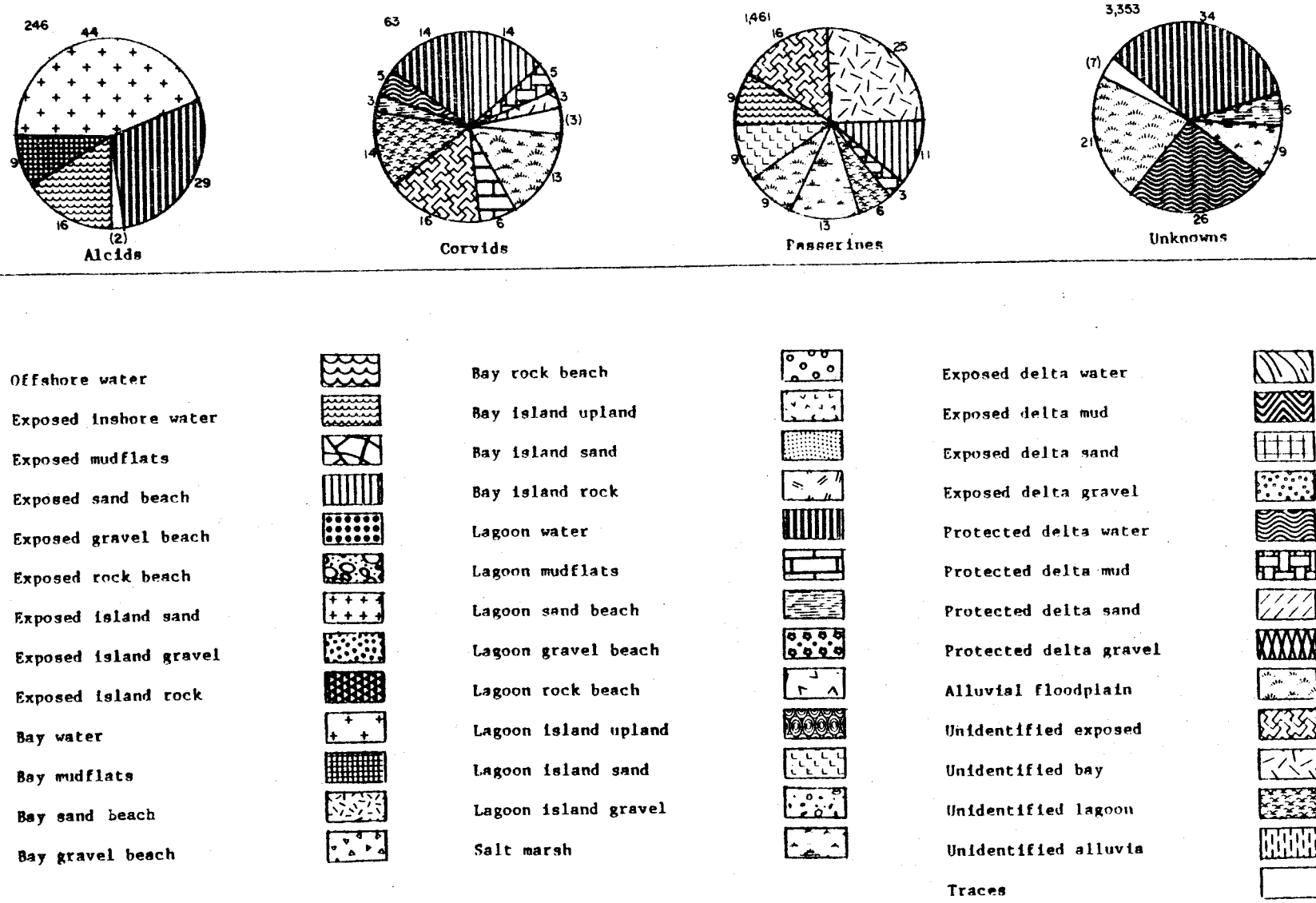
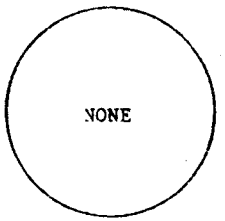
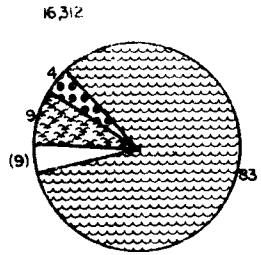


Fig. 130. North-Alaska Peninsula, Fall, 1975 and 1976. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

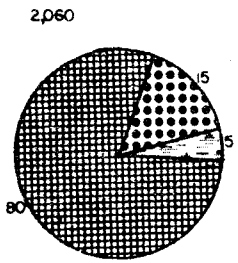
NORTH-ALASKA PENINSULA. FALL



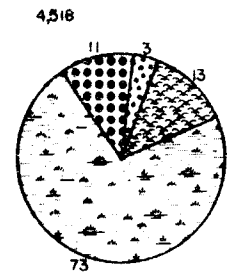
Offshore water



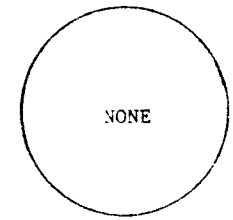
Exposed inshore water



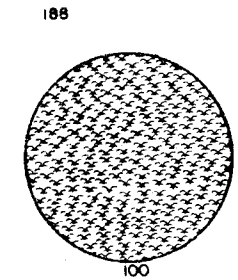
Exposed mudflats



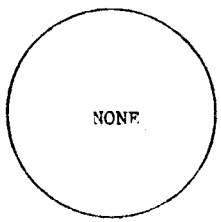
Exposed sand beach



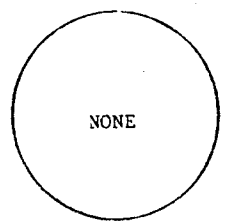
Exposed gravel beach



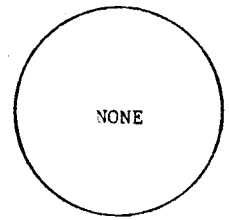
Exposed rock beach



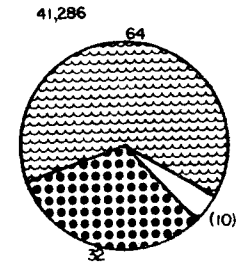
Exposed island sand



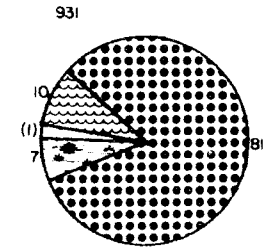
Exposed island gravel



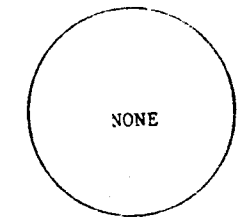
Exposed island rock



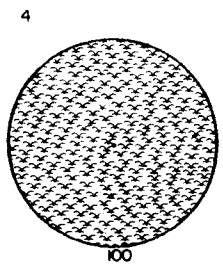
Bay water



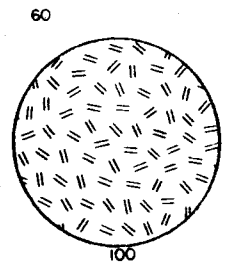
Bay mudflats



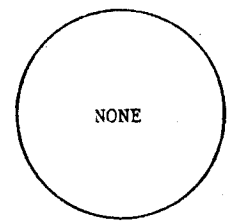
Bay sand beach



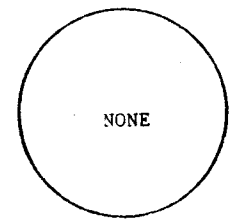
Bay gravel beach



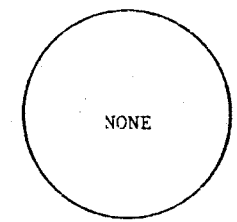
Bay rock beach



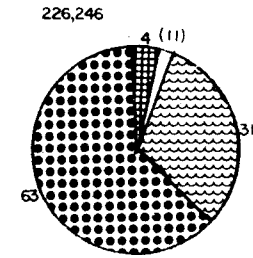
Bay island upland



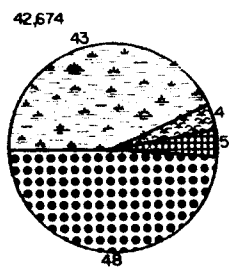
Bay island sand



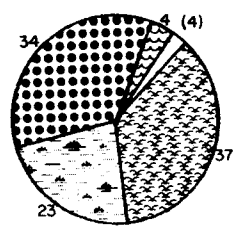
Bay island rock



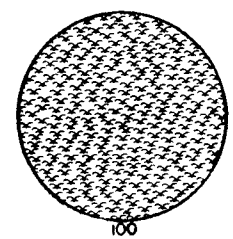
Lagoon water



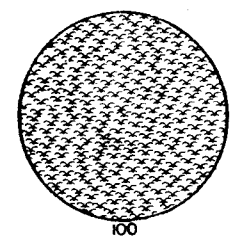
Lagoon mudflats



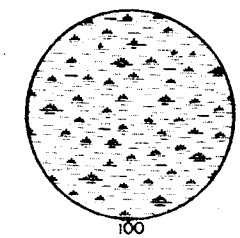
Lagoon sand beach



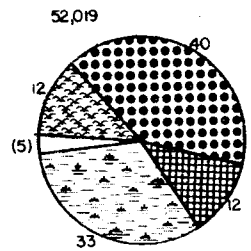
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

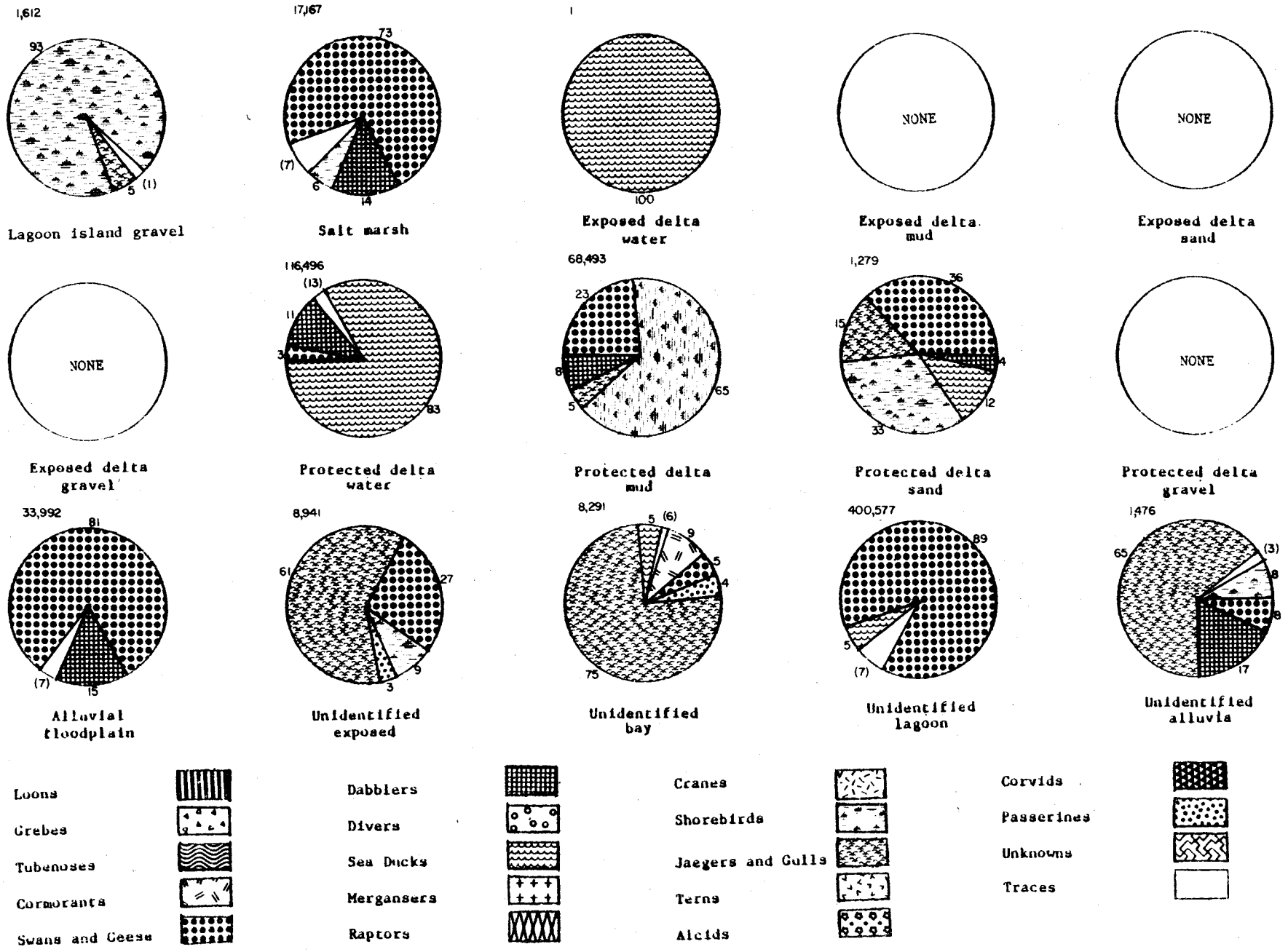


Fig. 131. North-Alaska Peninsula, Fall, 1975 and 1976. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

Eleven percent of the birds used protected delta water, and 83 percent of the birds on this habitat were sea ducks and 11 percent were dabbling ducks. Dabblers in large numbers frequently lined the waters' edge at river mouths. Of the almost 70,000 birds found on protected delta mud 65 percent were shorebirds, 23 percent geese, 8 percent dabblers and 5 percent gulls. Lagoon island sand beaches were used by geese (mostly Emperors), shorebirds, gulls and dabblers (percentages were: 40, 33, 12 and 12, respectively). The next most used habitats were lagoon mudflats and bay water. In the former type, geese and shorebirds predominated (48% and 43%, respectively). Sixty-four percent of the birds on bay water were sea ducks and 32 percent were geese.

Over 3 percent of the one million birds counted in North-Alaska Peninsula were on alluvial floodplain vegetation. Most were geese (81%) and dabblers (15%). Over 16,000 birds were on exposed inshore waters. Sea ducks were the most abundant (83% of total). Gulls were next with only 9 percent of the total. Geese and dabblers were the bird groups most frequently found on saltmarshes (73% and 14%, respectively).

Only five bird groups were found in relatively great abundance in fall on North-Alaska Peninsula. Geese, the most abundant, were found on 14 habitats but mostly used lagoon waters. Sea ducks were found 43 percent of the time on protected delta water, 31 percent on lagoon water, 12 percent on bay water and 6 percent on exposed inshore water. Almost one-half of the shorebirds, the third largest group, were found on protected delta mud. An additional 19 percent used lagoon mudflats and 18 percent used lagoon island sand. Over 54,000 dabblers preferred protected delta water (23%) lagoon water (15%), lagoon island sand (12%), protected delta mud (10%) and alluvial floodplain (9%). Eighteen habitats were used by gulls, the fifth most abundant bird group, and no one habitat was utilized significantly more than others.

WINTER

Although three winter surveys were conducted, coverage was limited and six sections were not surveyed. Other sections were surveyed only partially. A portion of one survey was several hundred meters offshore in pelagic waters.

Density - Bird densities dropped from a high of 453 birds/km^2 in fall to 53 birds/km^2 in winter (Table 17). Fourteen bird groups were recorded but only four in measurable numbers: sea ducks, gulls, geese and alcids. They had densities of 33, 13, 3 and 2 birds/km^2, respectively.

Section 10, the coast between Port Heiden and Seal Islands, had the highest bird densities at 197 birds/km^2. No other sections had densities over 100 birds/km^2; however, three were close with 97, 93 and 87 birds/km^2 (Sections 22, 4 and 16, respectively). In Section 10, sea ducks comprised 92 percent of the birds recorded, or 182 birds/km^2. Gulls made up most of the rest (15 birds/km^2). Winter use of sections 16 and 22 was primarily by sea ducks and geese. Both had goose densities of 35 birds/km^2.

Table 17. Bird density by section of coastline in North-Alaska Peninsula, winter 1977. See Figure 105 for section boundaries. (T=trace).

Winter Densities (birds/km^2)

Bird Group	Section of Coastline 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
Loon				T		T		T		T		T					T				T			T
Grebe				T		T				T		T					T				T	T	T	T
Tubenose																								0
Cormorant								T				T									1	6	1	T
Goose and Swan								T					21			35						35	1	3
Dabbler																							T	T
Diver	2										T	T						1				1	1	T
Sea Duck	1	T		40		16		7	5	182	13	25	9			49	11	52	58		38	52	20	33
Merganser												T										1	T	T
Raptor		T		T		T						T	T			T	T		T		T		T	T
Crane																								0
Shorebird																T		T						T
Gull and Jaeger		T		53	1	35		11	1	15	3	6	2			3	19	14	T		5	2	18	13
Tern																								0
Alcid								T											T		3	T	13	2
Corvid		T		T		T		T		T	T	T				T	T				T		T	T
Other Passerine		7																						T
Other Bird																								0
TOTAL	2	8	*	93	1	52	*	19	6	197	16	32	33	*	*	87	30	67	59	*	48	97	55	53

* Not surveyed.

Section 16 had a sea duck density of 49 birds/km^2 and Section 22 a density of 52 gulls/km^2. The latter section also supported a few diving ducks and mergansers plus a density of 6 cormorants/km^2. Section 4 mostly had gulls (53 birds/km^2) and sea ducks (40 birds/km^2).

Geese were also common in Section 13, Port Moller, where 21 birds/km^2 were recorded. In the winter surveys only Emperor Geese were recorded. However, on an overflight of Applegate Cove (Section 20) when surveys were not being conducted, a flock of about 2,000 Brant was noted. Because of the mild winter, they were able to overwinter at Izembek. The section with the second highest sea duck density (Section 19) had 58 sea ducks/km^2 and no other measurable bird densities. Eighty-two percent of the identified sea ducks observed on these winter flights were eiders. Scoters were next in abundance with 10 percent followed by Oldsquaw (7%) and Harlequin Duck (1%). Of identified eiders, 79 percent were Steller's, 20 percent King and 1 percent Common. For scoters the percentages of identified birds were: Black 87%, White-winged 13% and Surf trace. Sea ducks were recorded on 17 of the 18 sections surveyed. Only Section 5 did not have sea ducks, but only 2.3 km^2 of this section were surveyed.

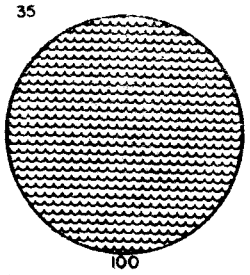
Gulls were also found on all but Section 1. Besides the high gull density in Section 4, gulls were most dense in Section 6 at 35 birds/km^2. Gulls were frequently observed roosting on, or flying along, the exposed sand beaches. Observed gull densities were greatest in exposed sections, but 80 percent of the area searched on these winter surveys was exposed habitat.

Alcids were the only other group with a measurable density. Almost all alcids were on the most southern sections. The most were in Section 23 (13 birds/km^2). Bald Eagles and Common Ravens were scattered throughout the coast in winter, but were not abundant in any section.

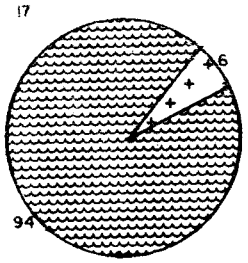
Habitat Usage - Forty-six percent of the birds observed during winter surveys were found in exposed habitats. An additional 6 percent were on offshore waters and 5 five percent on exposed delta habitats. This ratio of habitat use was biased by the fact that 80 percent of the area surveyed was exposed sections. Lagoon habitats contained 35 percent of the birds and 4 percent were in bays, 3 percent on protected delta habitats and 1 percent on saltmarshes. Information on winter habitat usage is presented in Figs. 132 and 133.

Only five habitats contained 1,000 or more birds. The largest percentage of birds (32%) were on lagoon water and essentially all of these were sea ducks. Exposed inshore water was next with 31 percent of the birds and again the majority (82%) were sea ducks. On exposed sand beaches 13 percent of the birds were found, and 95 percent of these were gulls. Six percent of the birds were on offshore waters and 52 percent of these were alcids and 43 percent sea ducks. Exposed river deltas supported 4 percent of the birds, all of which were gulls. Over 900 birds were seen on bay waters, and sea ducks, geese and cormorants were the most numerous birds (82, 8, and 6%, respectively).

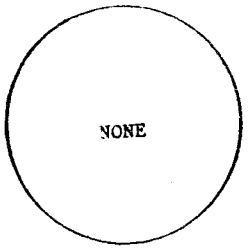
NORTH-ALASKA PENINSULA, WINTER



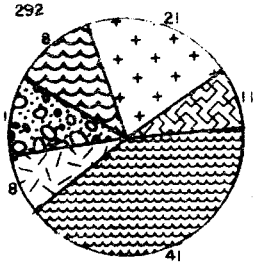
Loons



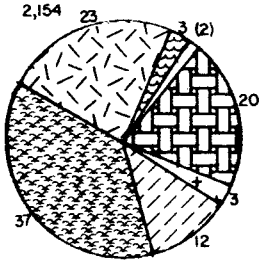
Grebes



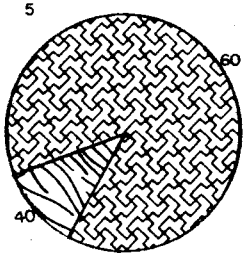
Tubenoses



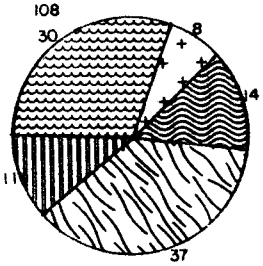
Cormorants



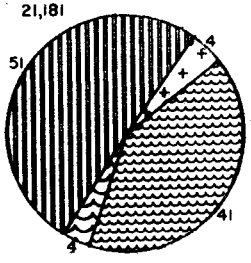
Swans and Geese



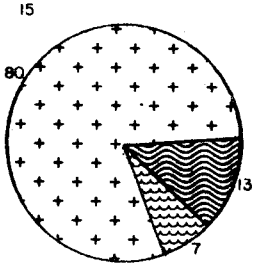
Dabblers



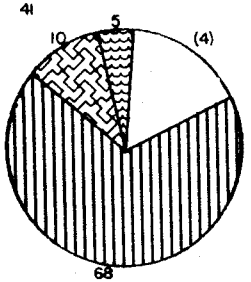
Divers



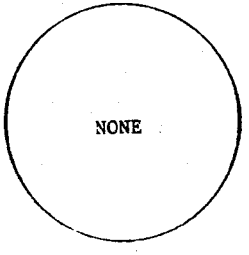
Sea Ducks



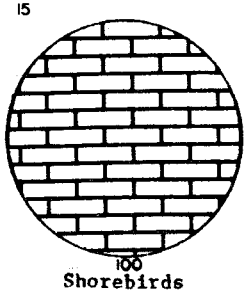
Mergansers



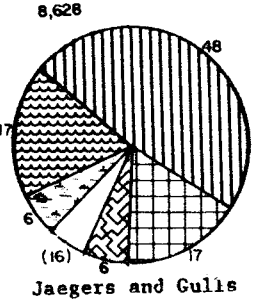
Raptors



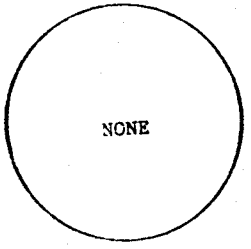
Cranes



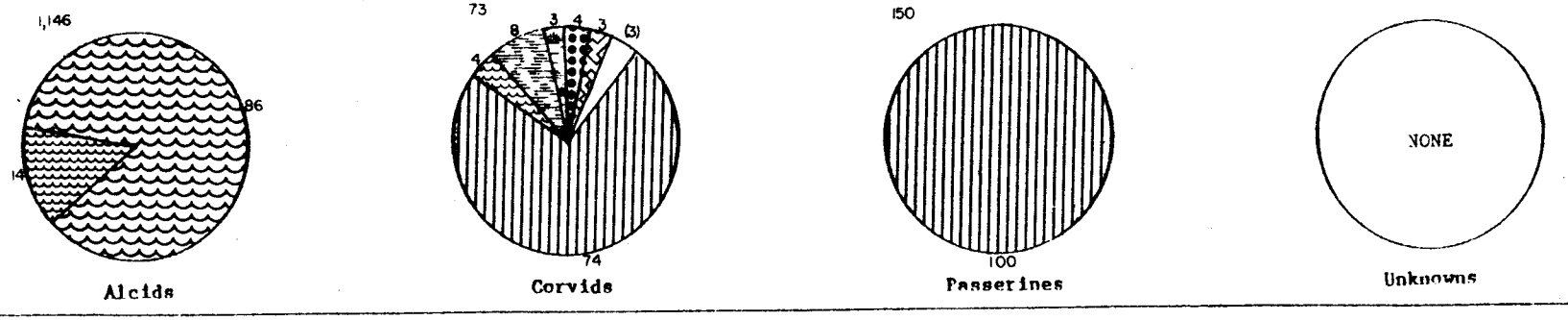
Shorebirds



Jaegers and Gulls



Terns



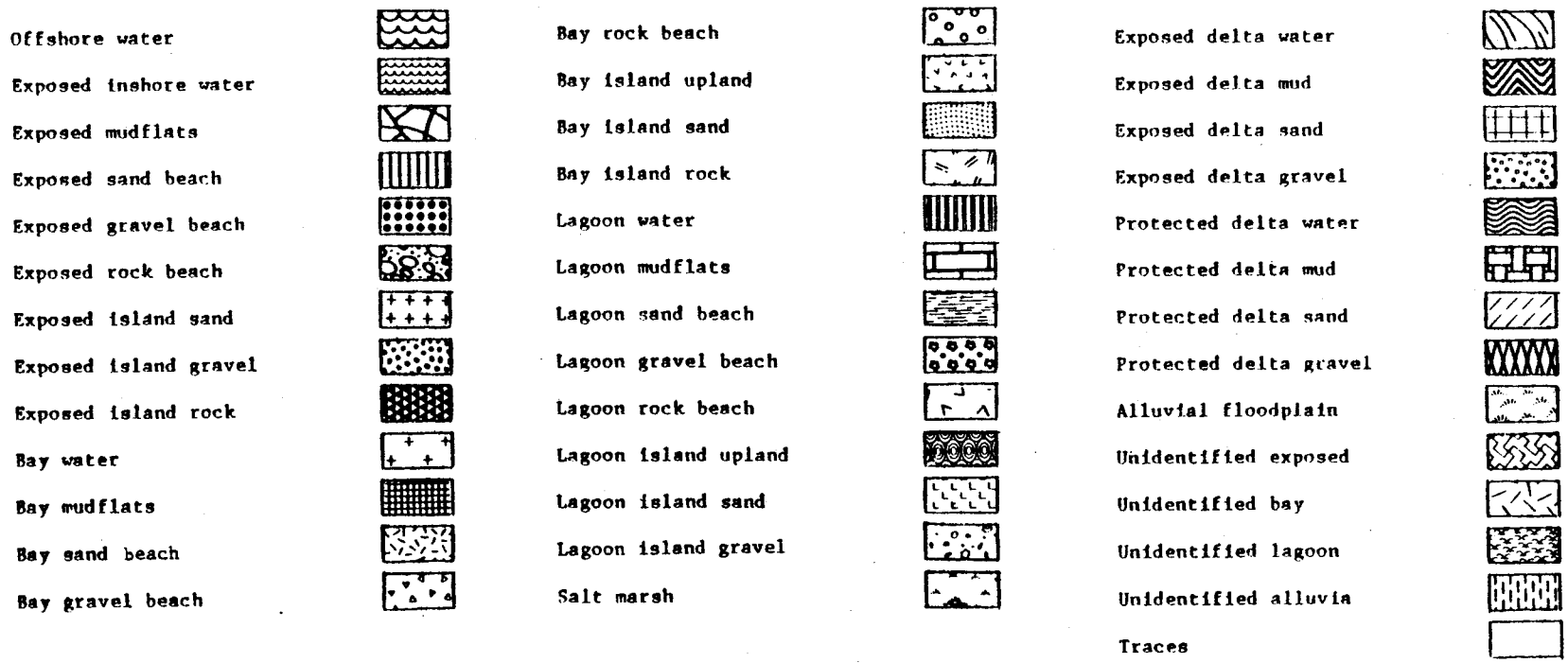
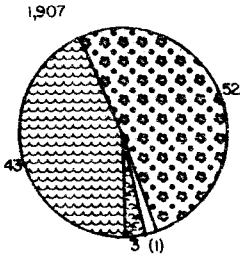
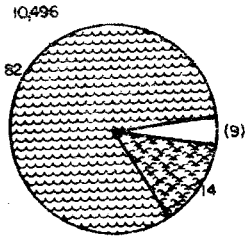


Fig. 132. North-Alaska Peninsula, Winter, 1977. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

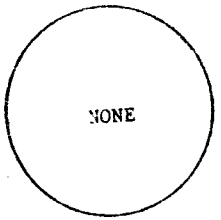
NORTH-ALASKA PENINSULA, WINTER



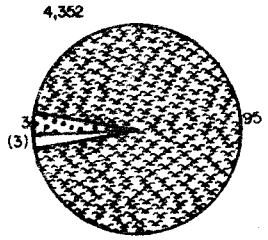
Offshore water



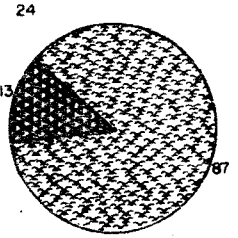
Exposed inshore water



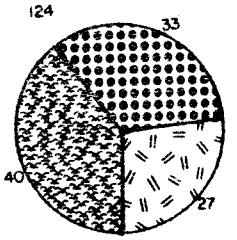
Exposed mudflats



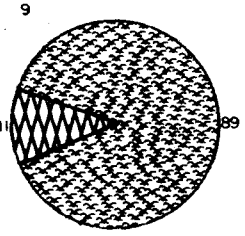
Exposed sand beach



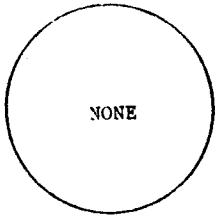
Exposed gravel beach



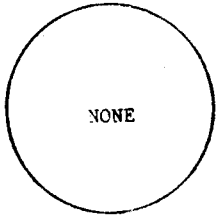
Exposed rock beach



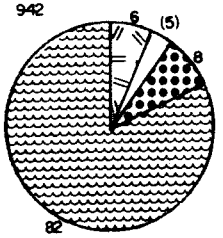
Exposed island sand



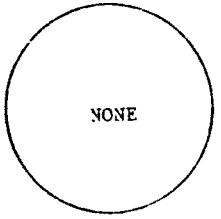
Exposed island gravel



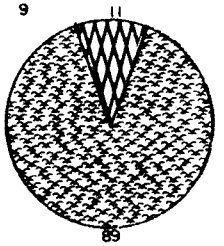
Exposed island rock



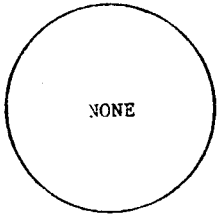
Bay water



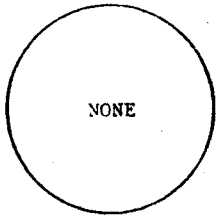
Bay mudflats



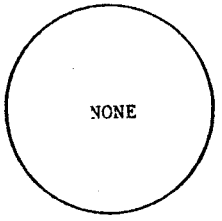
Bay sand beach



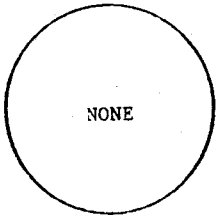
Bay gravel beach



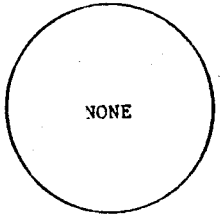
Bay rock beach



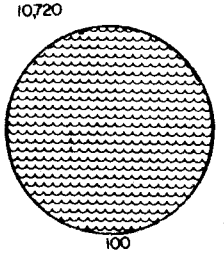
Bay island upland



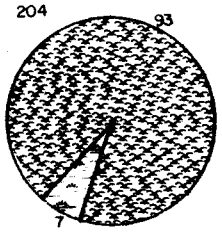
Bay island sand



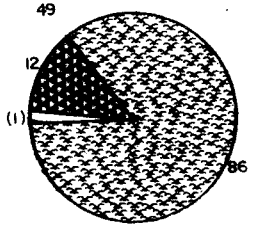
Bay island rock



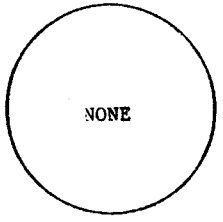
Lagoon water



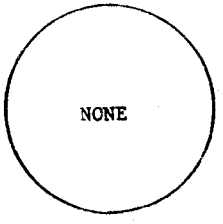
Lagoon mudflats



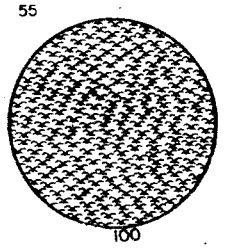
Lagoon sand beach



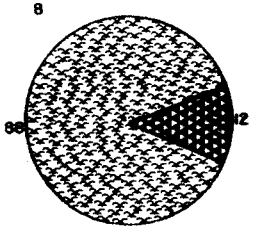
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

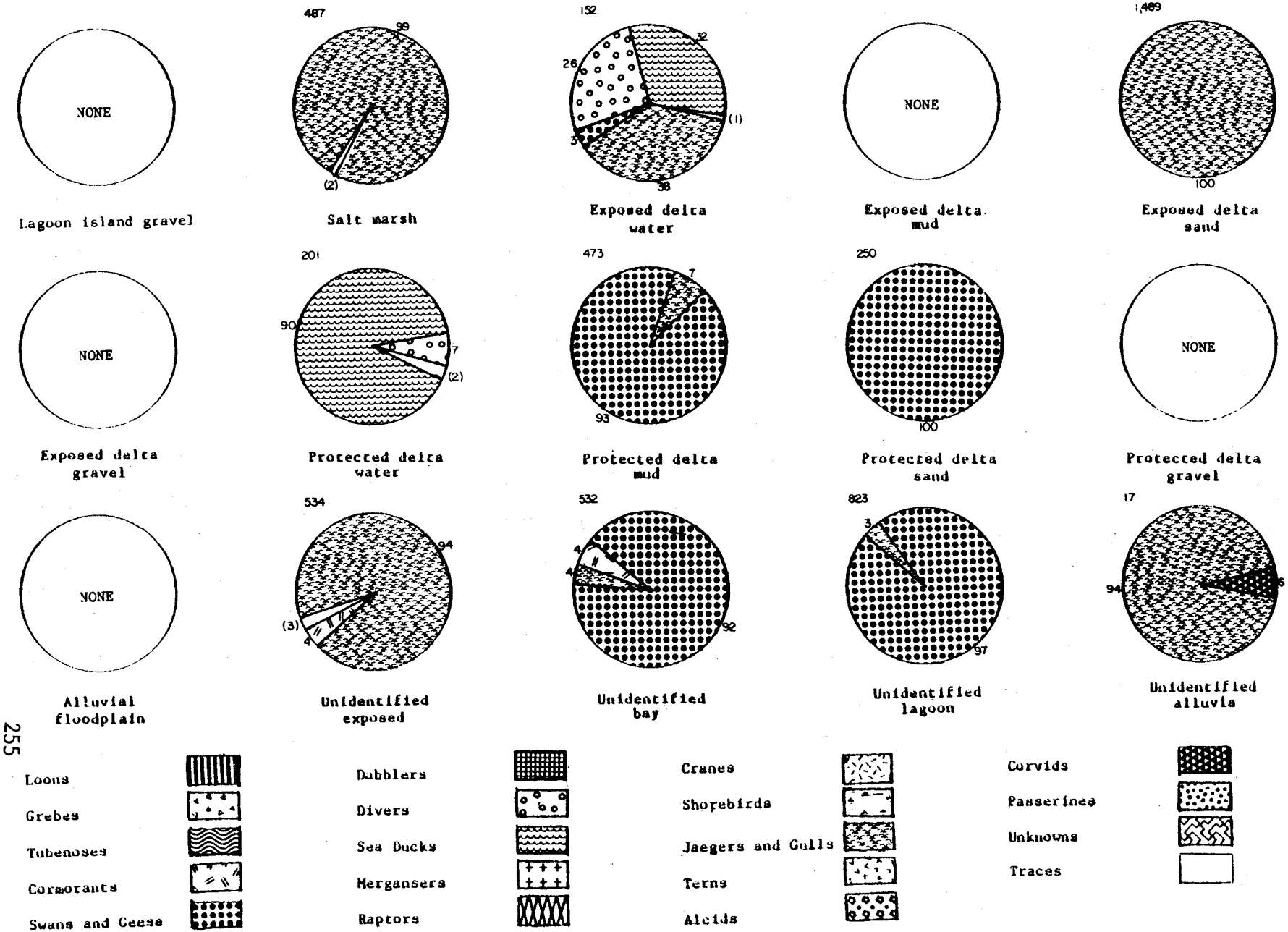


Fig. 133. North-Alaska Peninsula, Winter, 1977. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

Four species groups numbered over 1,000 individuals. Sea ducks, the most abundant bird group (63% of the total), were found most on lagoon water (51%), and most of the remainder (41%) were on exposed inshore water. One-fourth of the birds were gulls. They were found on 17 of the 19 identified habitats. Almost 50 percent used exposed sand beaches and 17 percent were on both exposed delta sand and exposed inshore water. The rest were found in small numbers on a variety of habitats. Most (60%) of the Emperor Geese were on unidentified bay and lagoon habitats; others used protected delta mud (20%) and protected delta sand (12%). Eighty-six percent of the 1,100 alcids were in offshore waters and the remainder (14%) on exposed inshore waters.

NORTH - BRISTOL BAY

Three spring surveys were conducted in North-Bristol Bay. The first, in May 1976, covered the entire coastline to Cape Newenham and Hagemeister Island (Fig. 134). The second survey, covering only Kvichak Bay, was done by helicopter, and the shoreline from Kvichak River to Kulukak Bay was flown in the final survey. Only aerial pelagic surveys were conducted in the Walrus Island vicinity in spring. In summer, pelagic surveys by raft were conducted in the Walrus Islands.

For analysis, the mainland coast was subdivided into 11 physiographic sections (Fig. 135). Hagemeister Island constituted one section and the Walrus Islands were another.

SPRING

Density - North-Bristol Bay in spring had a mean bird density of 86 birds/km^2 (Table 18). Bird density data by section are depicted in Figs. 136-153. Four sections had densities exceeding 100 birds/km^2. The coastline from Capes Peirce to Newenham, Section 11, had the highest density at 466 birds/km^2. Alcids were the most dense recorded group with 249 birds/km^2. Over 4,000 Brant were in Nanvak Bay near Cape Peirce, inflating the goose density to 140 birds/km^2 in Section 11. Although gull densities in Section 11 (34 birds/km^2) were high for the region, many gulls were not counted that were on colonies at both Capes Newenham and Peirce. The observation plane had to climb away from the high cliffs where thousands of black-legged kittiwakes flushed from nesting sites and endangering the aircraft (and themselves). Almost 300,000 kittiwakes have been estimated in breeding populations in this section (Sowls et al. 1978).

Section 1 in Kvichak Bay had a density of 259 birds/km^2. Most birds in this section were shorebirds and dabblers, but gulls, diving ducks and geese were also found in substantial numbers. The brackish alluvial floodplain and adjacent intertidal mudflat supported most of the birds.

The avifauna in Section 3, southern Nushagak Bay, was almost entirely diving ducks. Of the 206 birds/km^2 found in the section, 171 birds/km^2 were scaup. There was an almost continuous line of scaup in shallow water of Flounder Flats. Flocks of Black Scoters were mixed in with the scaup but in much lower densities. There were 21 sea ducks/km^2 in Section 3.

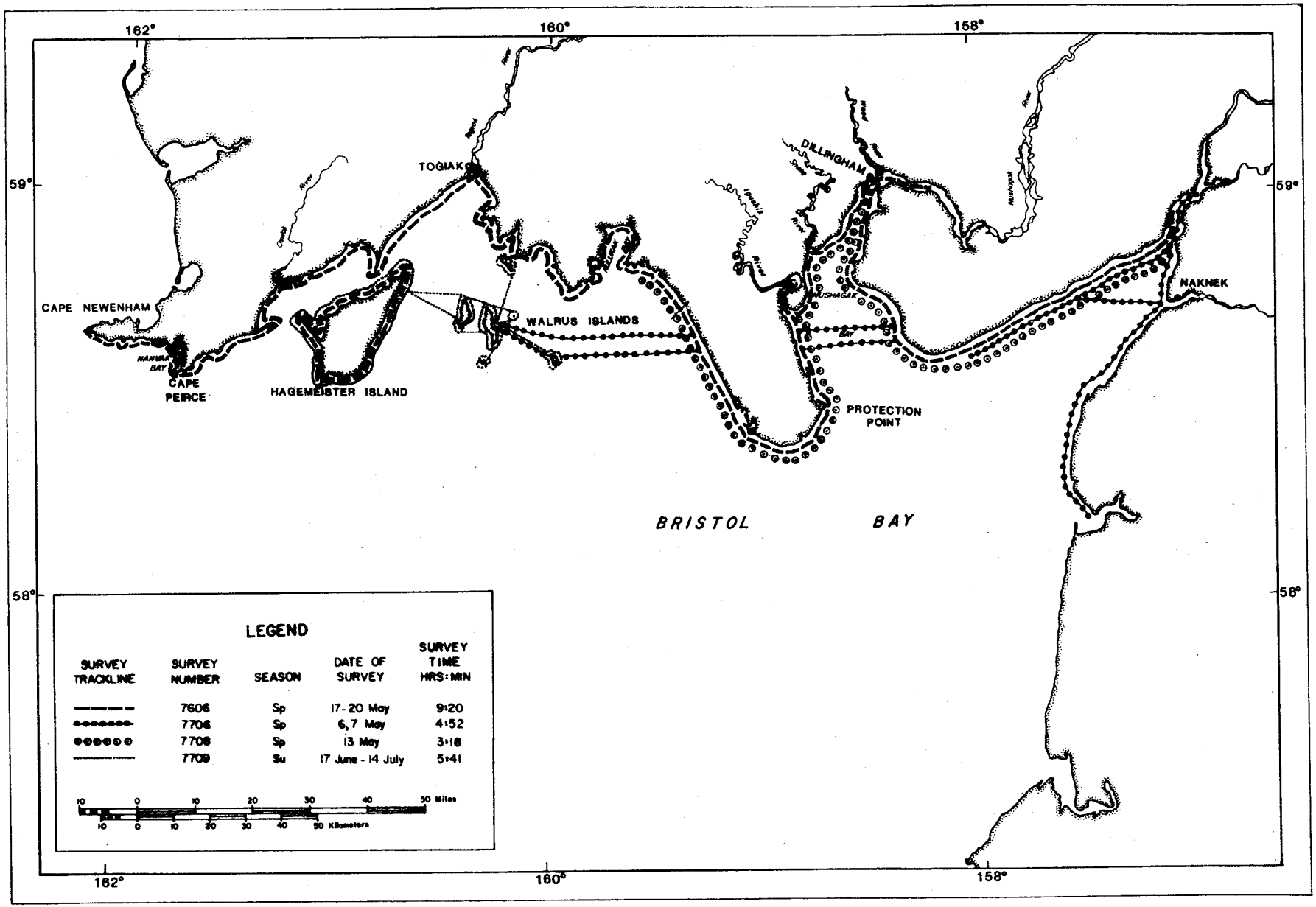


Fig. 134. Tracklines of aerial and boat (7709) surveys in North-Bristol Bay and North-Alaska Peninsula, 1976 and 1977.

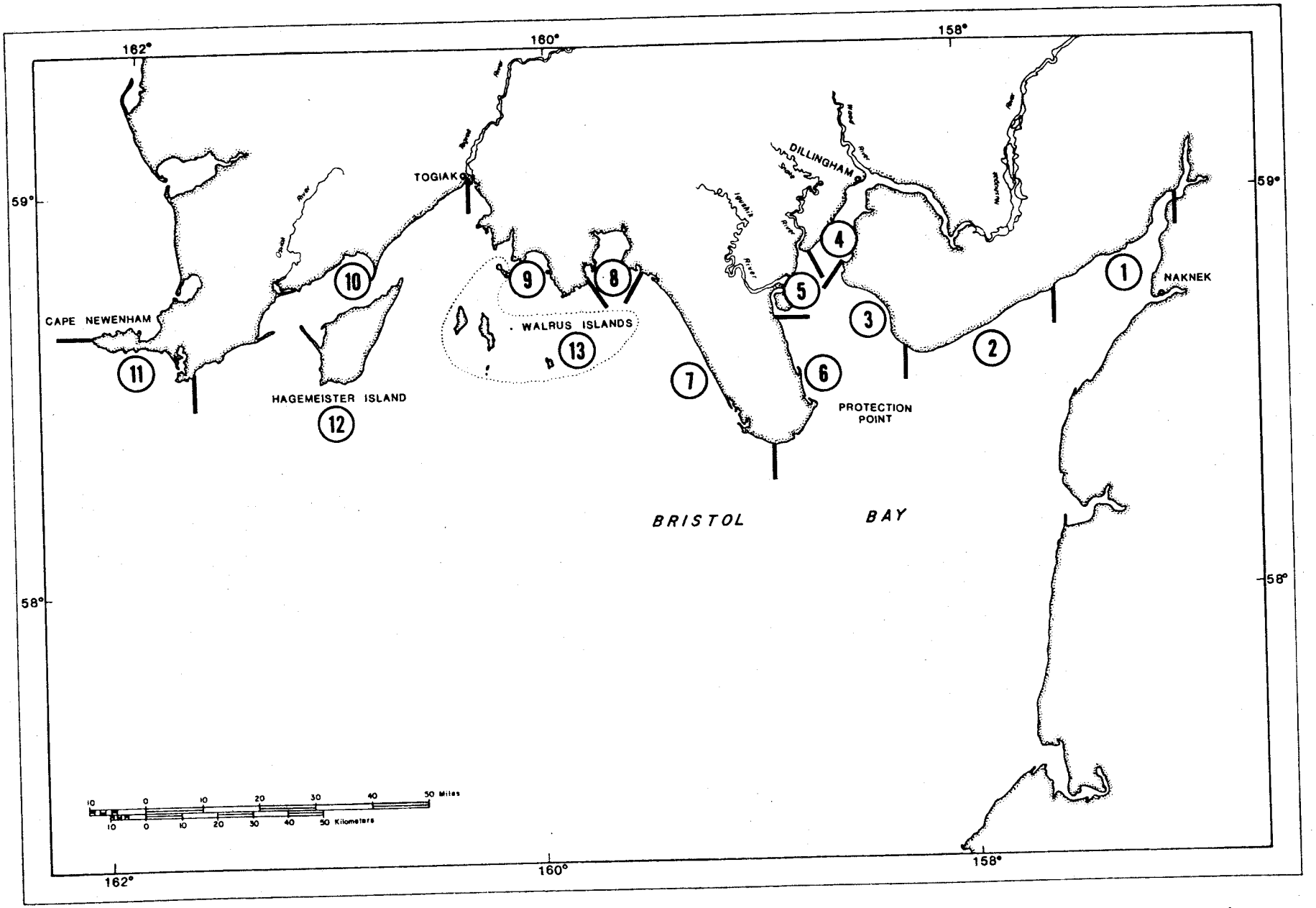


Fig. 135. Physiographic subdivision of North-Bristol Bay for bird density analysis. Each numbered section contains several survey stations.

Table 18. Bird density by section of coastline in North Bristol Bay, spring 1976, 1977, summer 1977. See Figure 135 for section boundaries. (T=trace).

	Spring Densities (birds/km^2)														Summer Density (birds/km^2)
	Section of Coastline														
Bird Group	1	2	3	4	5	6	7	8	9	10	11	12	13	Total	13
Loon	T	1	1	T	T	T	1	2	1	2	T	1	T	1	T
Grebe	T	T	T	T	T		T	T		T	T	T		T	0
Tubenose														0	0
Cormorant	T	T		T		T	2	2	12	10	2	4	T	2	15
Goose and Swan	10	1		2	2	2	T	1	1	11	140	T		7	0
Dabbler	81	1	2	5	1	1	T	3	1	2	1			9	0
Diver	13	13	171	2	13	16	1	14	21	7	14	2		12	0
Sea Duck	7	11	21	T	1	26	5	8	32	18	21	27	7	10	10
Merganser	1	2	1	T	1	1	1	3	4	2	T	1		1	0
Raptor	T	T		T	T		T		T	T				T	0
Crane	T	T		T	T	T		T	T	T	T			T	0
Shorebird	121	24	T	17	3	5	2	32	18	10	2	5		21	T
Gull and Jaeger	21	31	5	6	4	6	18	13	24	24	34	26	5	13	6
Tern	1	1	3	T	1	2	4	2	2	2	1	2		1	T
Alcid	T					T	T	1	7	1	249	8	4	8	103
Corvid	T	T		T	T	T		T		T	T			T	0
Other Passerine	T	T		T	T			T	T	T	T			T	0
Other Bird	3	2	1	T	T	2	T	T		T	1		T	1	0
TOTAL	259	86	206	34	26	61	36	81	121	90	466	76	16	86	134

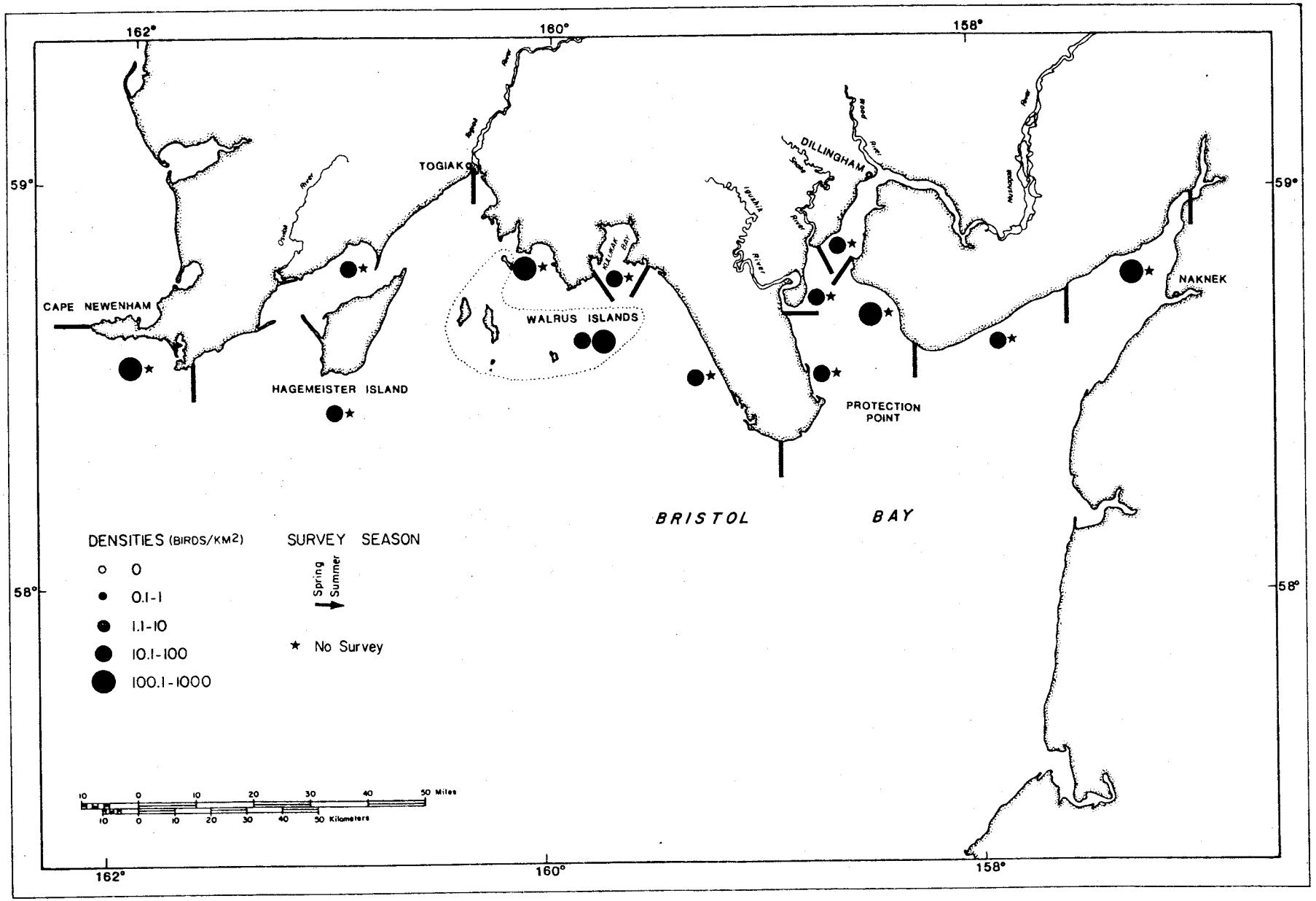


Fig. 136. Total bird density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

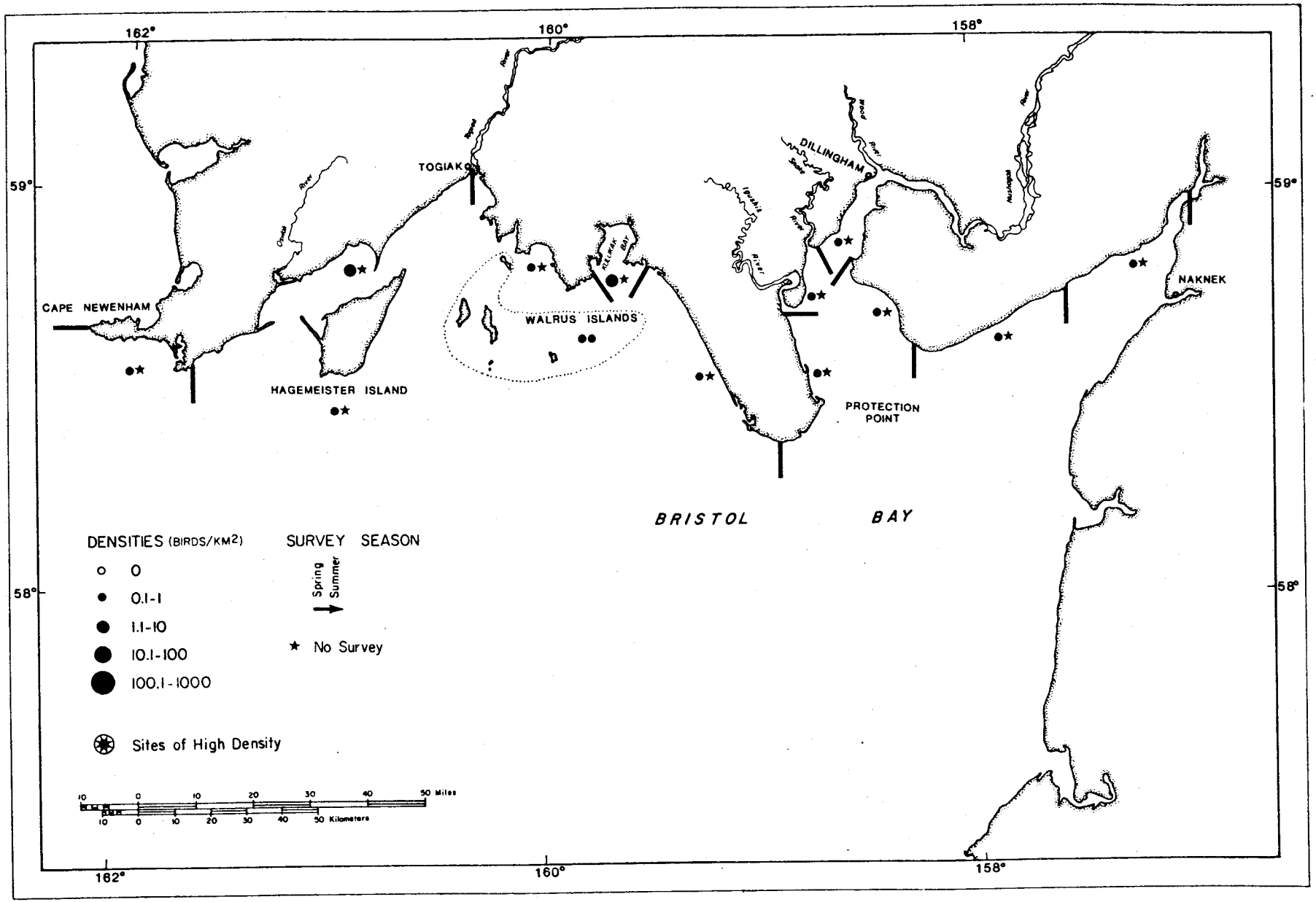


Fig. 137. Loon density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

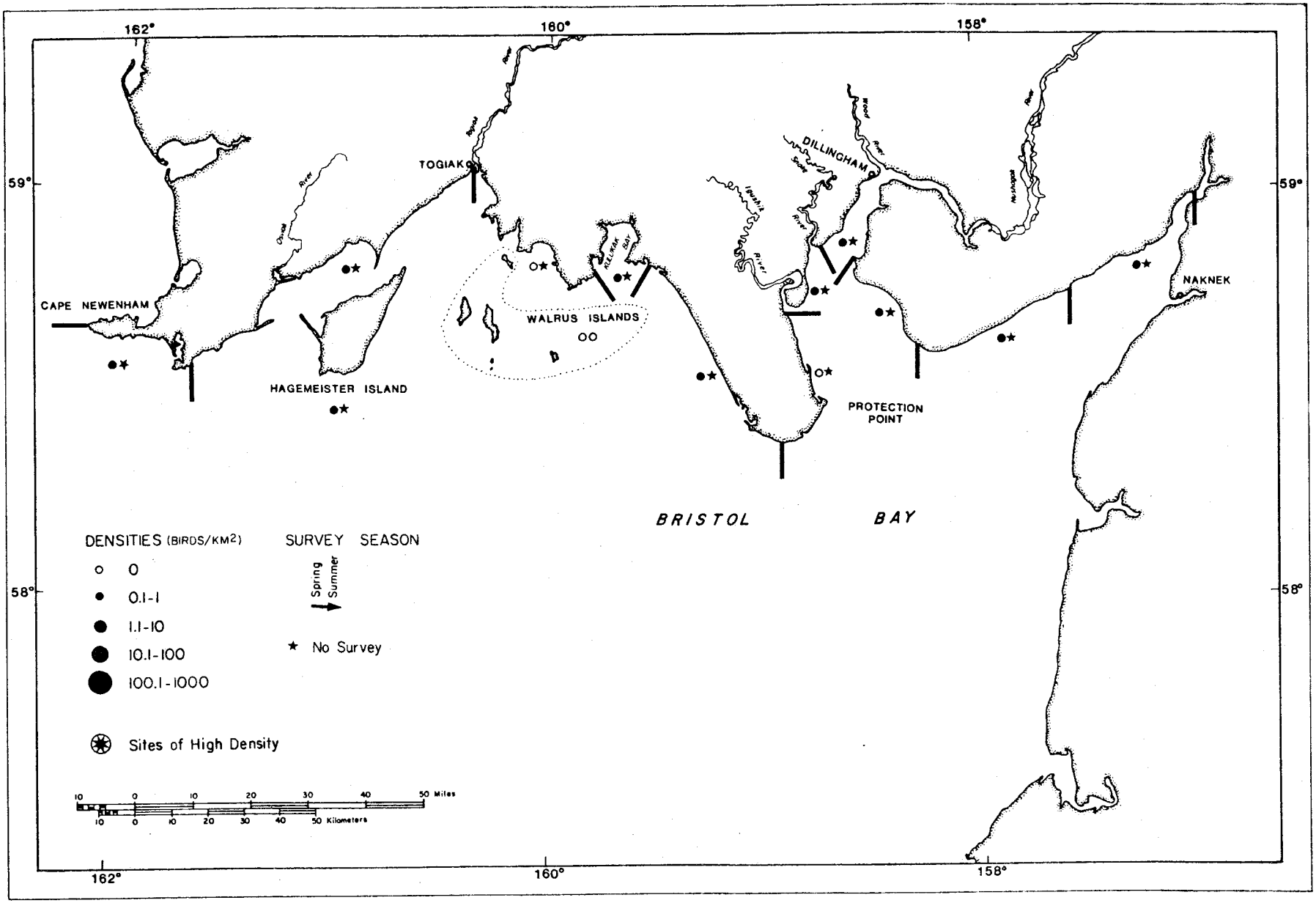


Fig. 138. Grebe density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

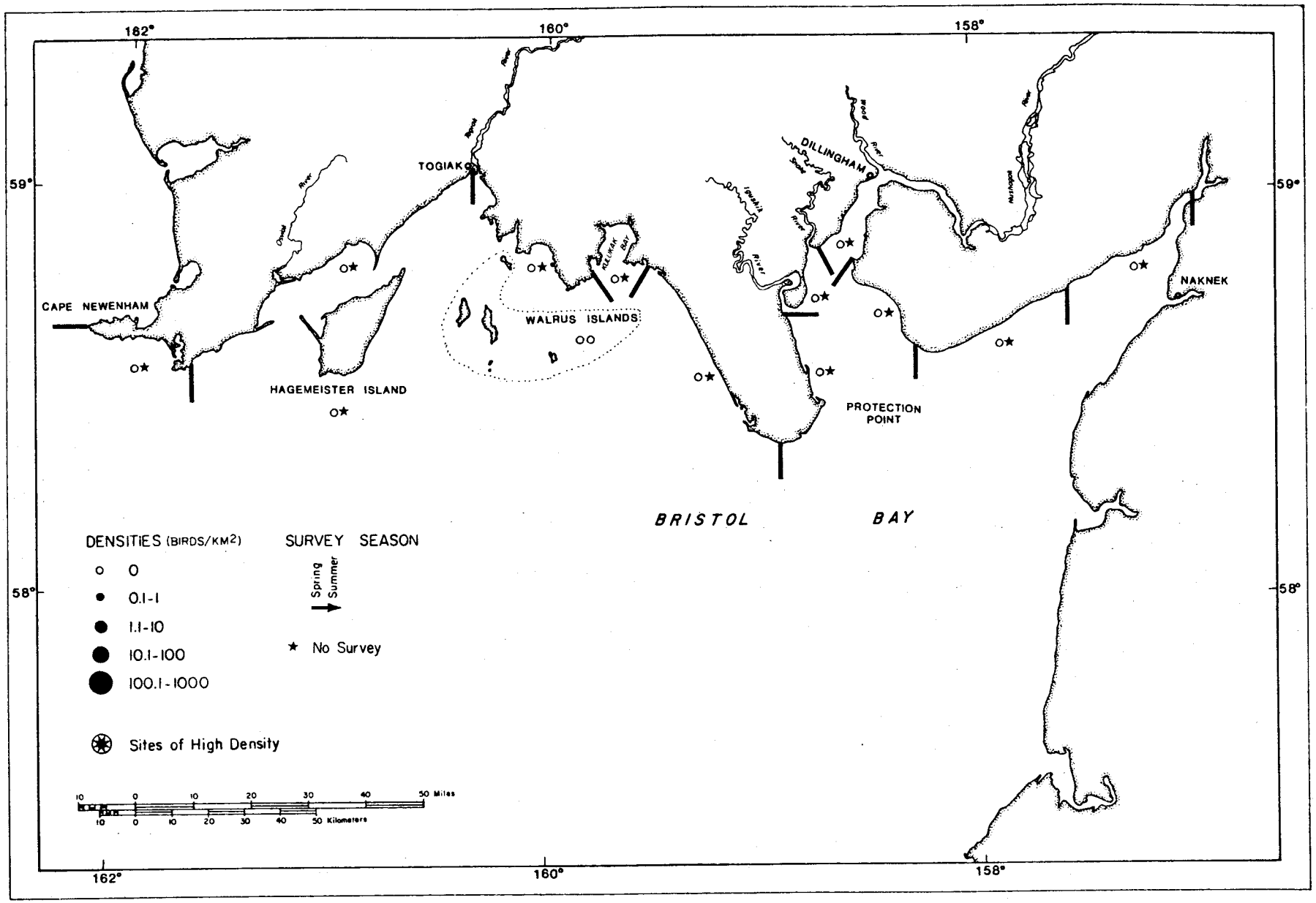


Fig. 139. Tubenose density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. No tubenoses were sighted.

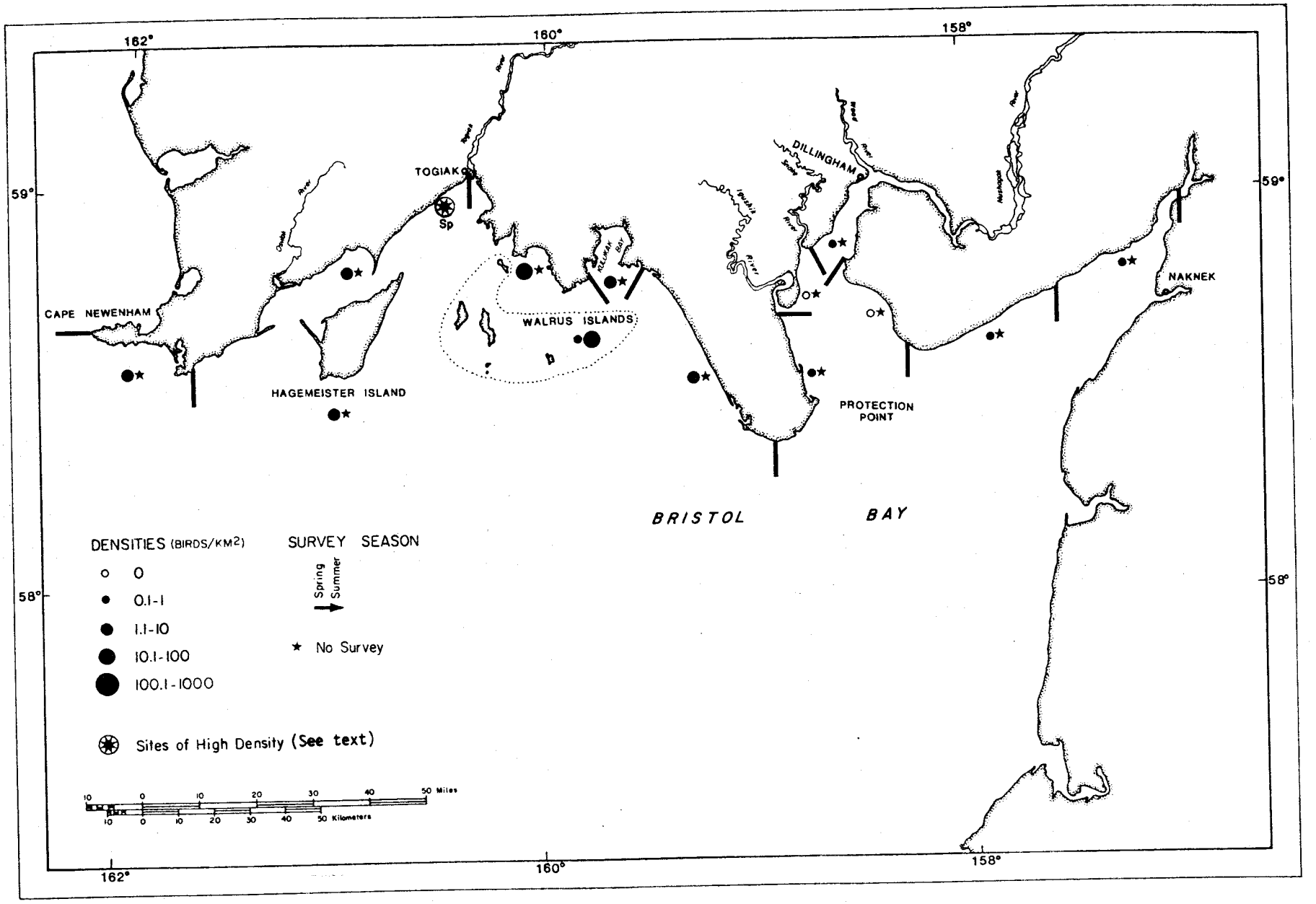


Fig. 140. Cormorant density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

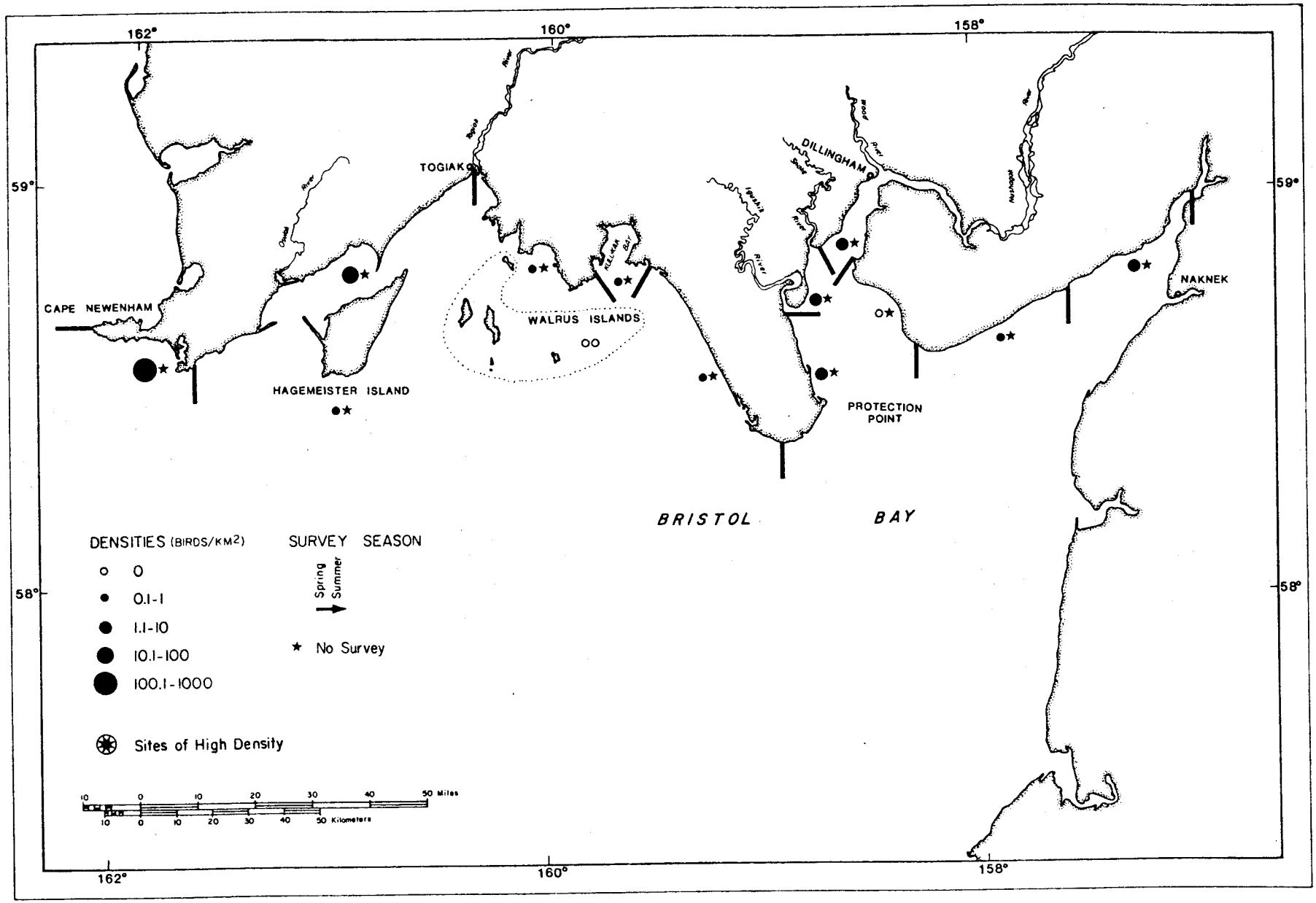


Fig. 141. Goose and swan density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

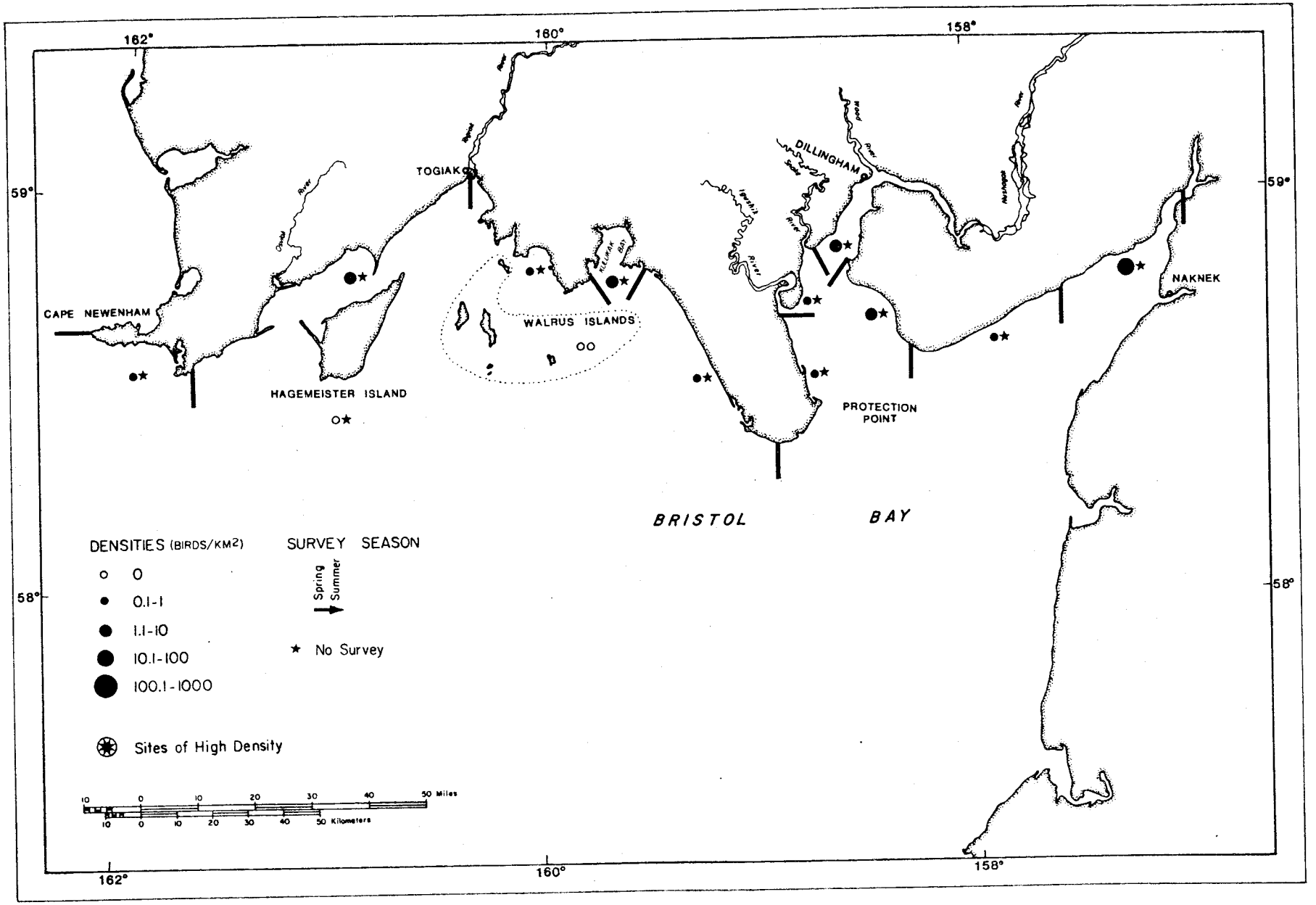


Fig. 142. Dabbling duck density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

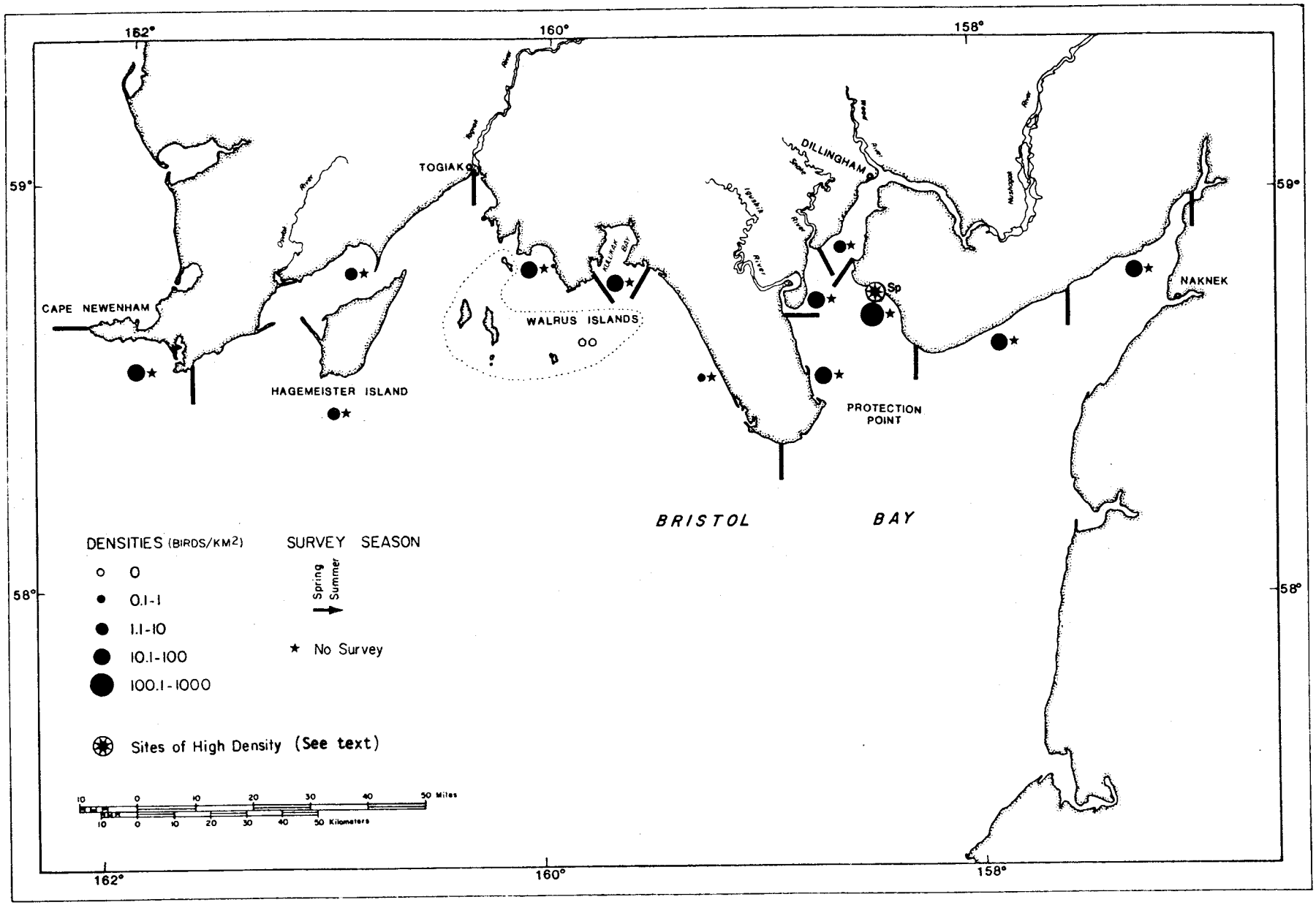


Fig. 143. Diving duck density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

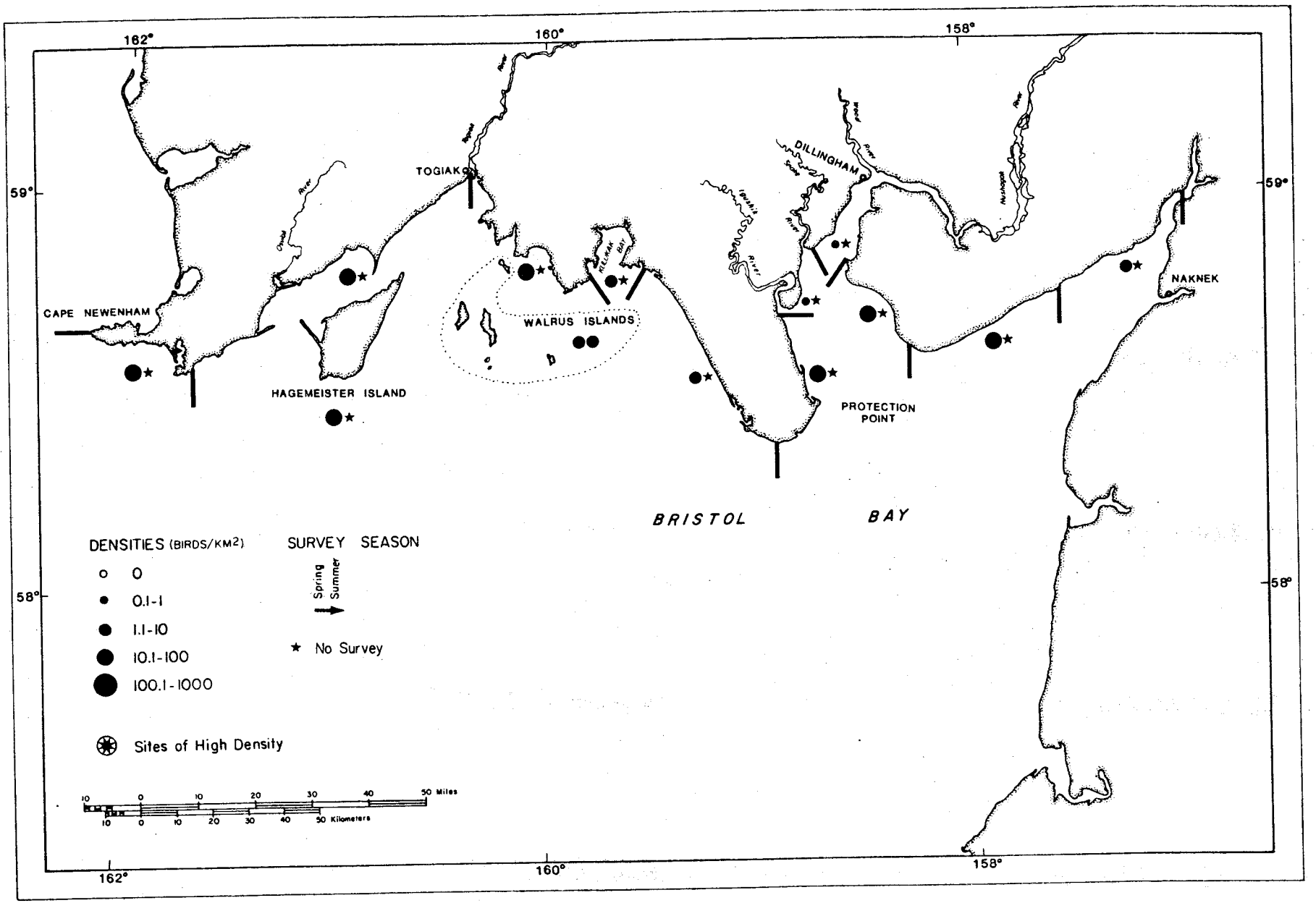


Fig. 144. Sea duck density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

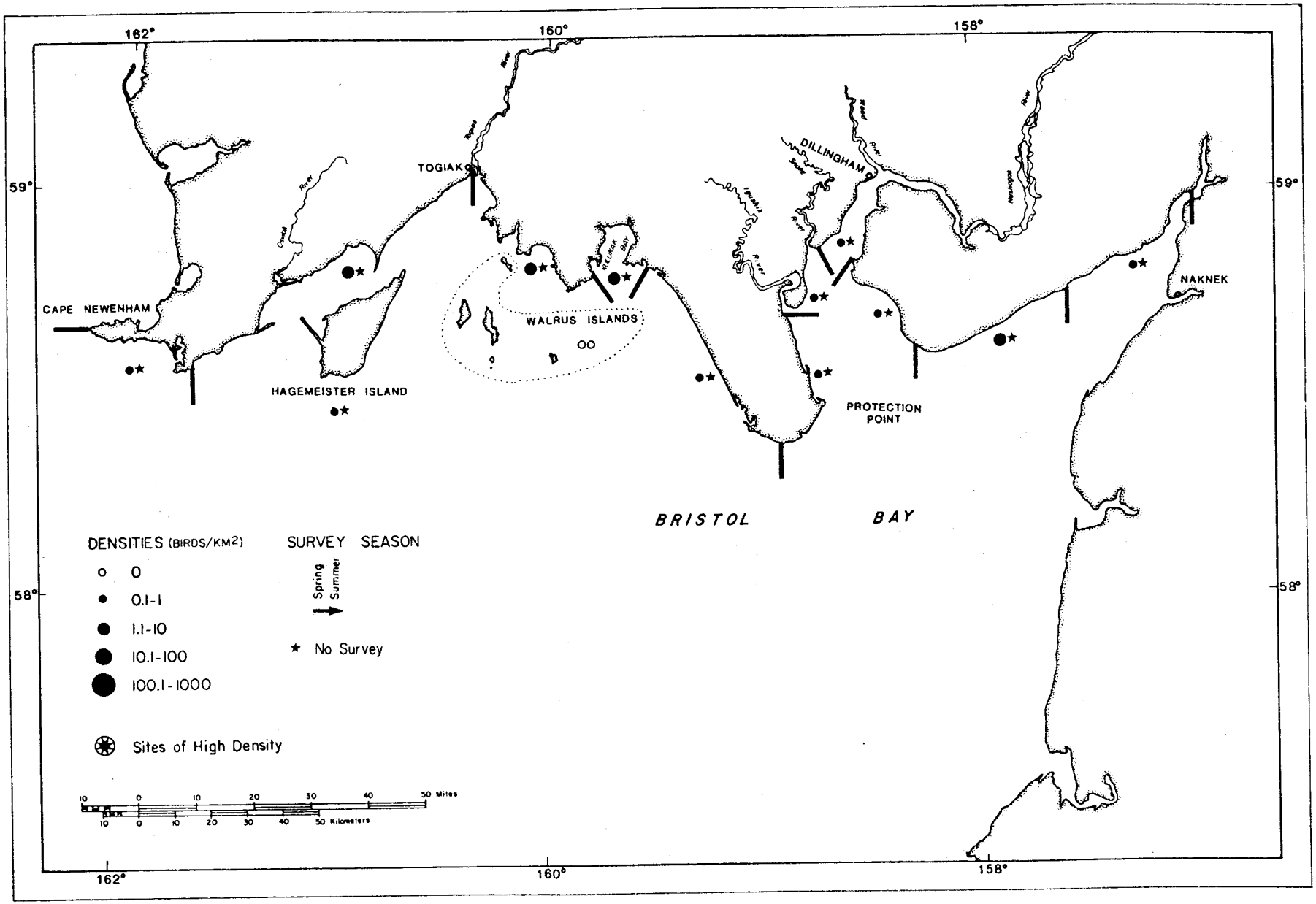


Fig. 145. Merganser density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

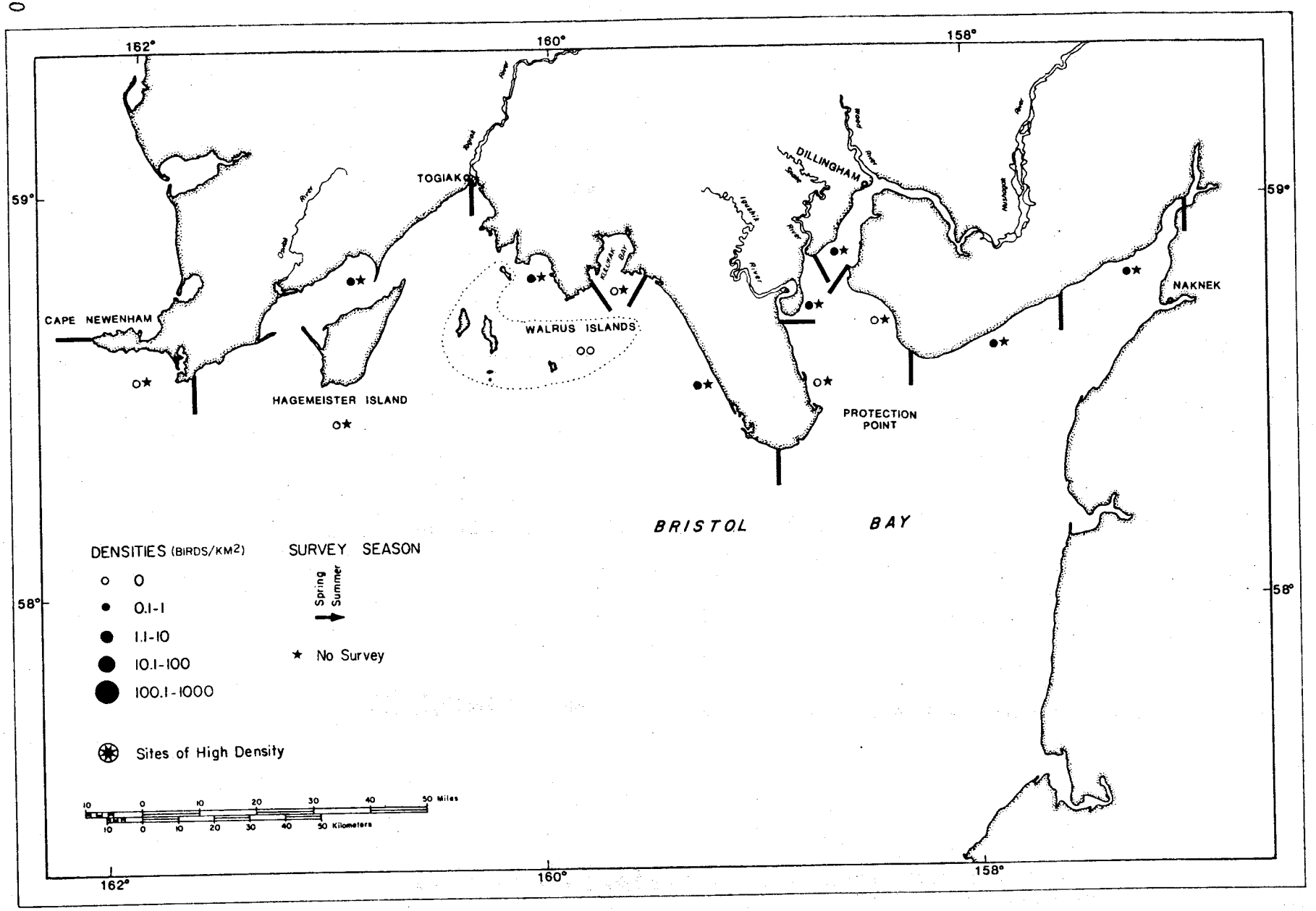


Fig. 146. Raptor density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

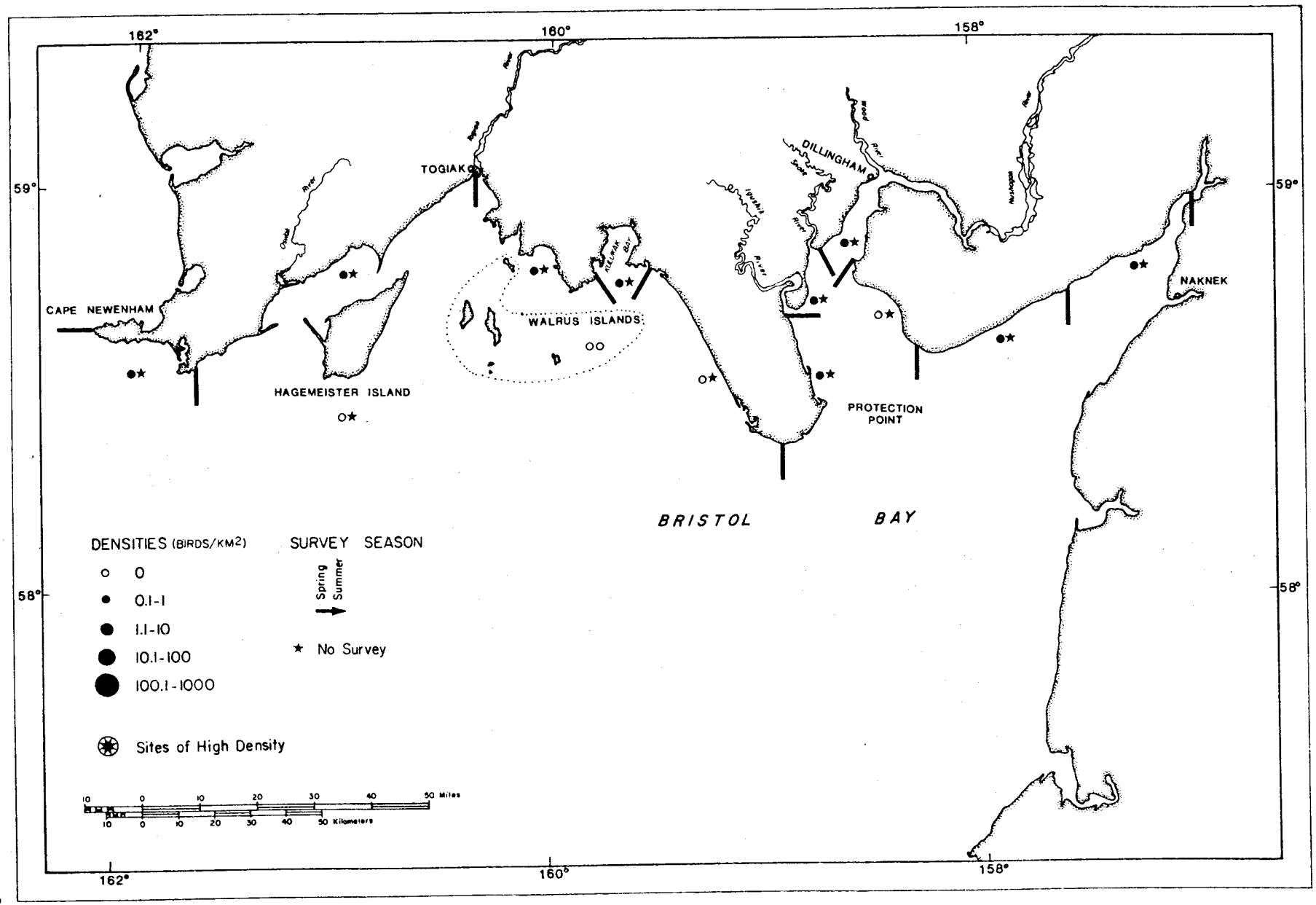


Fig. 147. Crane density by section in North-Bristol Bay during spring and summer seasons as determined by aerial survey. Densities read from left to right: spring, summer.

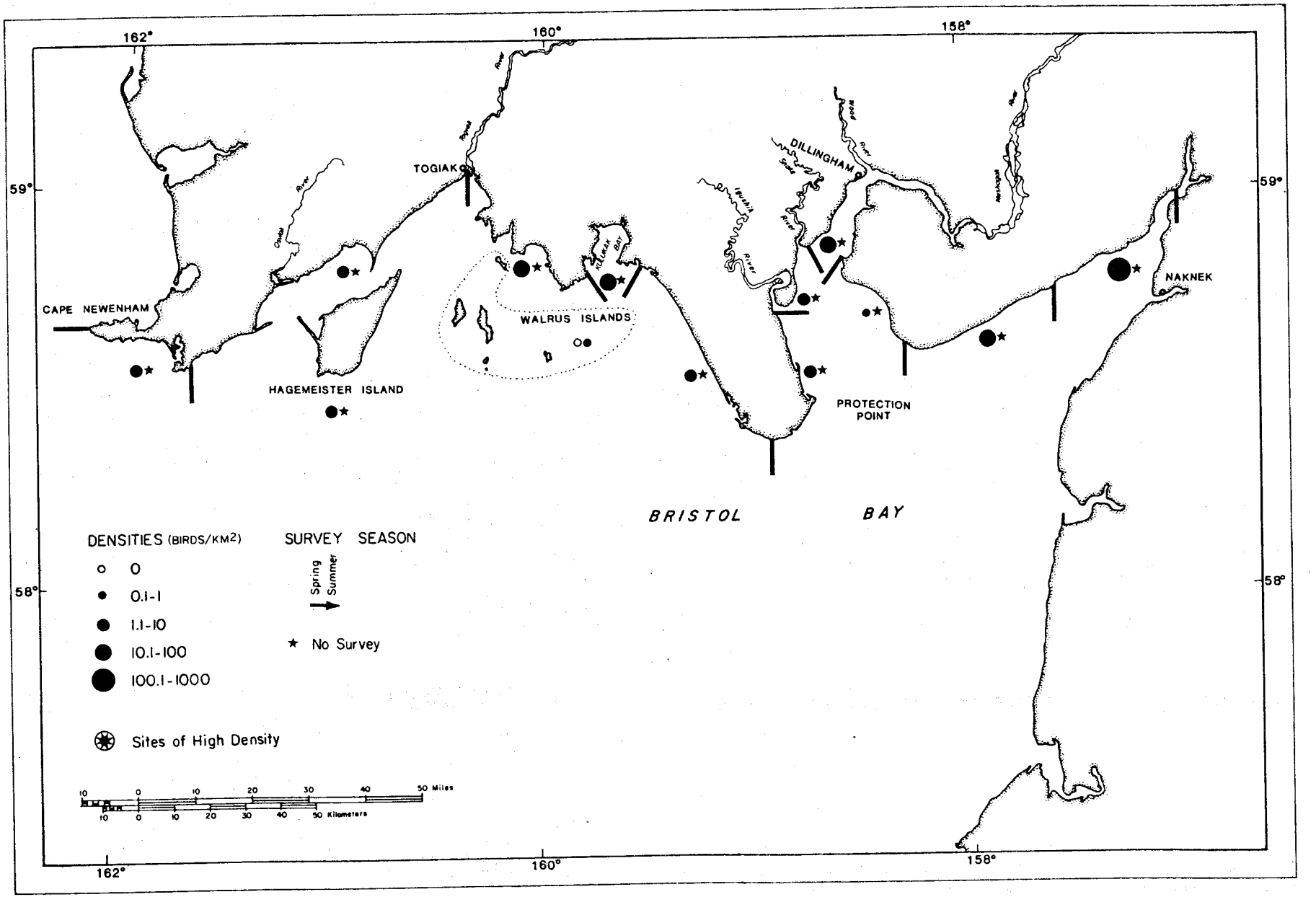


Fig. 148. Shorebird density by section in North-Bristol Bay during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

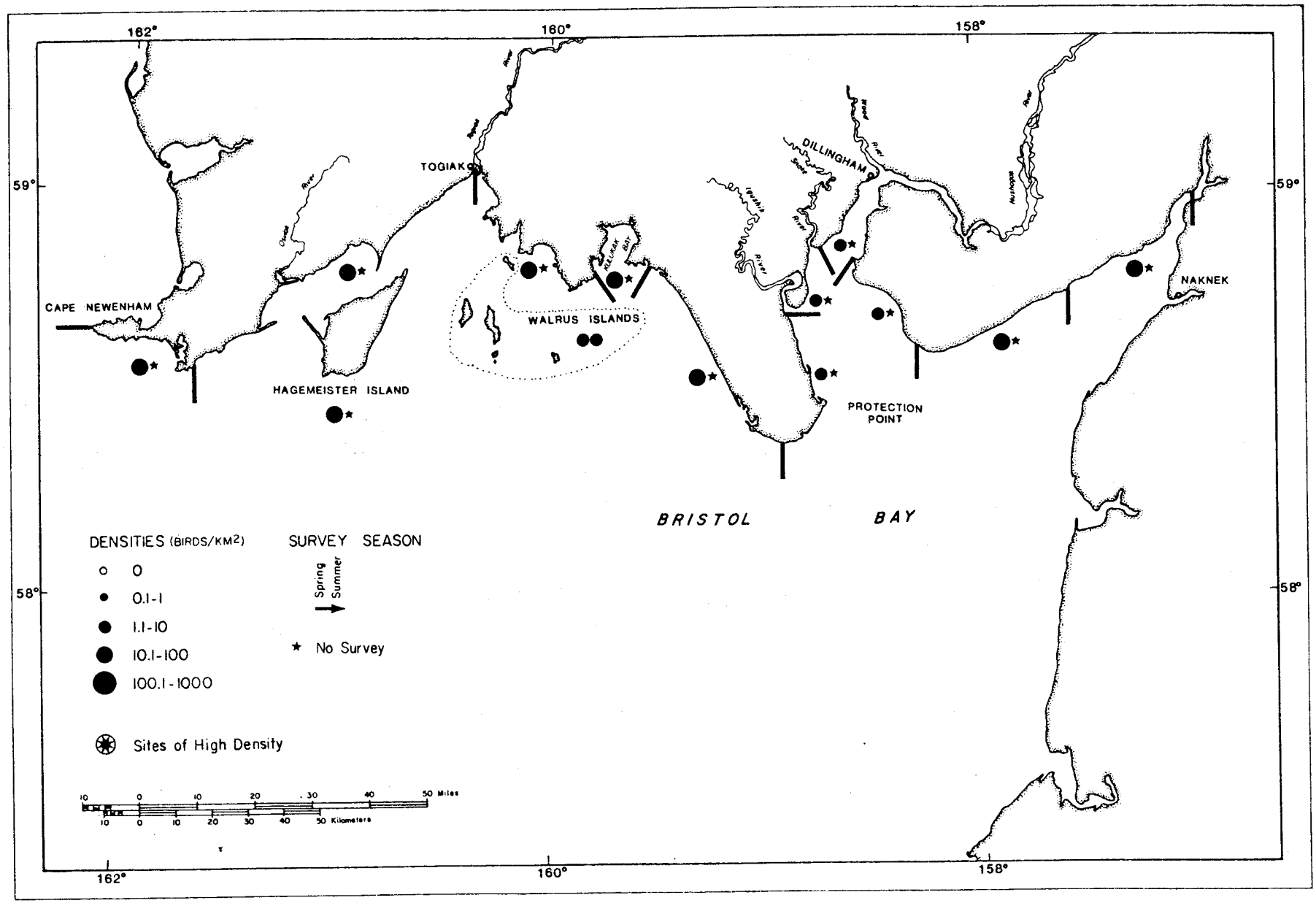


Fig. 149. Gull and jaeger density by section in North-Bristol Bay during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

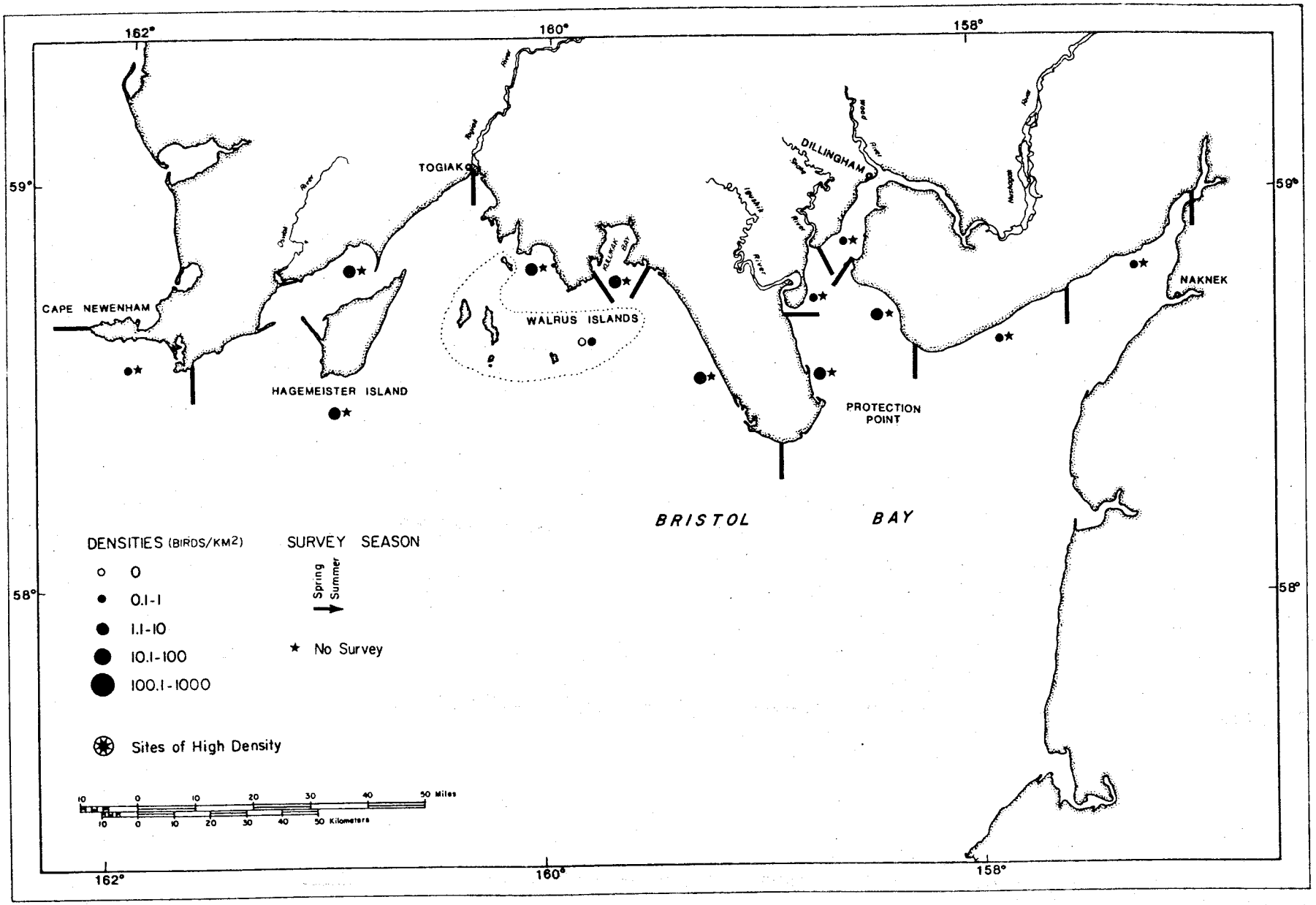


Fig. 150. Tern density by section in North-Bristol Bay during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

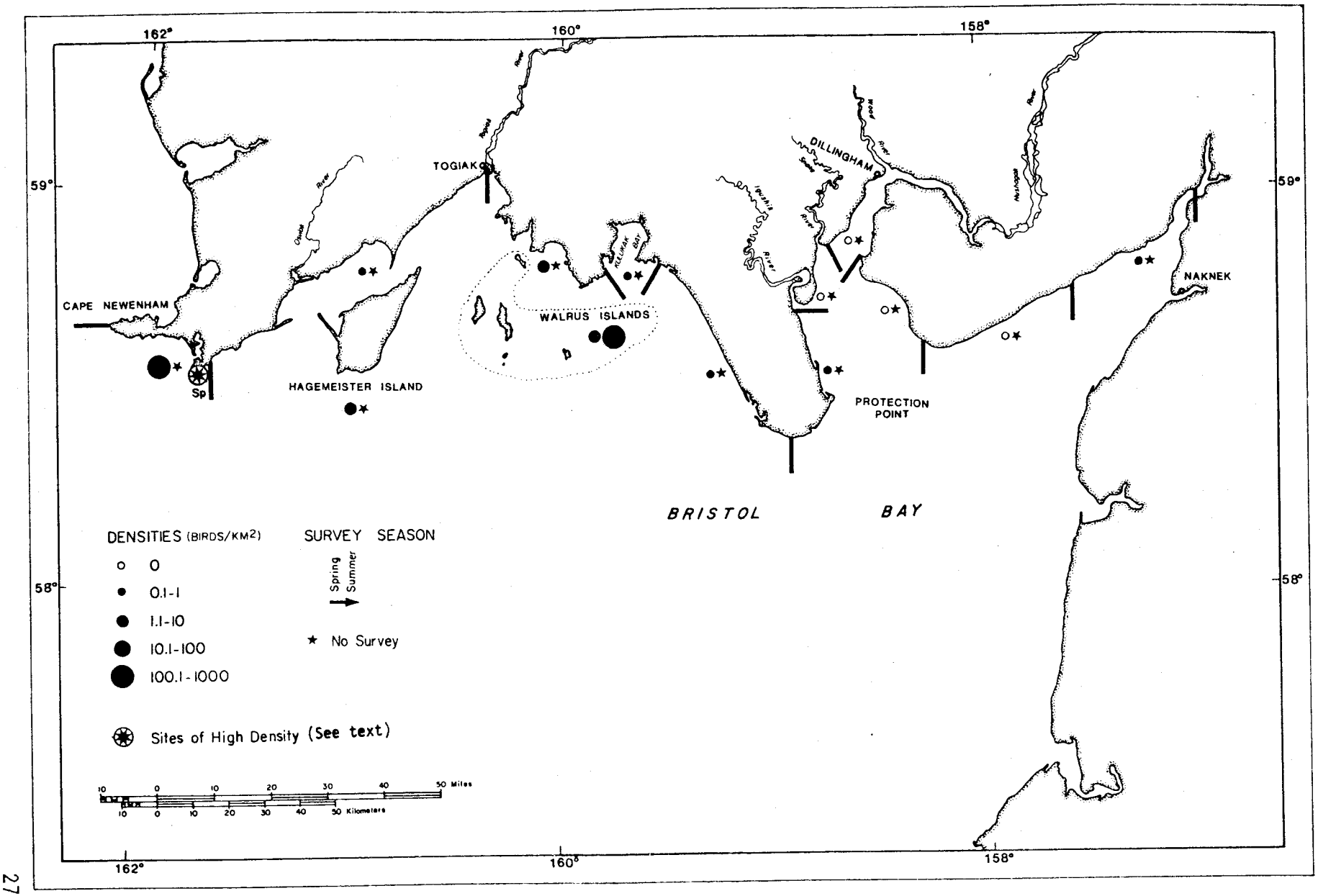


Fig. 151. Alcid density by section in North-Bristol Bay during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

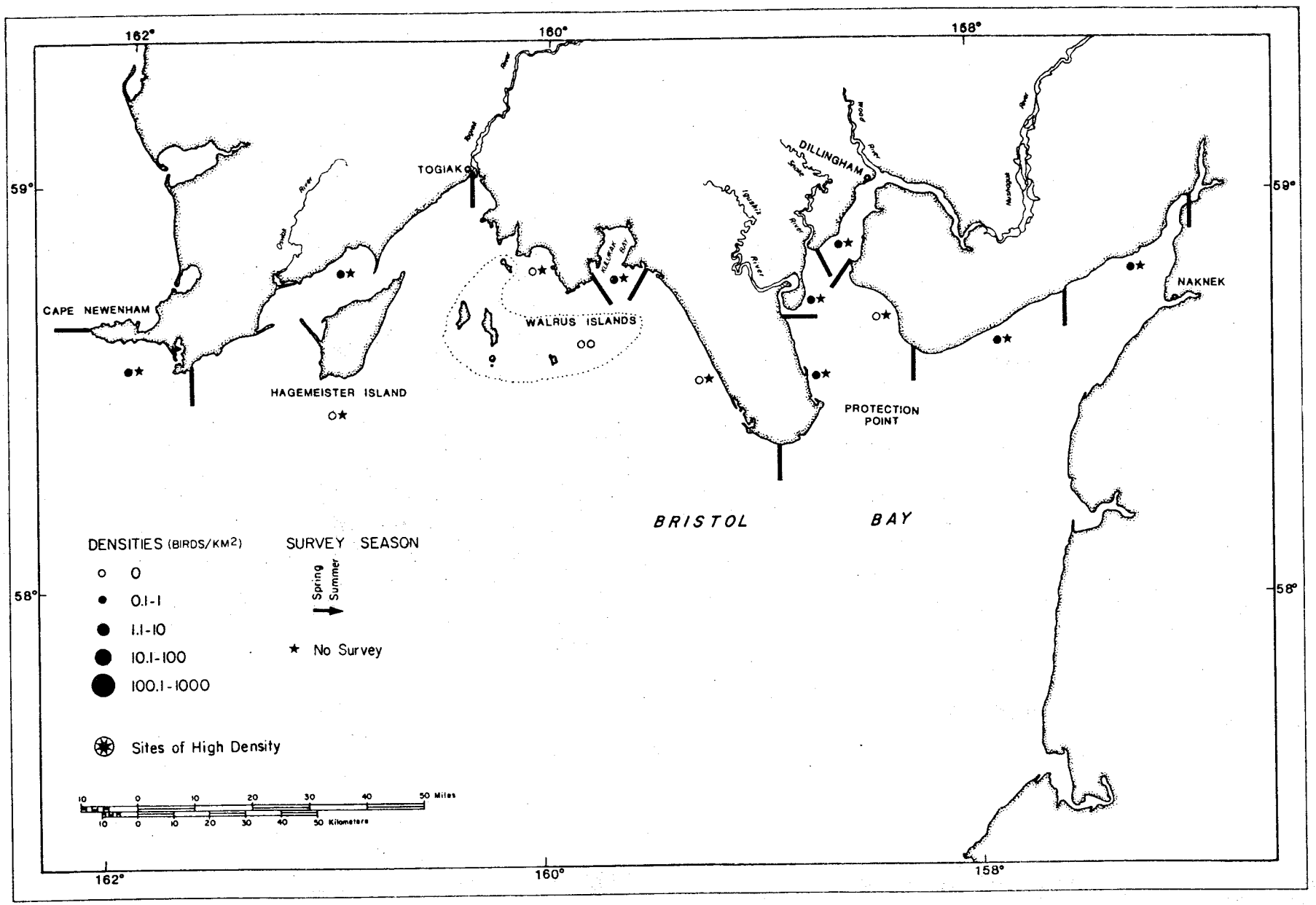


Fig. 152. Corvid density by section in North-Bristol Bay during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

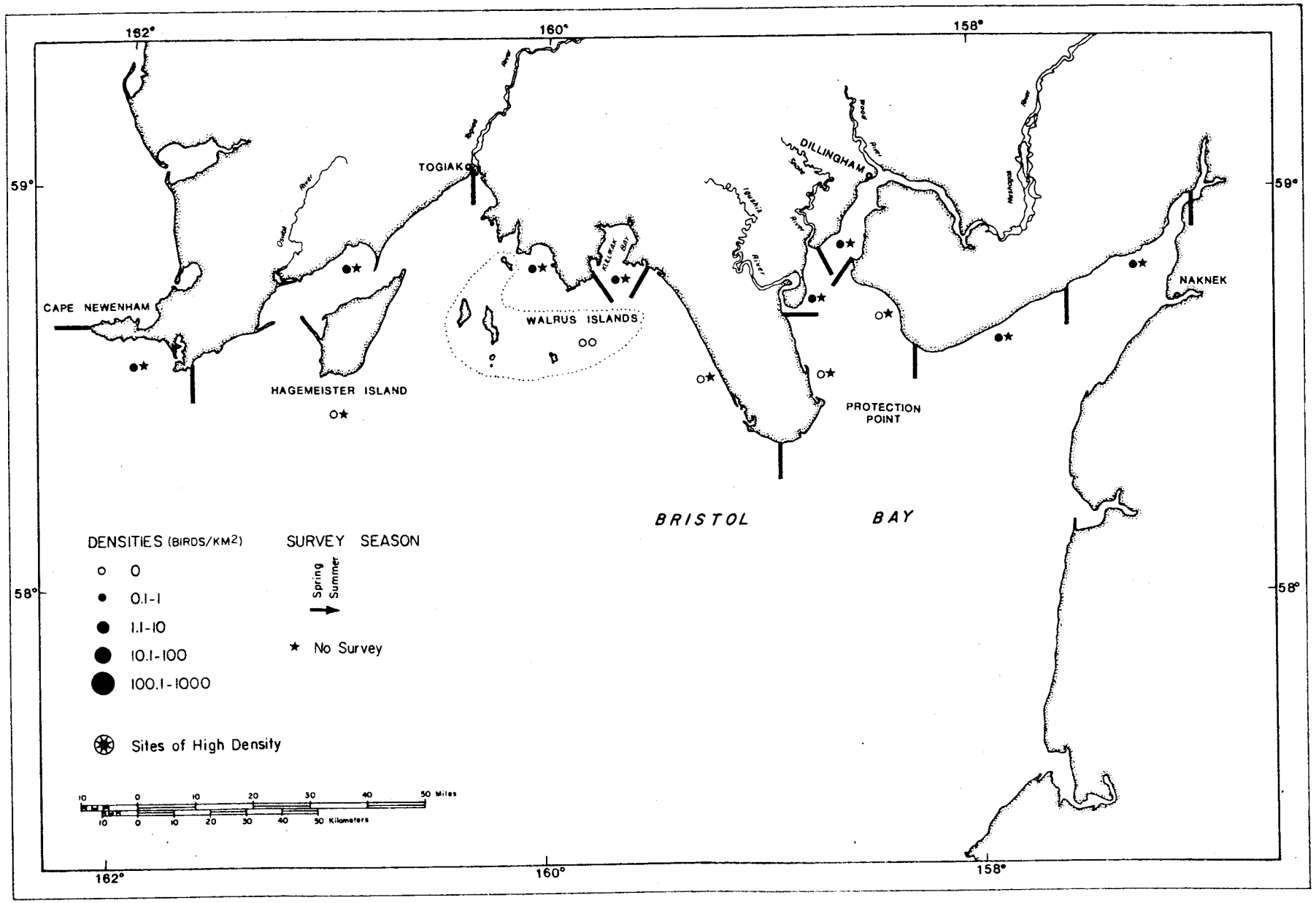


Fig. 153. Passerine (other than corvid) density in North-Bristol Bay during spring and summer seasons as determined by aerial surveys. Densities read from left to right: spring, summer.

The coast from Kulukak Bay to Togiak, Section 9, was the fourth section with a mean density over 100 birds/km^2 (121). No one bird group dominated in this section. The largest were sea ducks with 32 birds/km^2 followed by gulls 24 birds/km^2, divers 21 birds/km^2, shorebirds 18 birds/km^2, cormorants 12 birds/km^2, alcids 7 birds/km^2, mergansers 4 birds/km^2, plus several groups with 2 or fewer birds/km^2.

The section with the lowest density, Section 13, had 16 birds/km^2, but this represented only pelagic transects to, from and between the Walrus Islands. A shoreline survey of the islands was not conducted in spring.

For North-Bristol Bay in spring, there was a well-balanced distribution of overall densities in all bird groups. Shorebirds had the highest density at 21 birds/km^2. This was followed by 13 gulls/km^2, 12 divers/km^2, 10 sea ducks/km^2, 9 dabblers/km^2, 8 alcids/km^2 and 7 geese/km^2. Cormorants occurred at a density of 2 birds/km^2, three groups had densities of 1 bird/km^2 and five had traces. No tubenoses were observed.

Loons were observed in all sections but were most dense in Sections 7-10 where 1-2 birds/km^2 were found. Red-throated Loons were by far the most abundant. They were observed in shallow water all along the coast. Cormorants reached greatest densities of 10 and 12 birds/km^2 in the two Togiak Bay sections. Besides the large number of geese in Nanvak Bay, concentrations were also found in Osviak Bay and at the mouth of the Kvichak River. At Protection Point all five goose species commonly observed in Alaska (Canada, Brant, Emperor, White-fronted and Snow) were recorded as well as swans, cranes and many duck species. Dabblers were most dense in Section 1 and divers in Section 3. Densities of dabblers were low in all other sections, but densities of divers were moderately high in many of the sections. Scaup made up 99 percent of all diving ducks observed. The difference in dabbler and diver density likely reflected a differential in migration timing rather then absolute bird usage patterns in the area.

Twenty or more sea ducks/km^2 were recorded in several sections. The highest densities (32 birds/km^2) were in Section 9 and next highest in Sections 6 and 12. Composition of identified sea ducks was: 10 percent Oldsquaws, 12 percent Harlequin Ducks, 19 percent eiders, and 59 percent scoters. King Eiders were the prevalent identified eider (45% of the total), while 36 percent of the eiders were Common and 19 percent Steller's. Most of the identified scoters were Black (97%). Three percent were White-winged scoters and only a trace of Surf Scoters as recorded.

Red-breasted Mergansers were relatively common in North-Bristol Bay and Sections 8-10 supported the highest densities (2-4 birds/km^2). Sandhill Cranes, although never abundant, were frequently observed (9 of 13 sections). Besides Section 1, where 121 shorebirds/km^2 were found, the densest concentrations of shorebirds were in Section 8, Kulukak Bay, where 32 birds/km^2 were found and in outer Kvichak Bay (Section 2) with 24 birds/km^2. Nearly 5,000 shorebirds were recorded in Section 4 but densities were only 17 birds/km^2.

Densities of over 10 gulls/km^2 were observed in all sections except the Nushagak Bay area. In Sections 3-6 only 4 to 6 gulls/km^2 were found. Many gulls were paired and apparently on breeding territories along the Nushagak River and over 4,000 gulls were counted in those four sections. However, the area searched was large, and gull densities were correspondingly low. Tern migration had reached its peak in May, and the North-Bristol Bay surveys caught at least part of the migration. Terns were observed in all sections except No. 13 and densities up to 4 terns/km^2 were recorded.

Alcids were found in measurable numbers only beyond Kulukak Bay. The majority (249 birds/km^2) were in Section 11 but other concentrations were in Sections 9 and 12. Murres comprised 91 percent of the total identified alcids, Pigeon Guillemots 5 percent and puffins (mostly Tufted) 4 percent. Corvids were most numerous in Section 10 and other passerines in Section 5 but both groups were found only in trace quantities.

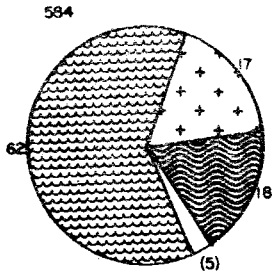
Habitat Usage - Habitat preferences of each species group and what species groups were found on each habitat type for the spring survey of North-Bristol Bay are shown in Figs. 154 and 155, respectively. Forty-two percent of the birds were recorded on protected delta habitats, 37 percent on exposed inshore habitats, 12 percent on bay habitats, 4 percent on offshore waters, 3 percent in lagoon habitats, 2 percent on saltmarshes and 1 percent on exposed deltas. Six habitats were used by 3,500 or more birds (4% or more of the total). The remaining 20 identified habitats on which birds were found contained only small numbers of birds.

During the spring surveys most birds were found on exposed inshore waters (22% of the total). Three bird groups predominated in this habitat: alcids (34% of the birds), sea ducks (27%) and divers (23%). Nineteen percent of the birds used protected delta water, and many of these were dabblers (43%), divers (20%), shorebirds (16%) and gulls (9%). Exposed sand beach and bay water were each used by 7 percent of the birds. On sand beaches most birds were gulls and divers (46% and 33%, respectively) and on bay water waterfowl predominated, 52 percent geese, 22 percent divers and 14 percent sea ducks. Four percent of the birds were found on both alluvial floodplain and protected delta mud. On the former habitat, shorebirds, gulls and geese were most abundant (41%, 26%, and 16% respectively). The latter habitat was used most by shorebirds (48%), gulls (23%) and dabblers (16%).

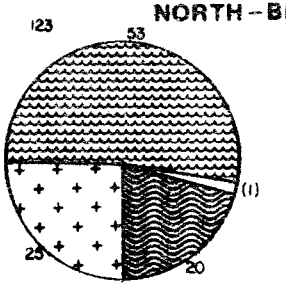
On a species group basis, shorebirds, the most abundant group, were found on 23 of 26 identified habitats, but almost one-half were on unidentified protected alluvial habitats. Thirteen percent were on or flying over protected alluvial floodplains. The remainder was divided among the other habitats. Gulls, too, were on a variety of habitats (22 of 26) but most frequently used exposed sand beaches (22%), protected delta water (11%), alluvial floodplain (7%) and protected delta mud (6%).

Almost 13,000 birds observed during the spring survey were diving ducks (scaup). They were found most on exposed inshore water (35%), protected delta water (27%), exposed sand beaches (17%) and bay water (11%).

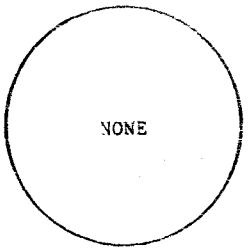
NORTH-BRISTOL BAY, SPRING



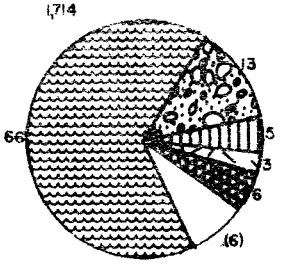
Loons



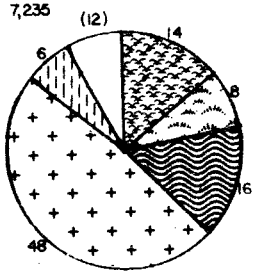
Grebes



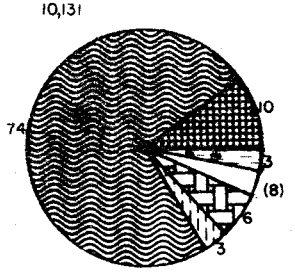
Tubenoses



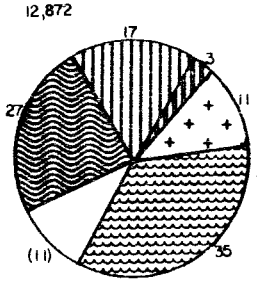
Cormorants



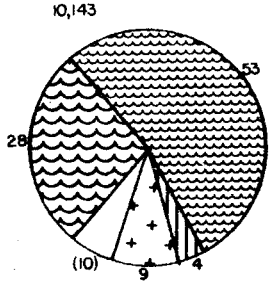
Swans and Geese



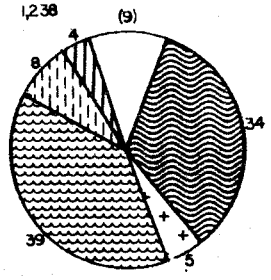
Dabblers



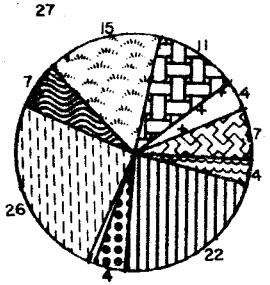
Divers



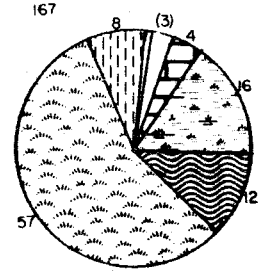
Sea Ducks



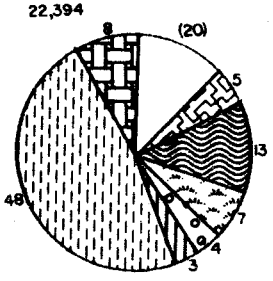
Mergansers



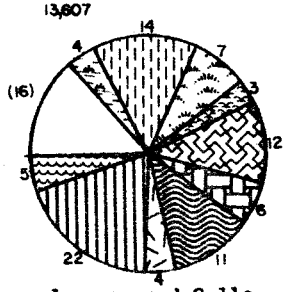
Raptors



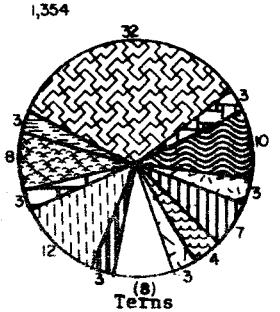
Cranes



Shorebirds



Jaegers and Gulls



Terns

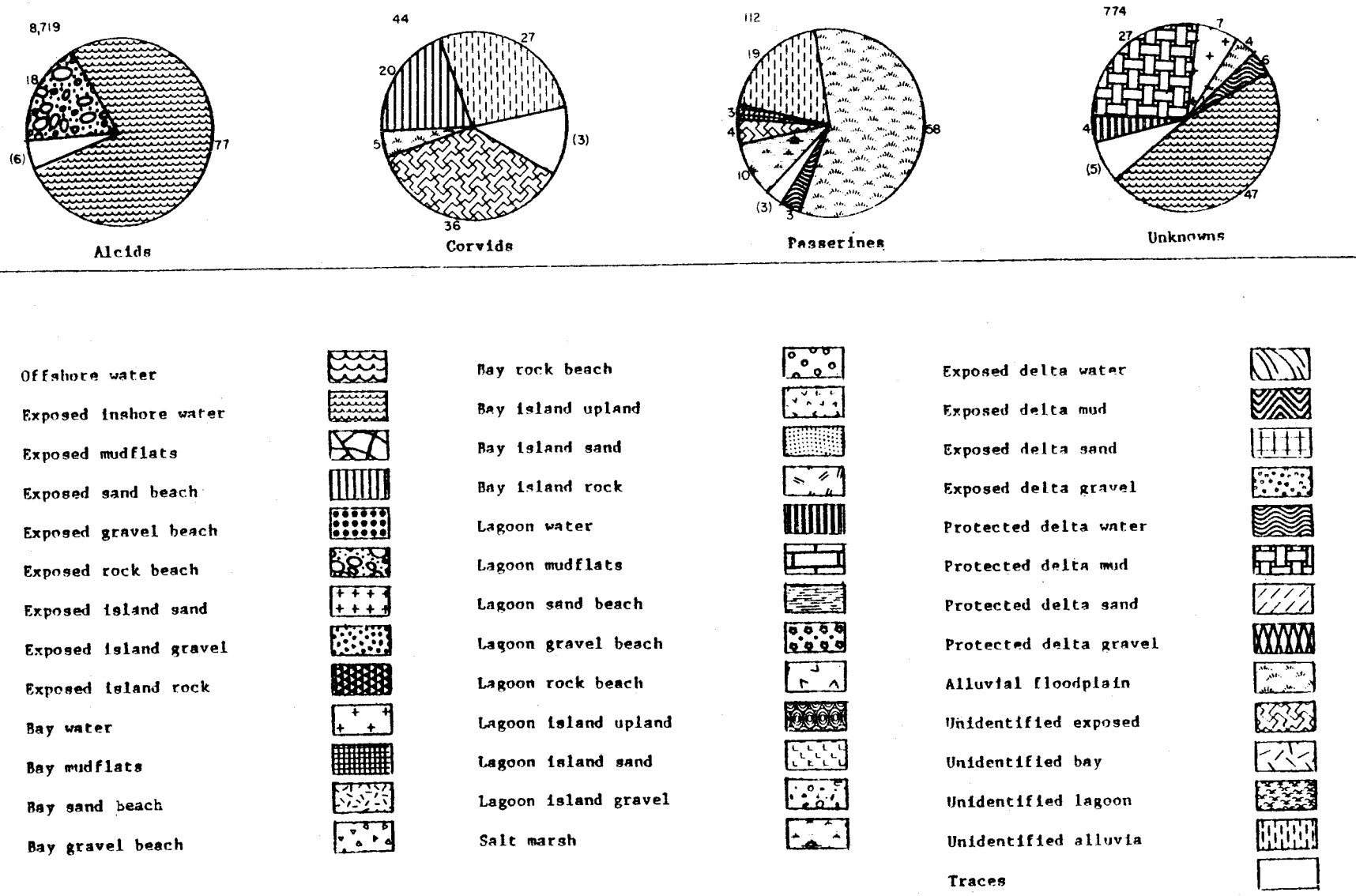
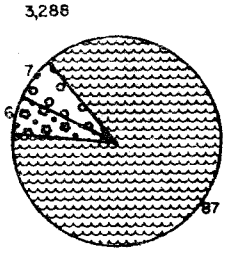
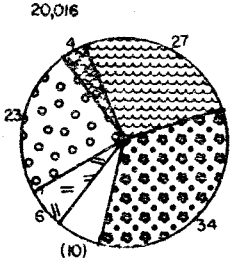


Fig. 154. North-Bristol Bay, Spring 1976, 1977. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

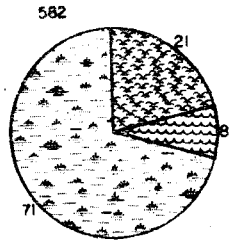
NORTH-BRISTOL BAY, SPRING



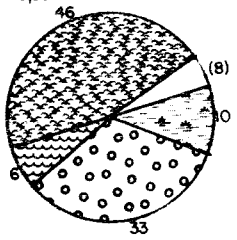
Offshore water



Exposed inshore water



Exposed mudflats



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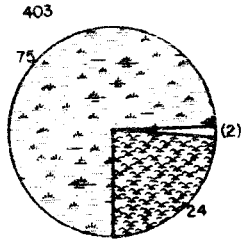
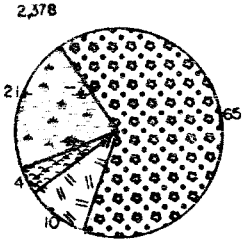
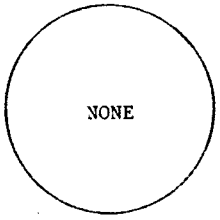


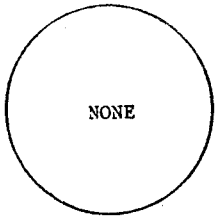
Exposed gravel beach



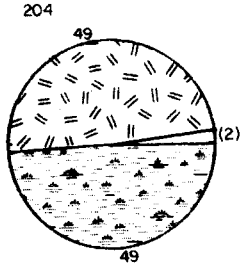
Exposed rock beach



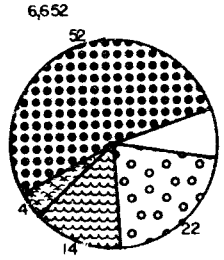
Exposed island sand



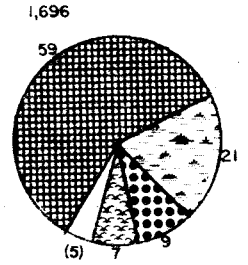
Exposed island gravel



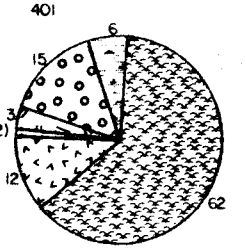
Exposed island rock



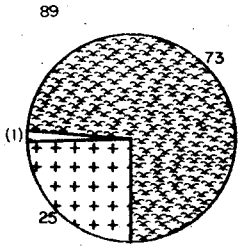
Bay water



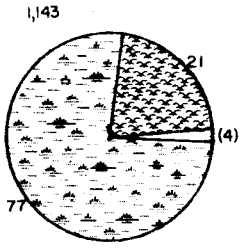
Bay mudflats



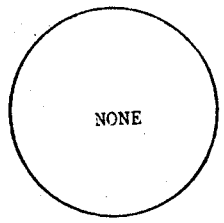
Bay sand beach



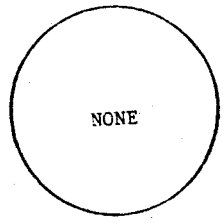
Bay gravel beach



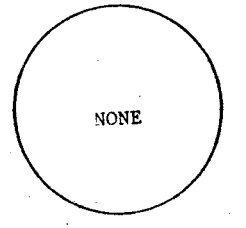
Bay rock beach



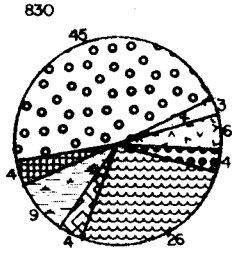
Bay island upland



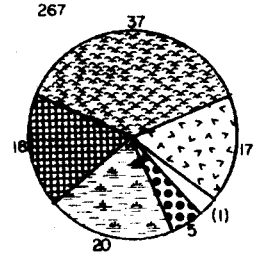
Bay island sand



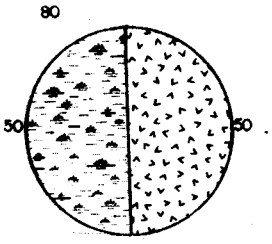
Bay island rock



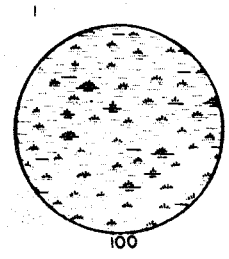
Lagoon water



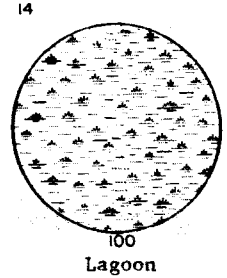
Lagoon mudflats



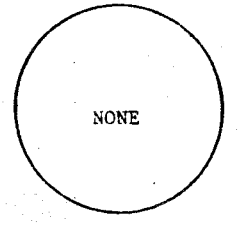
Lagoon sand beach



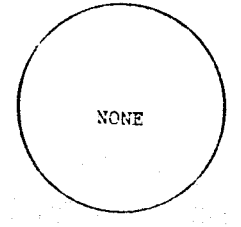
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

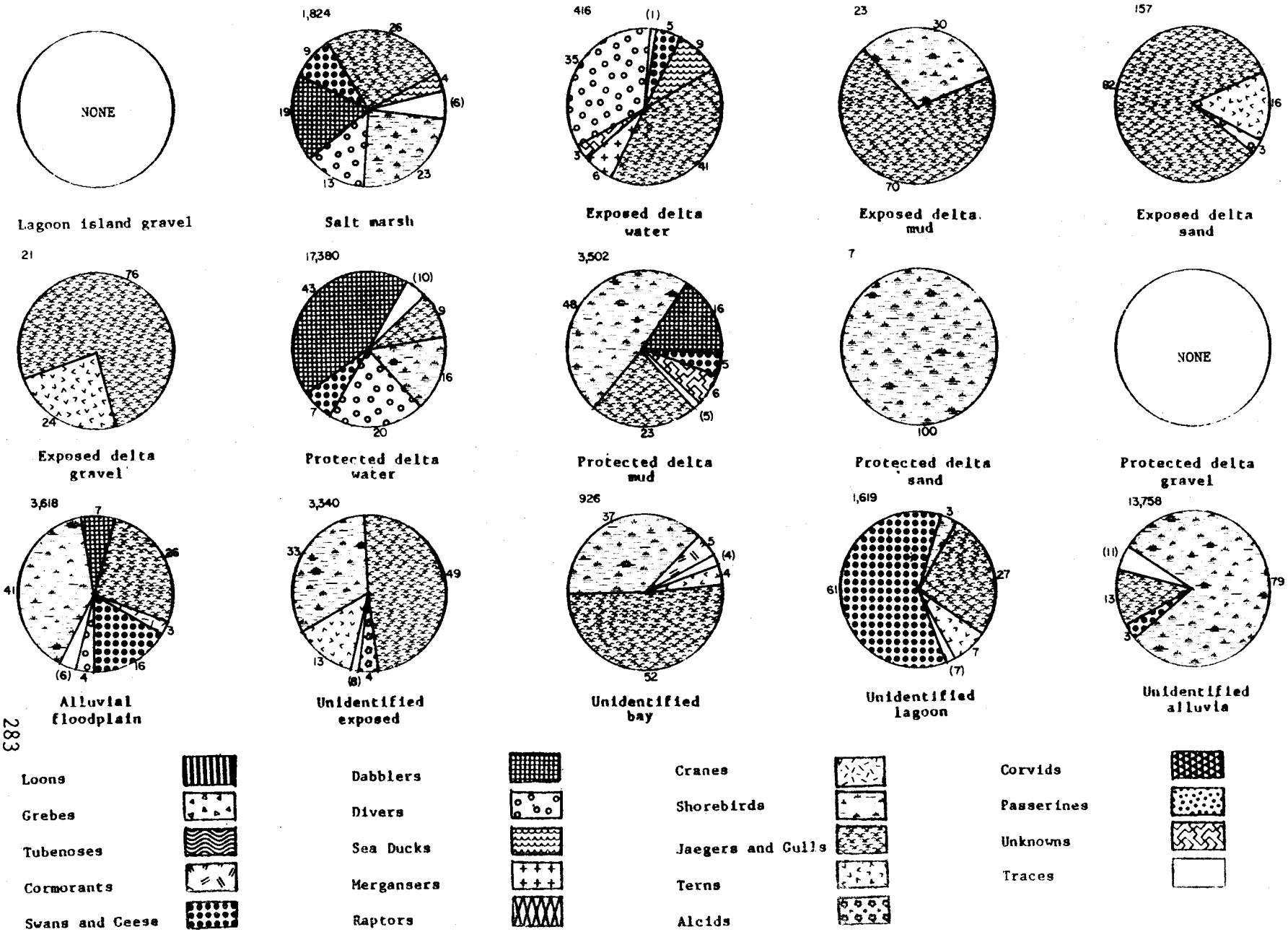


Fig. 155. North-Bristol Bay, Spring 1976, 1977. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

About 10,000 dabblers and sea ducks were recorded. Dabblers preferred protected delta water (74% of the total) and often roosted and fed at river's edge. Other dabblers were found on bay mudflats (10%) and protected delta mud (6%). Almost all sea ducks were on exposed inshore water (53%), offshore water (28%) or bay water (9%). About one-half the geese used bay water, 16 percent were on protected delta water and 8 percent alluvial floodplains.

Of the almost 9,000 alcids, 77 percent were found on exposed inshore water and 18 percent on exposed rock beach. Three other species groups had sample sizes of over 1,000 birds (cormorants, mergansers and terns.) Cormorants were most often on exposed inshore water, mergansers were on that habitat plus protected delta water and terns used bay habitats most frequently. Loons were more numerous in North-Bristol Bay than in any other region and were found on exposed inshore water 62 percent of the time. Eighteen percent were on protected delta water and 17 percent on bay water.

SUMMER

Density - Only 18 transects were conducted by raft between the Walrus Islands in the summer in North-Bristol Bay. The mean density for all birds was 134 birds/km^2 (Table 18). Most were alcids (103 birds/km^2), followed by cormorants (15 birds/km^2), sea ducks (10 birds/km^2) and gulls (6 birds/km^2). Most of the sea ducks were non-breeding White-winged Scoters.

Habitat Usage - Because these surveys were pelagic transects, most birds were on offshore waters and further evaluation of habitat use was unnecessary.

ALEUTIAN SHELF

Only one winter survey was conducted in this region (Fig. 156). At the time of the survey, weather was generally poor with snow squalls, high winds and rough seas. Parts of some stations were missed and others completely bypassed. The south side of Unalaska Island and the east side of Umnak Island were not surveyed. More birds were present than are represented here.

The subdivision into sections (Fig. 157) was arbitary. Many of the bays and islands are physiographically similar and were therefore combined into the large sections. Exposure was the only obvious difference. Samalga Island was selected as one section in itself because of its relative importance. Bogoslof Island and the accompanying transects to and from the island were also given sectional status.

WINTER

Density - Bird densities by section for the winter survey of the Aleutian Shelf are shown in Figs. 158-175. The mean density for all birds was 94 birds/km^2 (Table 19). The section with the highest density of all

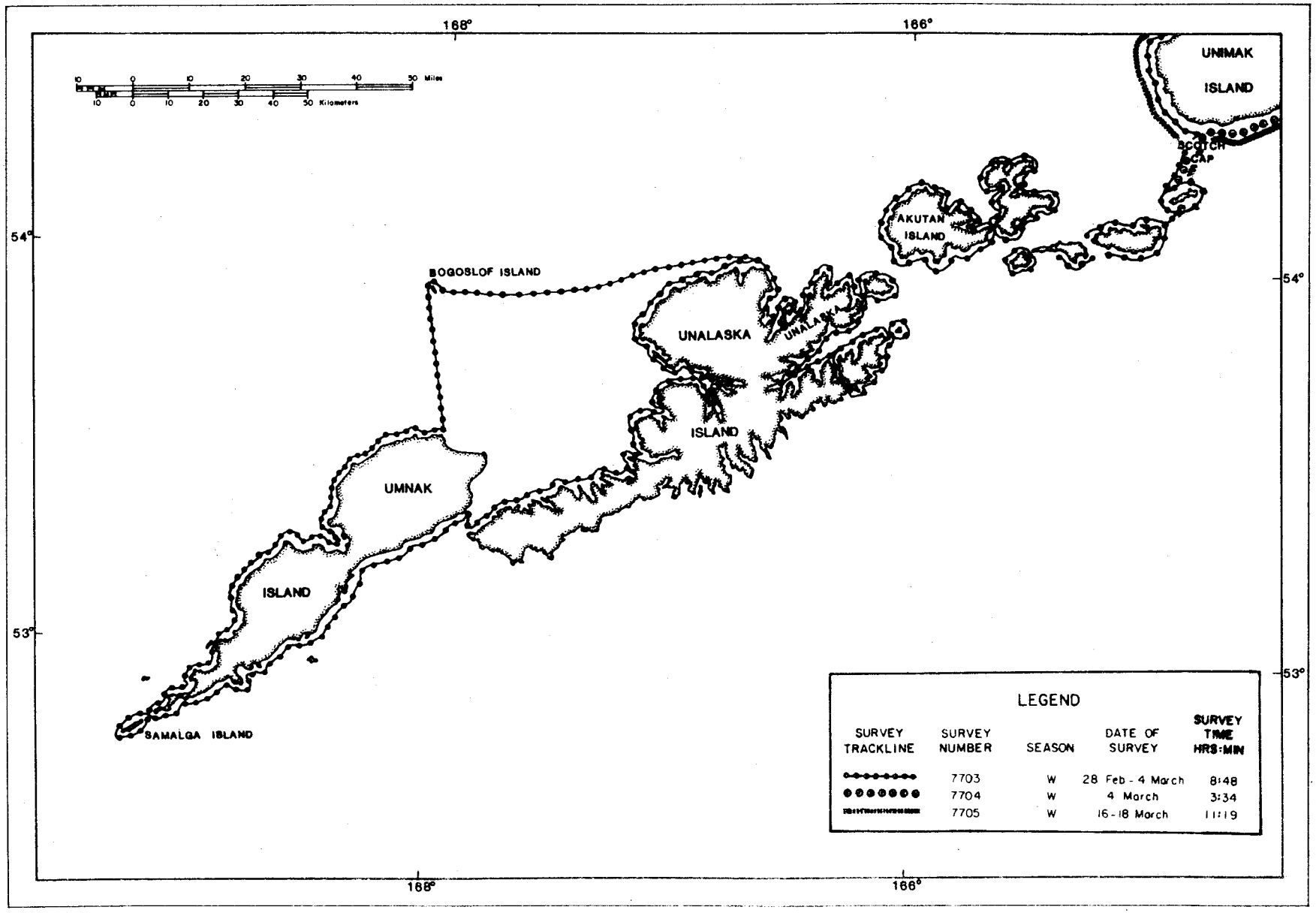


Fig. 156. Tracklines of aerial bird surveys along the Aleutian Shelf, 1977.

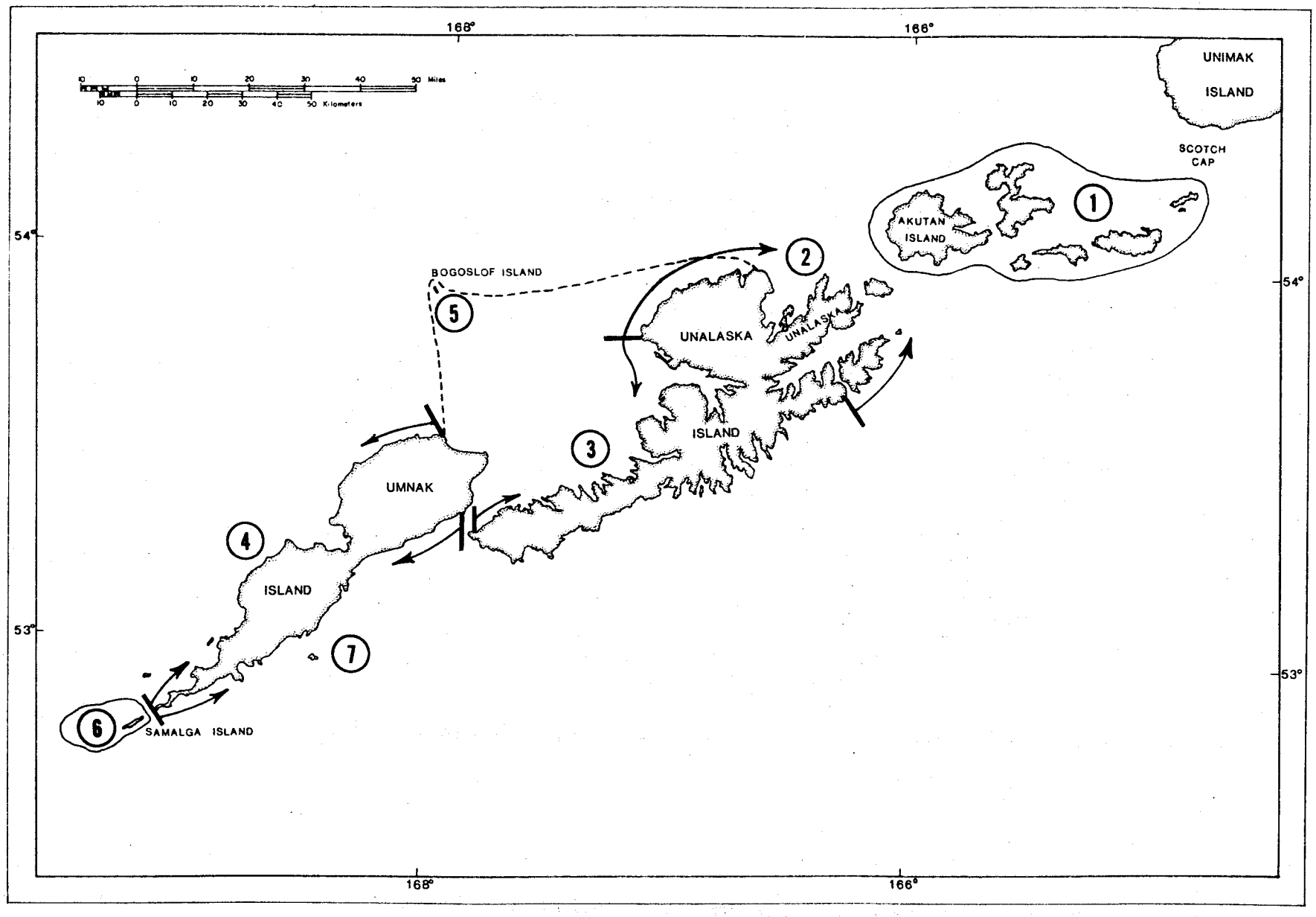


Fig. 157. Physiographic subdivision of the Aleutian Shelf for bird density analysis. Each numbered section contains several survey stations.

Table 19. Bird density by section of coastline in Aleutian Shelf, winter 1978. See Figure 157 for section boundaries. (T=trace).

	Winter Densities (birds/km^2)							
	Section of Coastline							
Bird Group	1	2	3	4	5	6	7	Total
Loon	T	T	T	T				T
Grebe	T	T	T			T		T
Tubenose					1			T
Cormorant	6	4	4	2	T		2	4
Goose and Swan	6	9	23	8		1435	10	17
Dabbler	T	T		2		30	1	1
Diver	T	1	1	T		20	1	1
Sea Duck	50	41	51	30	T	416	57	43
Merganser	T	T	T			T	T	T
Raptor	T	T	T	T			T	T
Crane								0
Shorebird	1	1	1	1		1240	48	13
Gull and Jaeger	7	14	10	11	12	99	9	11
Tern								0
Alcid	4	8	10	T	T			5
Corvid	T	1	T	T			T	T
Other Passerine		T	T				1	T
Other Bird		T	2				T	T
TOTAL	75	80	103	54	13	3240	129	94

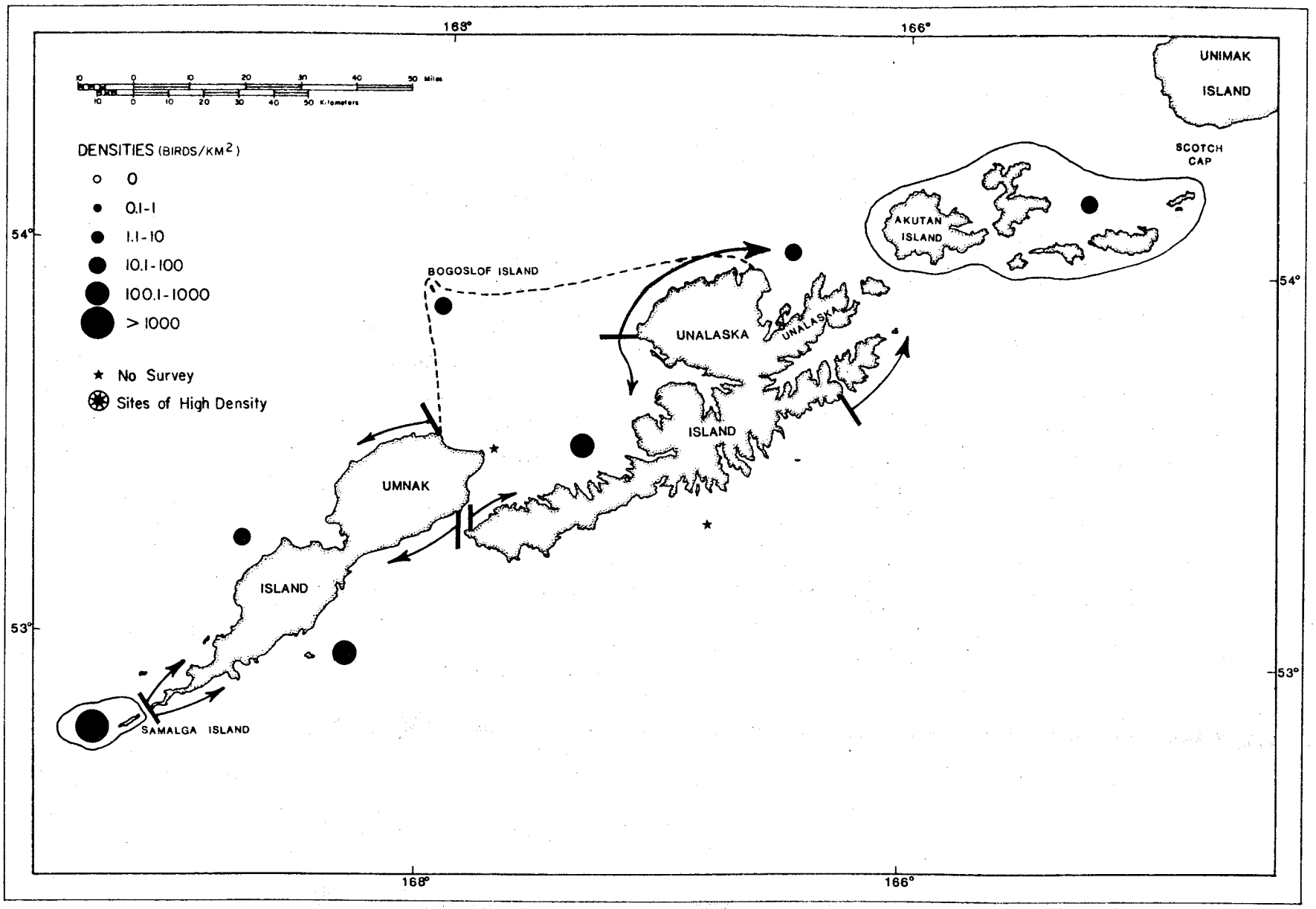


Fig. 158. Total bird density by section along the Aleutian Shelf during winter as determined by aerial survey.

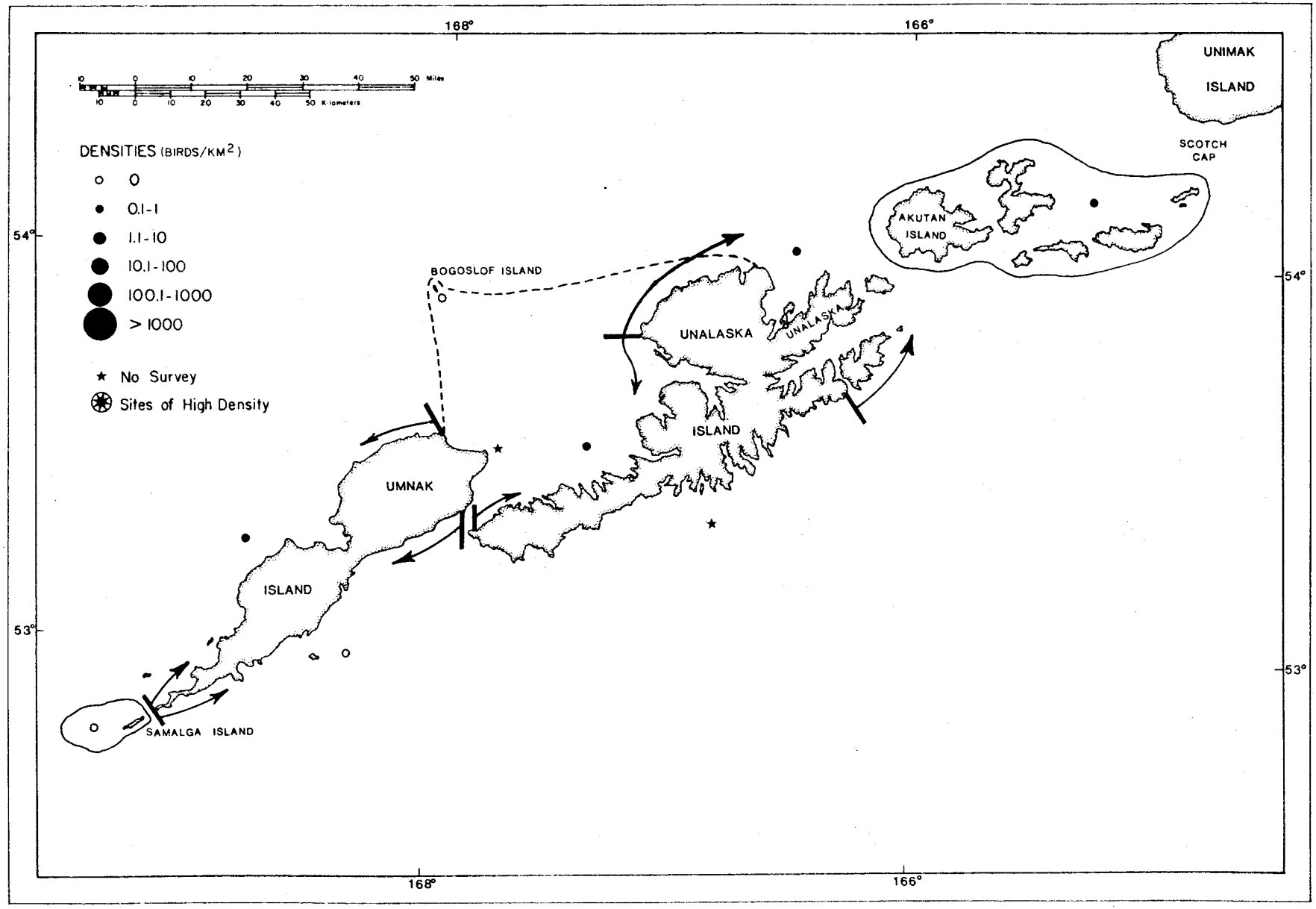


Fig. 159. Loon density by section along the Aleutian Shelf during winter as determined by aerial survey.

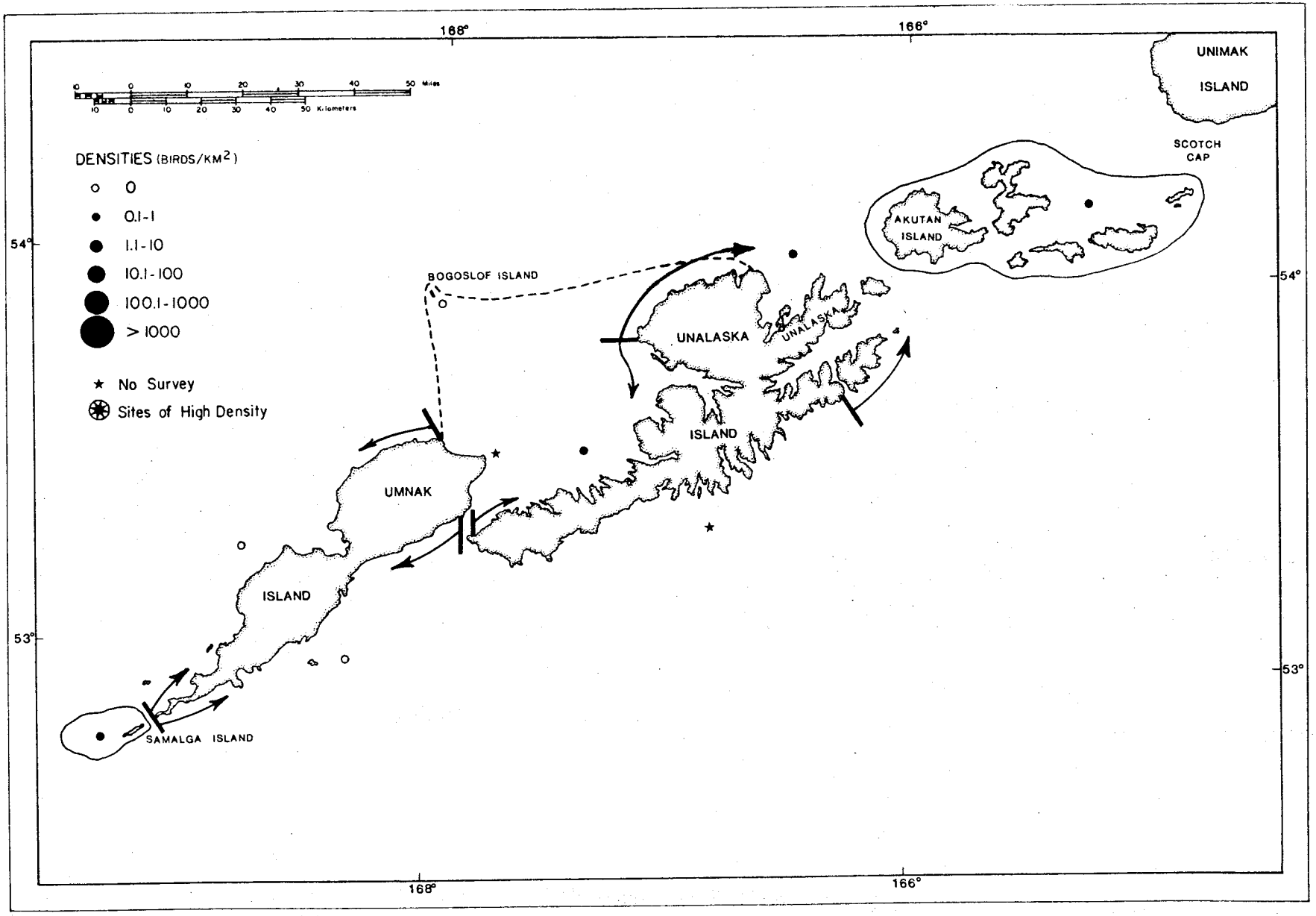


Fig. 160. Grebe density by section along the Aleutian Shelf during winter as determined by aerial survey.

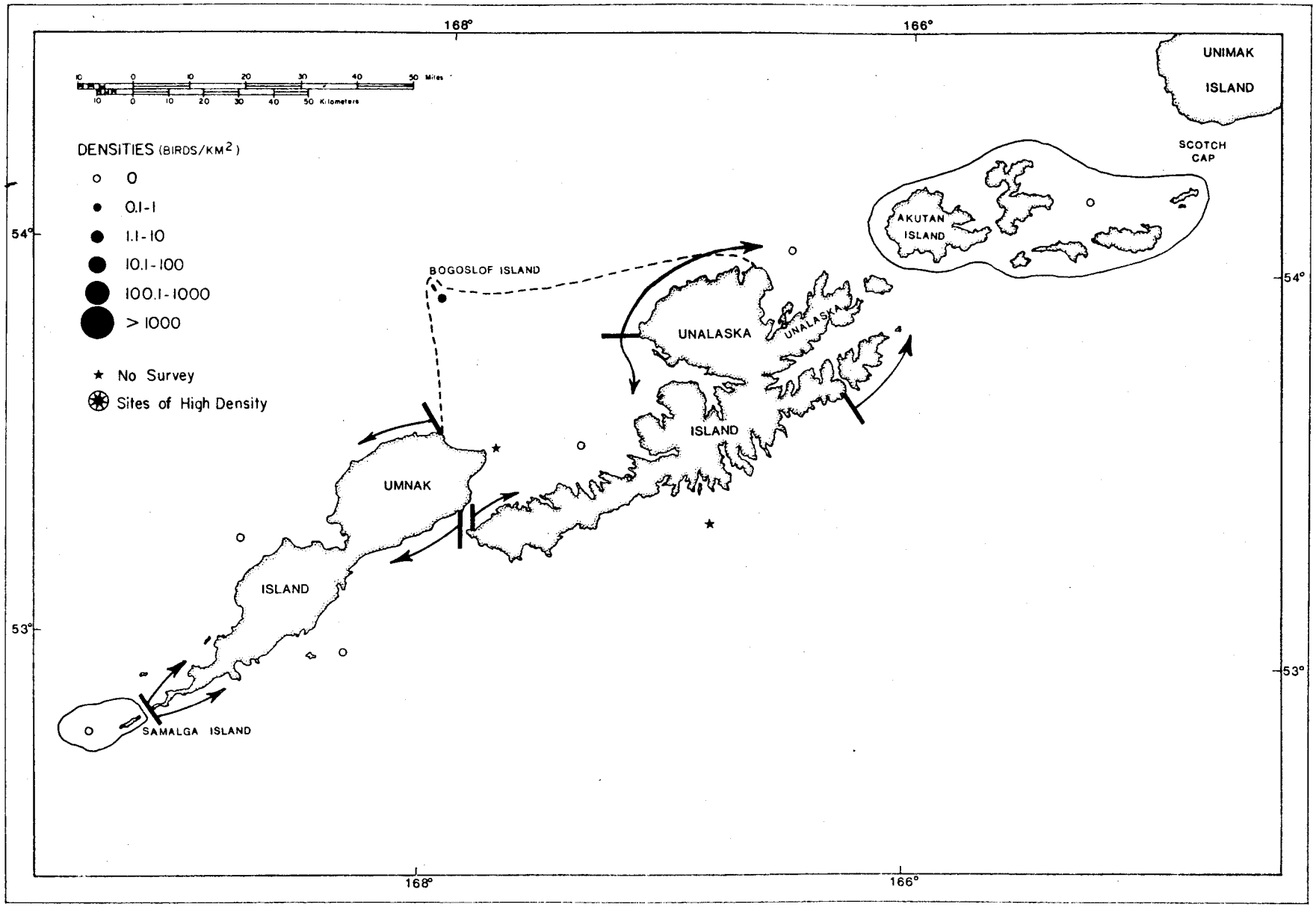


Fig. 161. Tubenose density by section along the Aleutian Shelf during winter as determined by aerial survey.

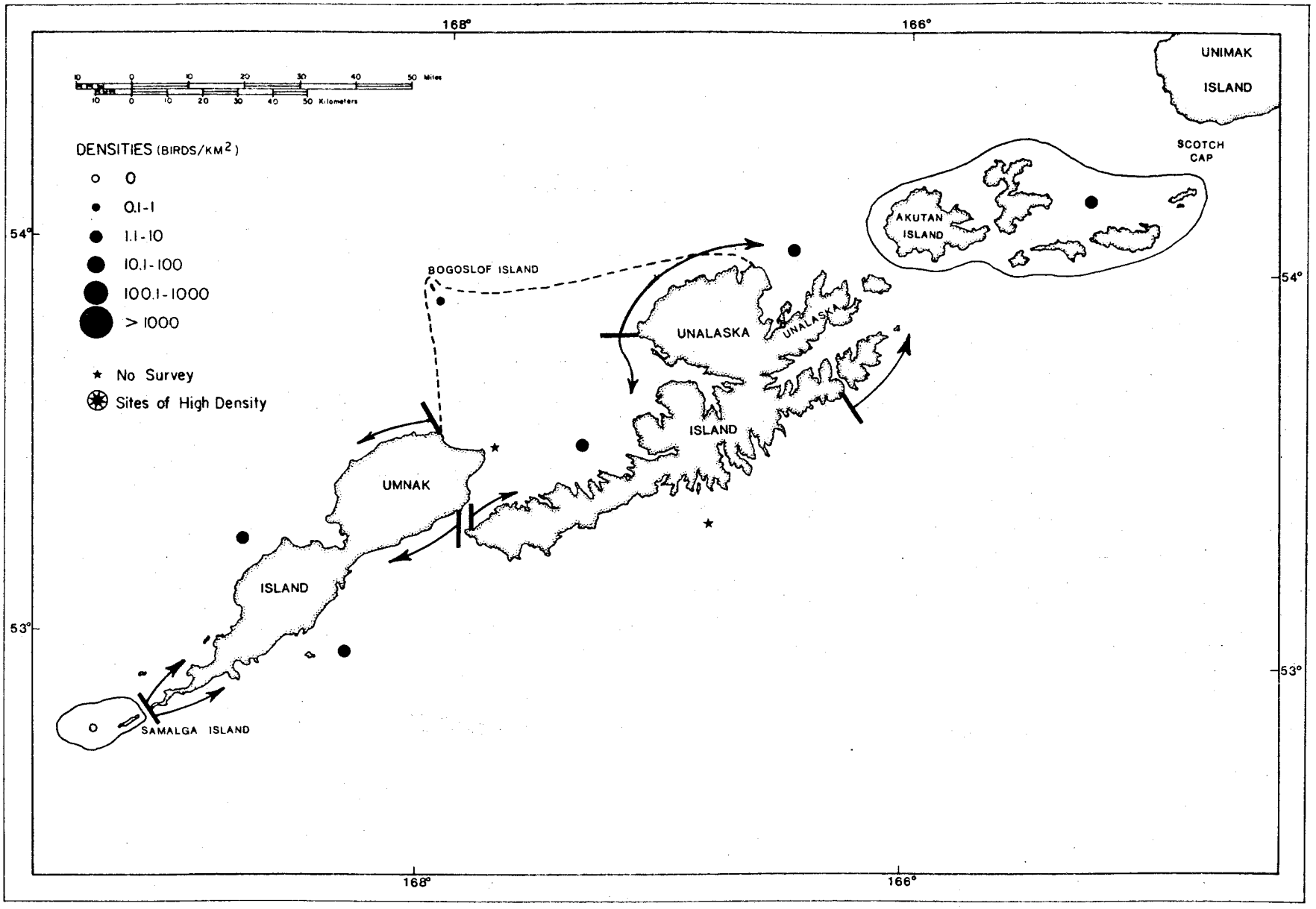


Fig. 162. Cormorant density by section along the Aleutian Shelf during winter as determined by aerial survey.

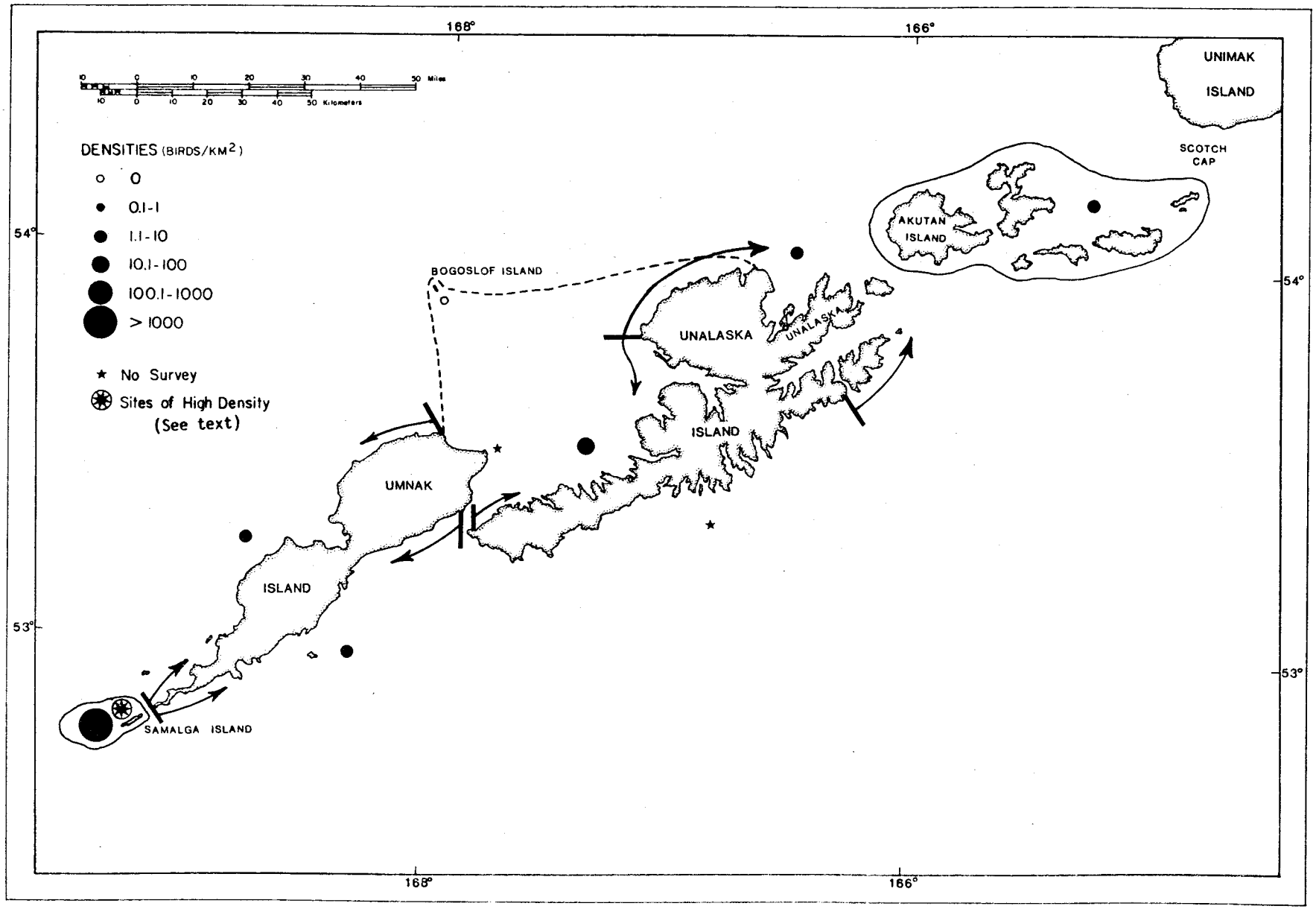


Fig. 163. Goose and swan density by section along the Aleutian Shelf during winter as determined by aerial survey.

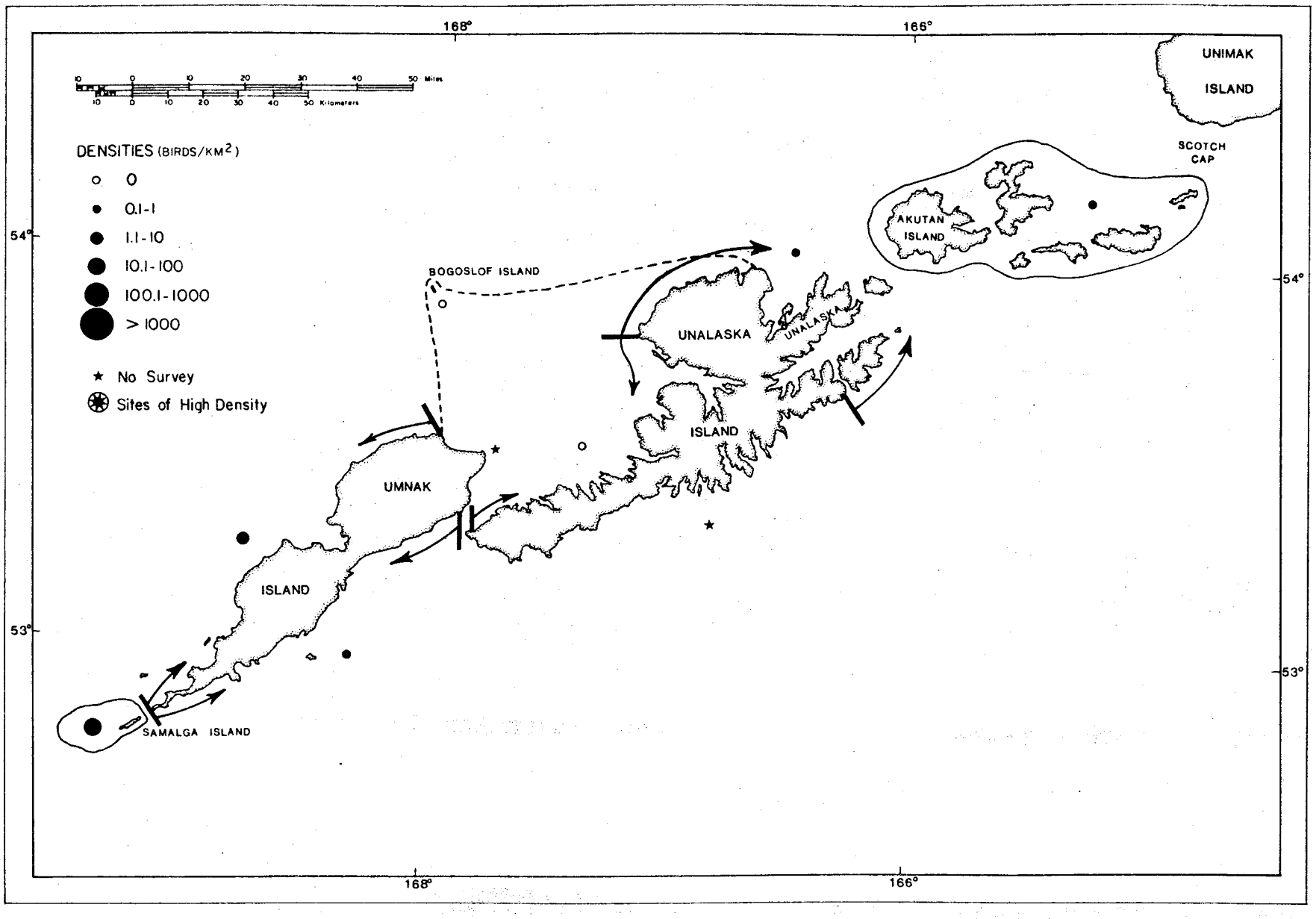


Fig. 164. Dabbling Duck density by section along the Aleutian Shelf during winter as determined by aerial survey.

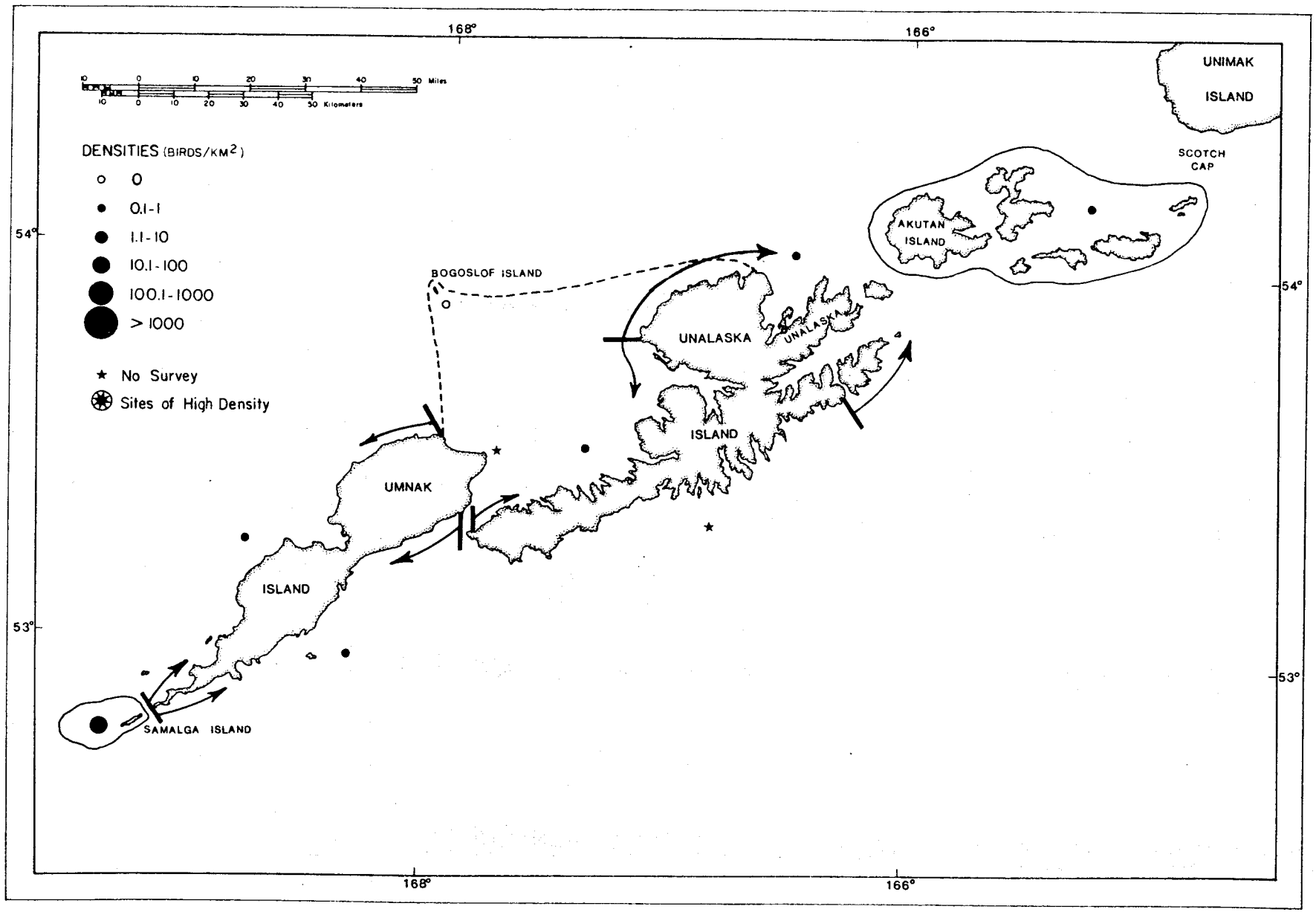


Fig. 165. Diving duck density by section along the Aleutian Shelf during winter as determined by aerial survey.

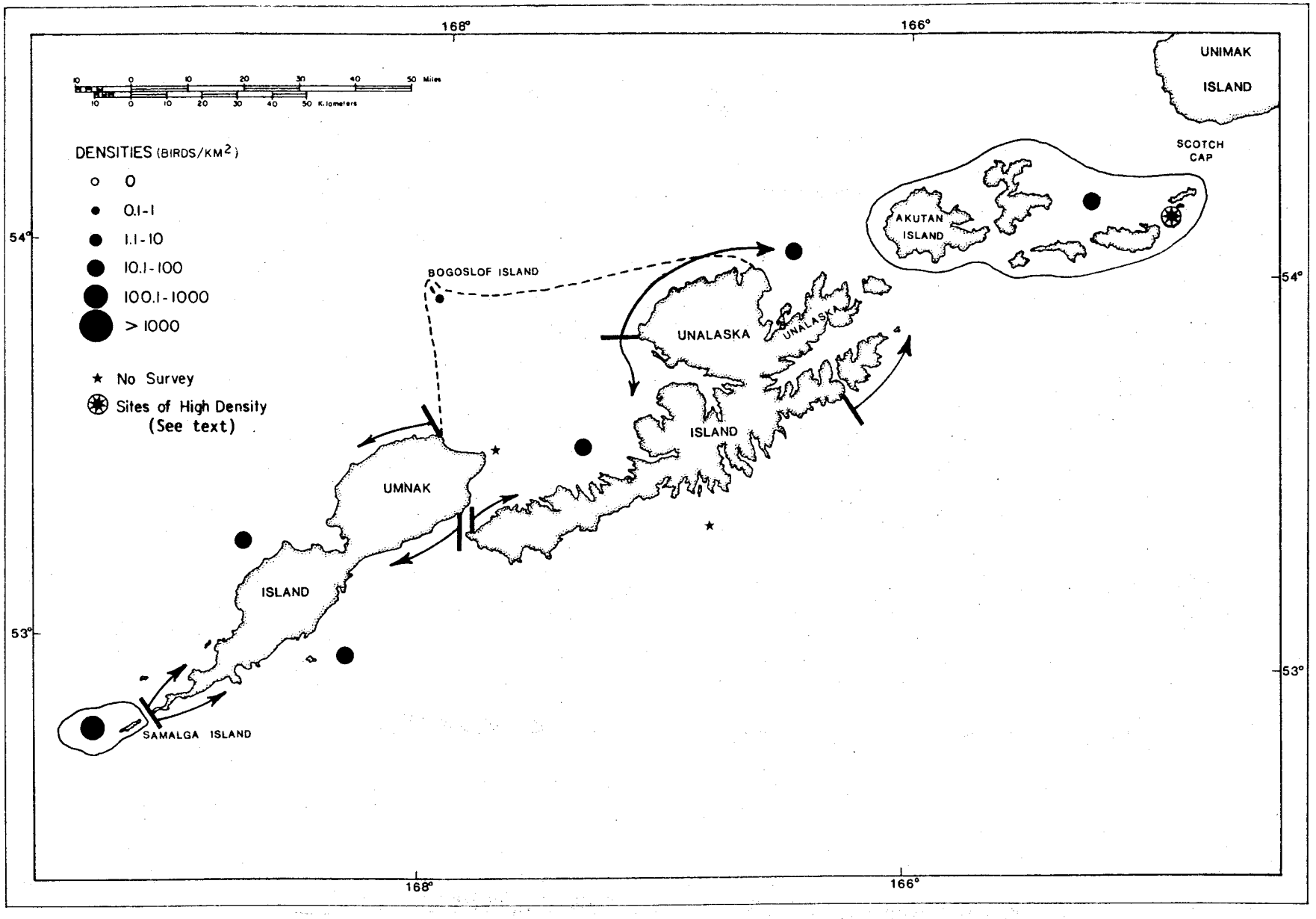


Fig. 166. Sea duck density by section along the Aleutian Shelf during winter as determined by aerial survey.

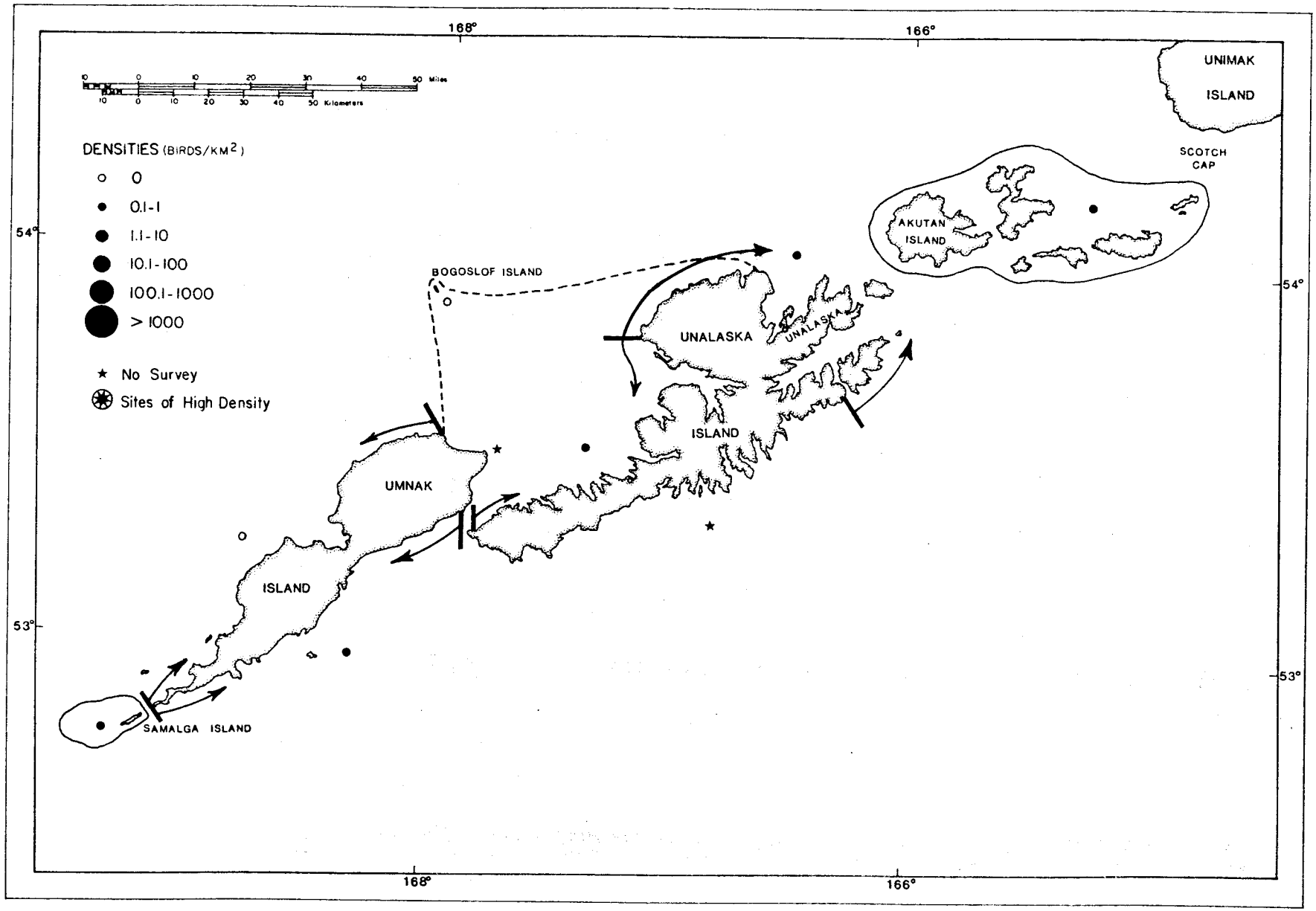


Fig. 167. Merganser density by section along the Aleutian Shelf during winter as determined by aerial survey.

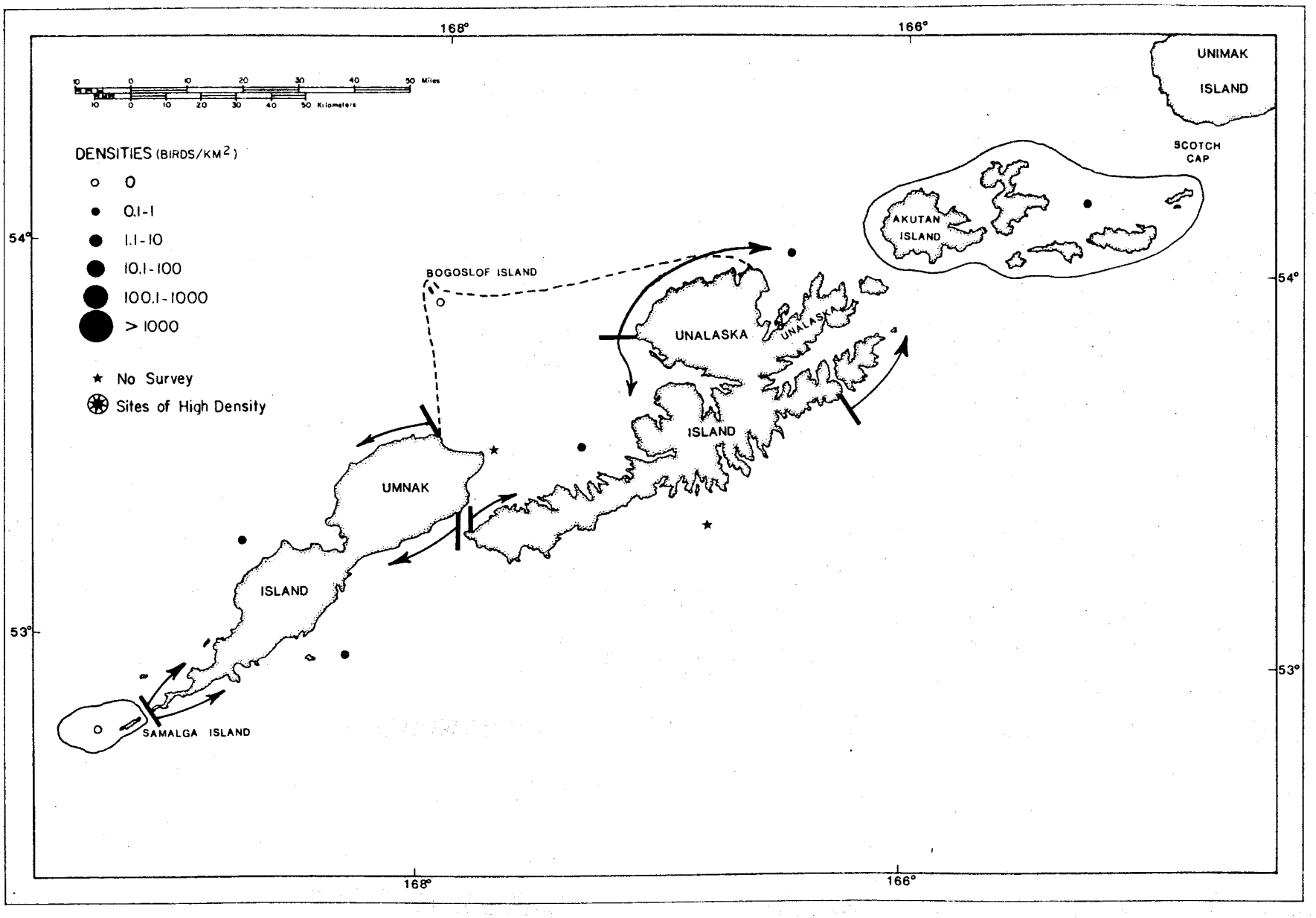


Fig. 168. Raptor density by section along the Aleutian Shelf during winter as determined by aerial survey.

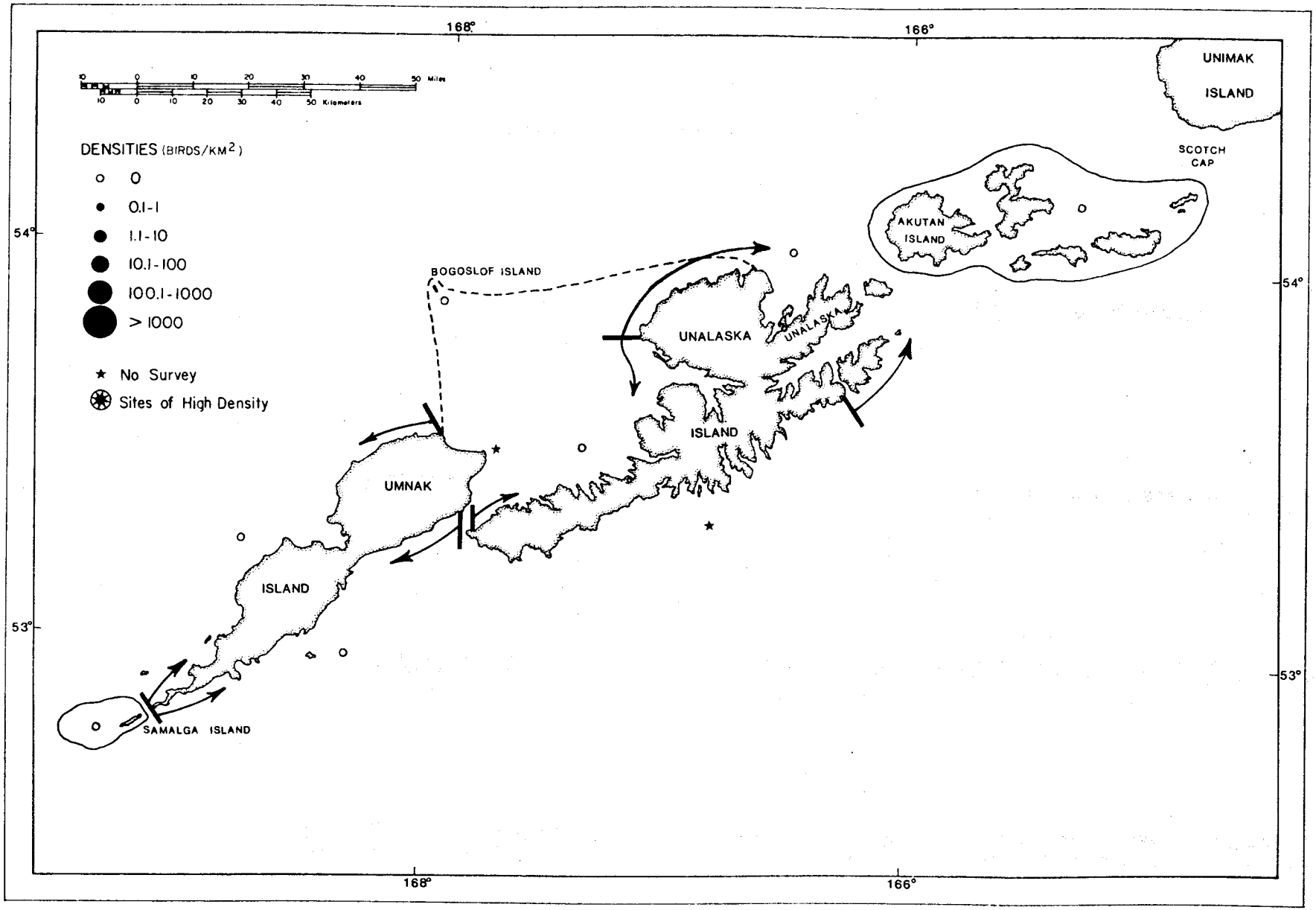


Fig. 169. Crane density by section along the Aleutian Shelf during winter as determined by aerial survey. No cranes were sighted.

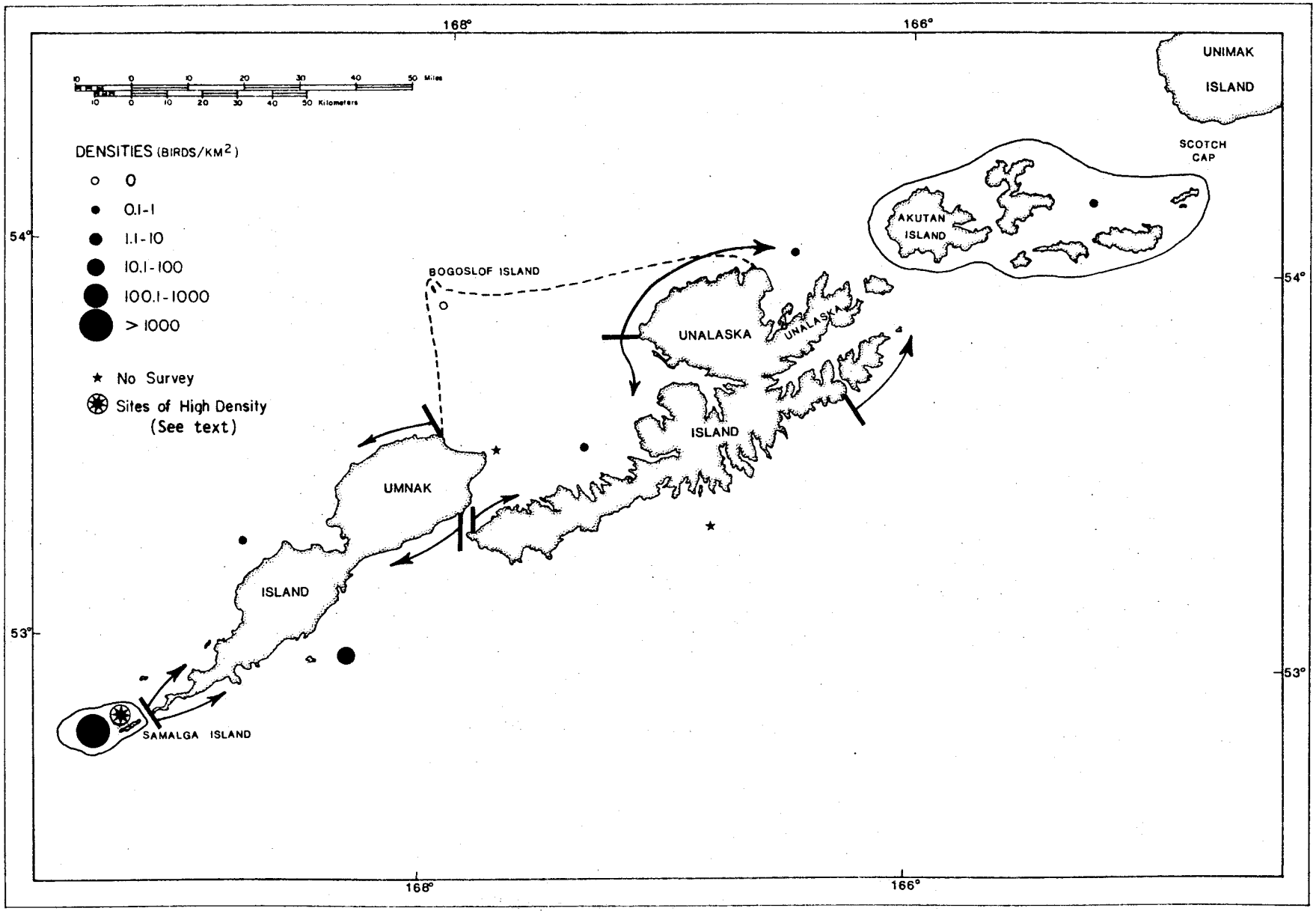


Fig. 170. Shorebird density by section along the Aleutian Shelf during winter as determined by aerial survey.

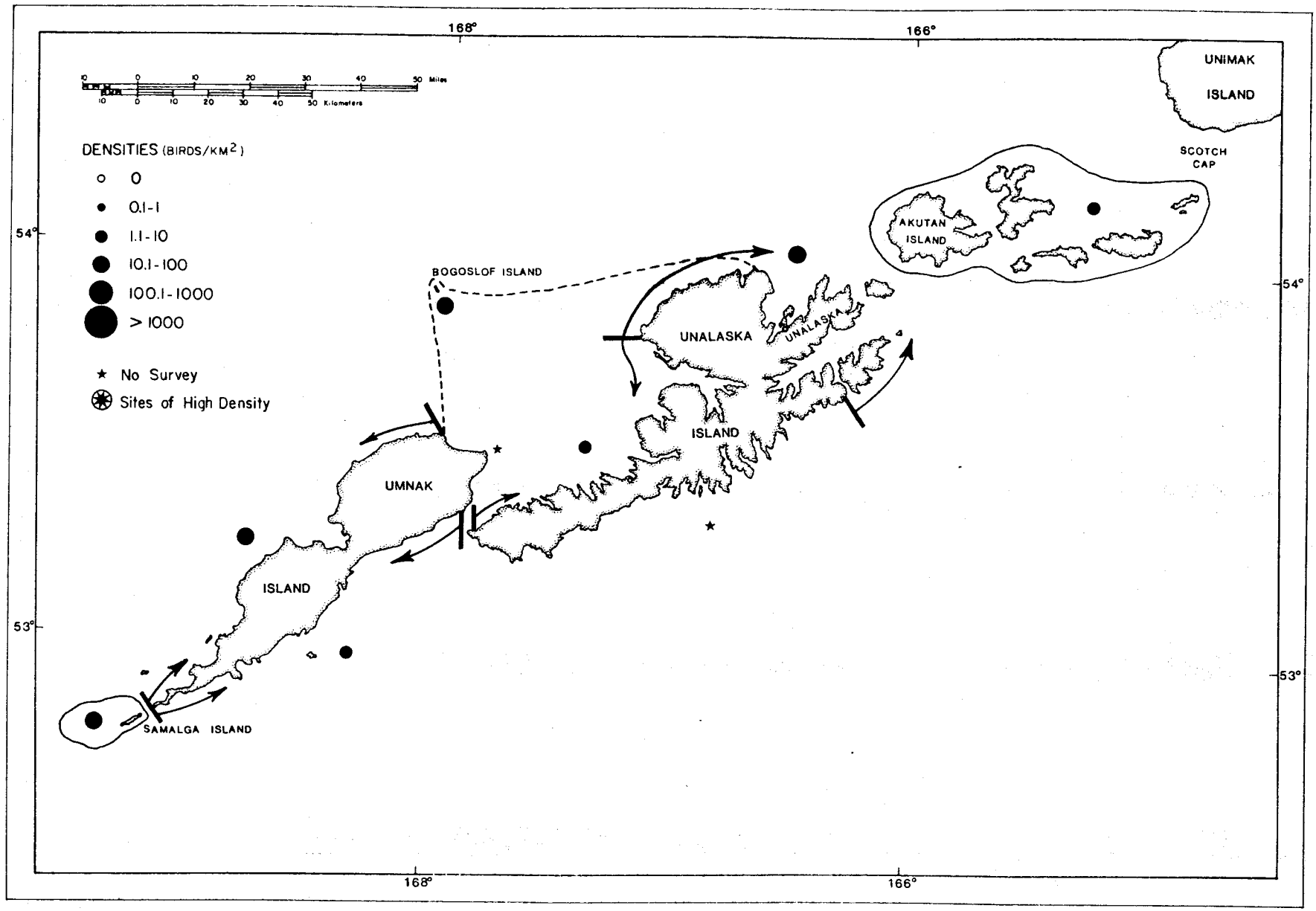


Fig. 171. Gull and jaeger density by section along the Aleutian Shelf during winter as determined by aerial survey.

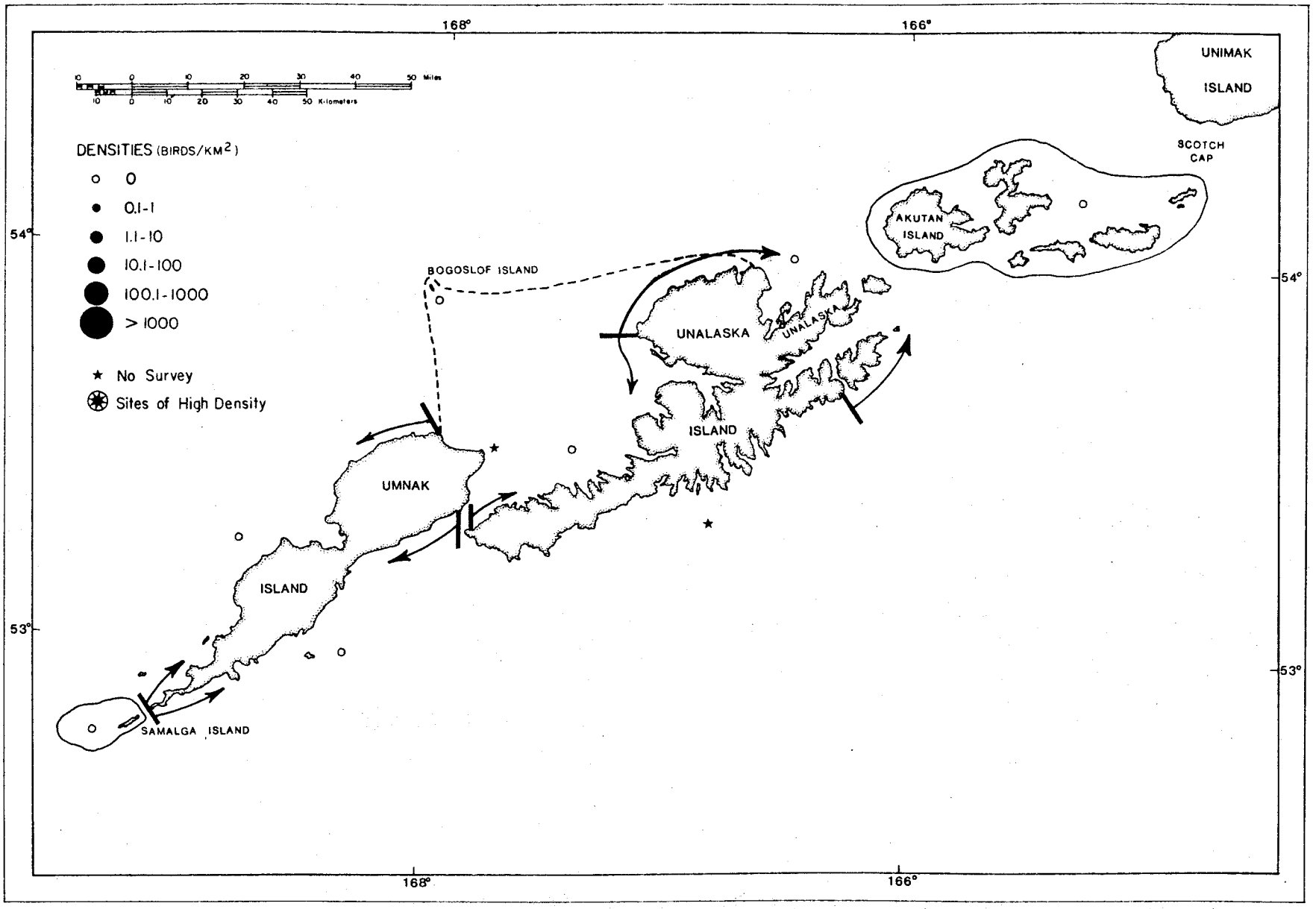


Fig. 172. Tern density by section along the Aleutian Shelf during winter as determined by aerial survey. No terns were sighted.

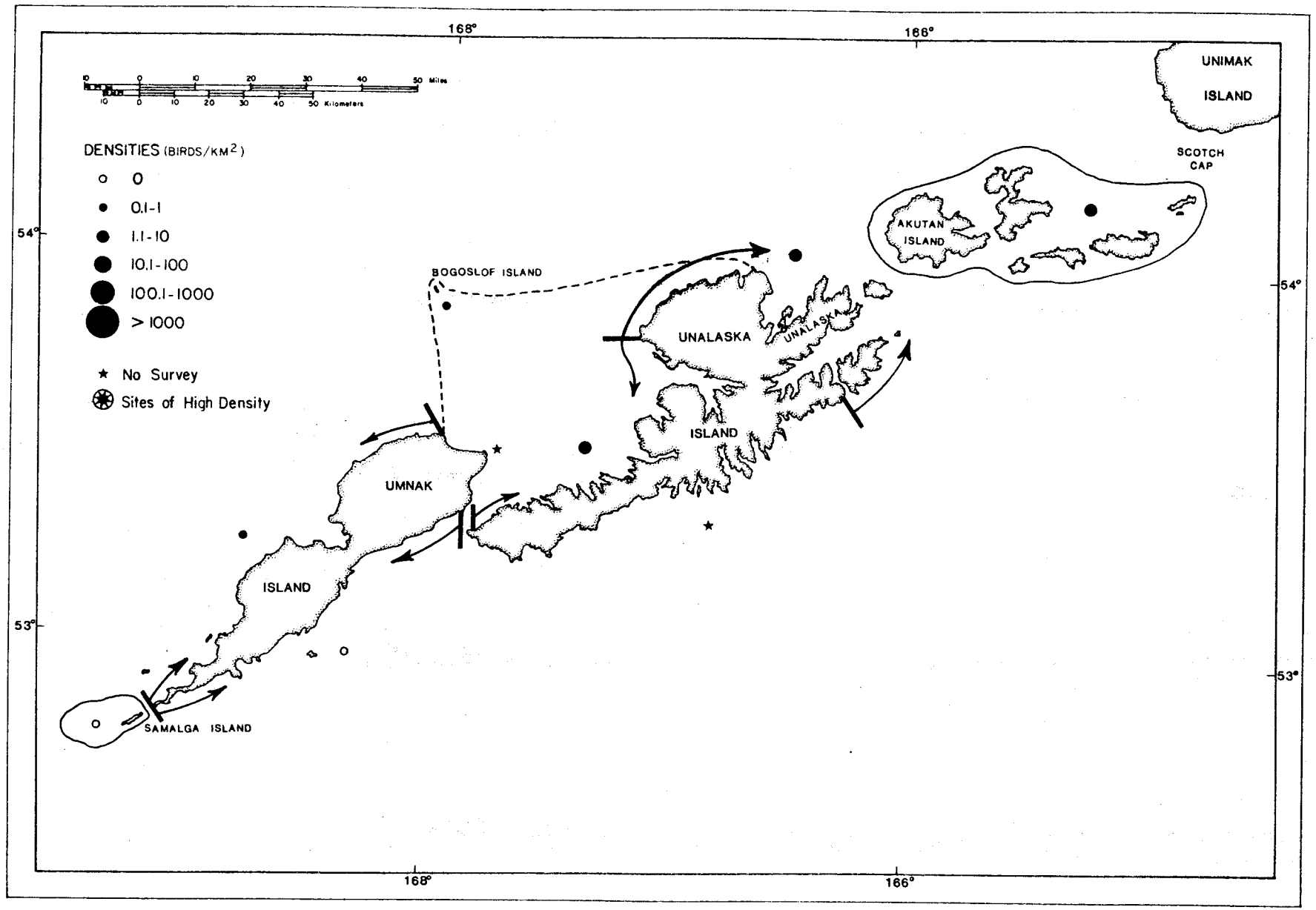


Fig. 173. Alcid density by section along the Aleutian Shelf during winter as determined by aerial survey.

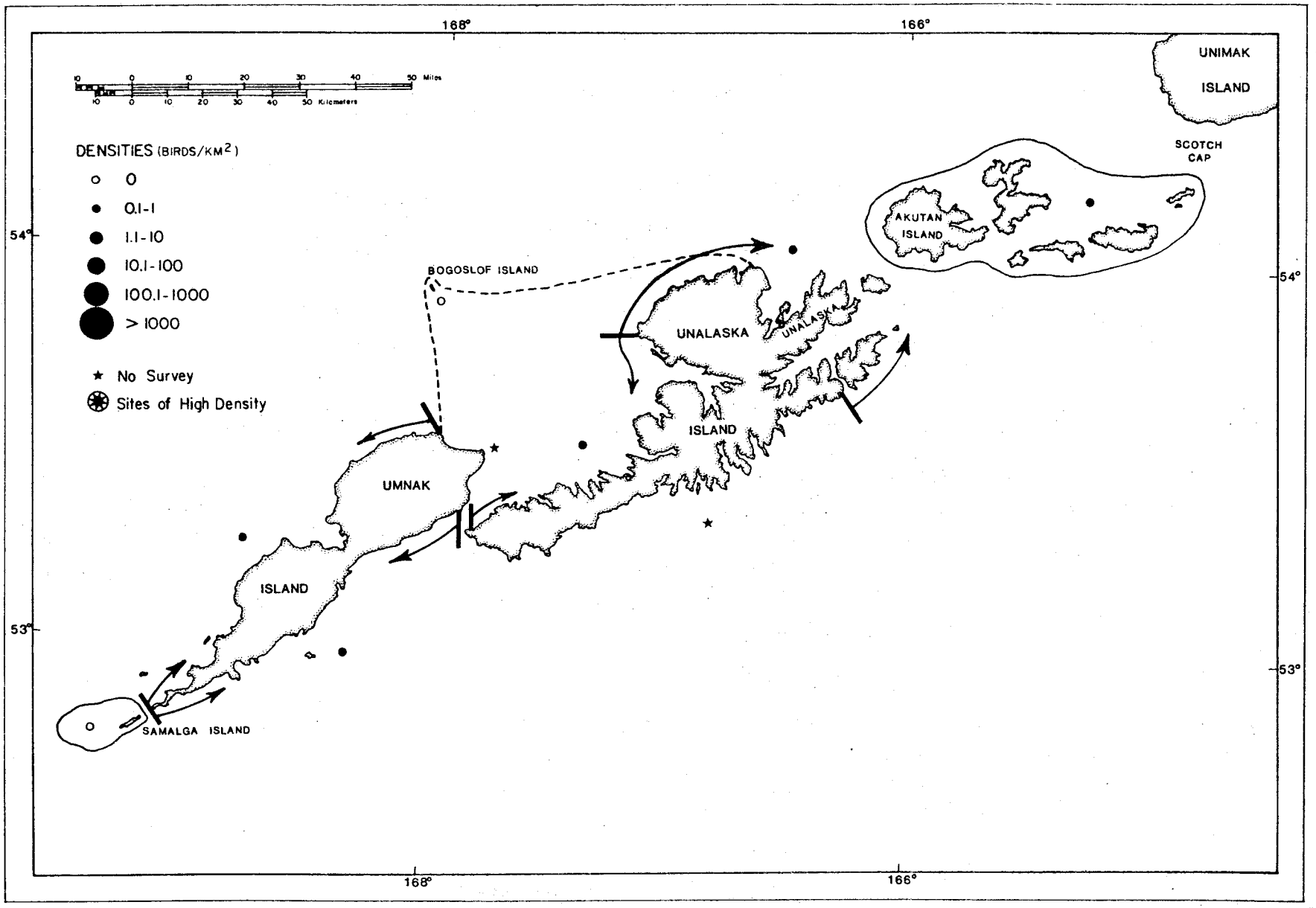


Fig. 174. Corvid density by section along the Aleutian Shelf during winter as determined by aerial survey.

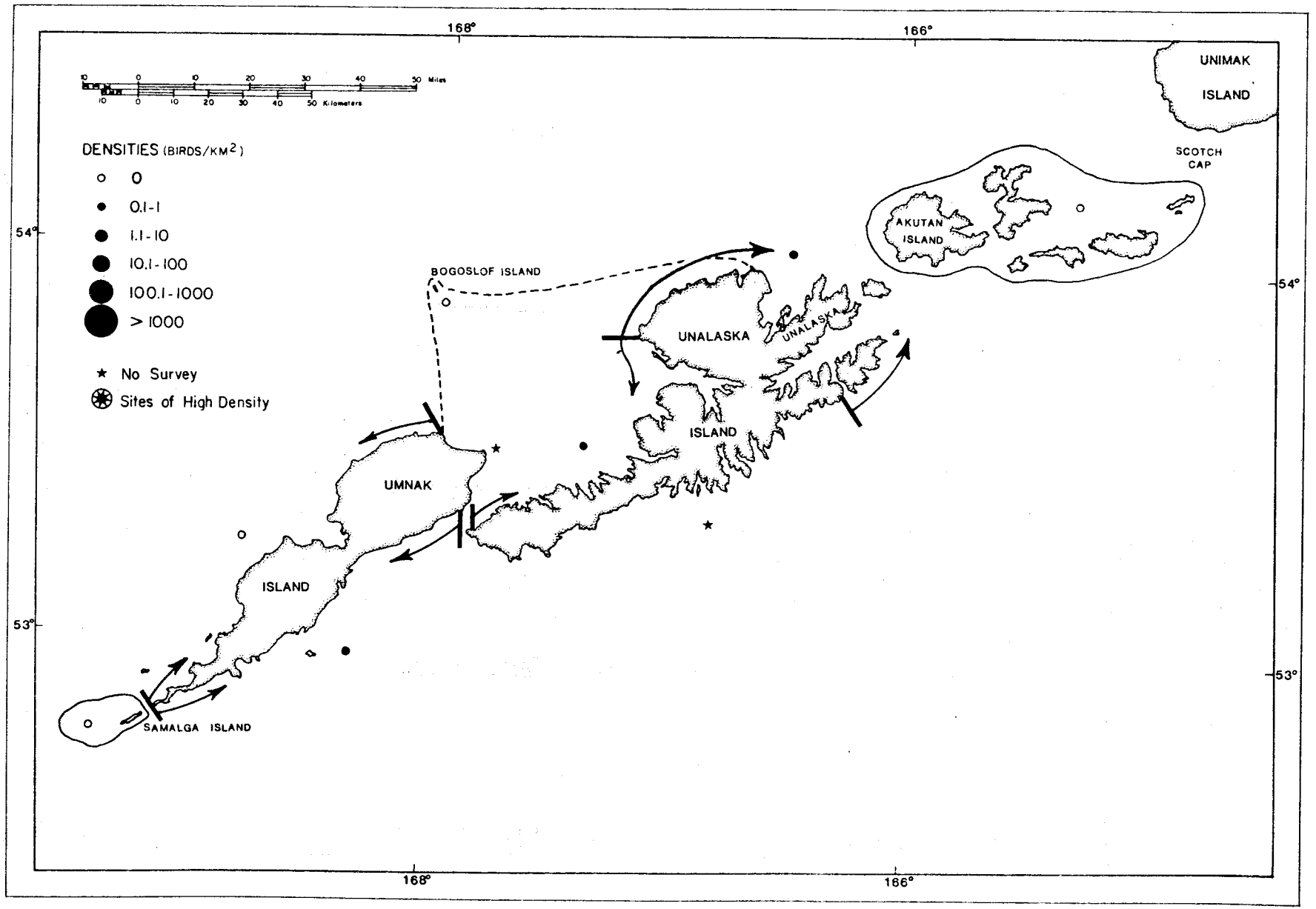


Fig. 175. Passerine (other than corvid) density by section along the Aleutian Shelf during winter as determined by aerial survey.

regions in the study was Samalga Island with 3240 birds/km^2. Over 8,000 birds were estimated in an area of 2.5 km^2. This was one-fifth of the birds in the entire survey. Samalga Island had the highest densities for all bird groups recorded in measurable amounts. Geese (all Emperors) were first with 1435 birds/km^2. Shorebirds numbered 1240 birds/km^2, sea ducks 416 birds/km^2, gulls 99 birds/km^2, dabblers (mostly mallards) 30 birds/km^2 and divers 20 birds/km^2. At the time of the survey an Arctic fox was observed on the island. Fox predation on birds may be a limiting factor to bird use of the island if foxes are abundant.

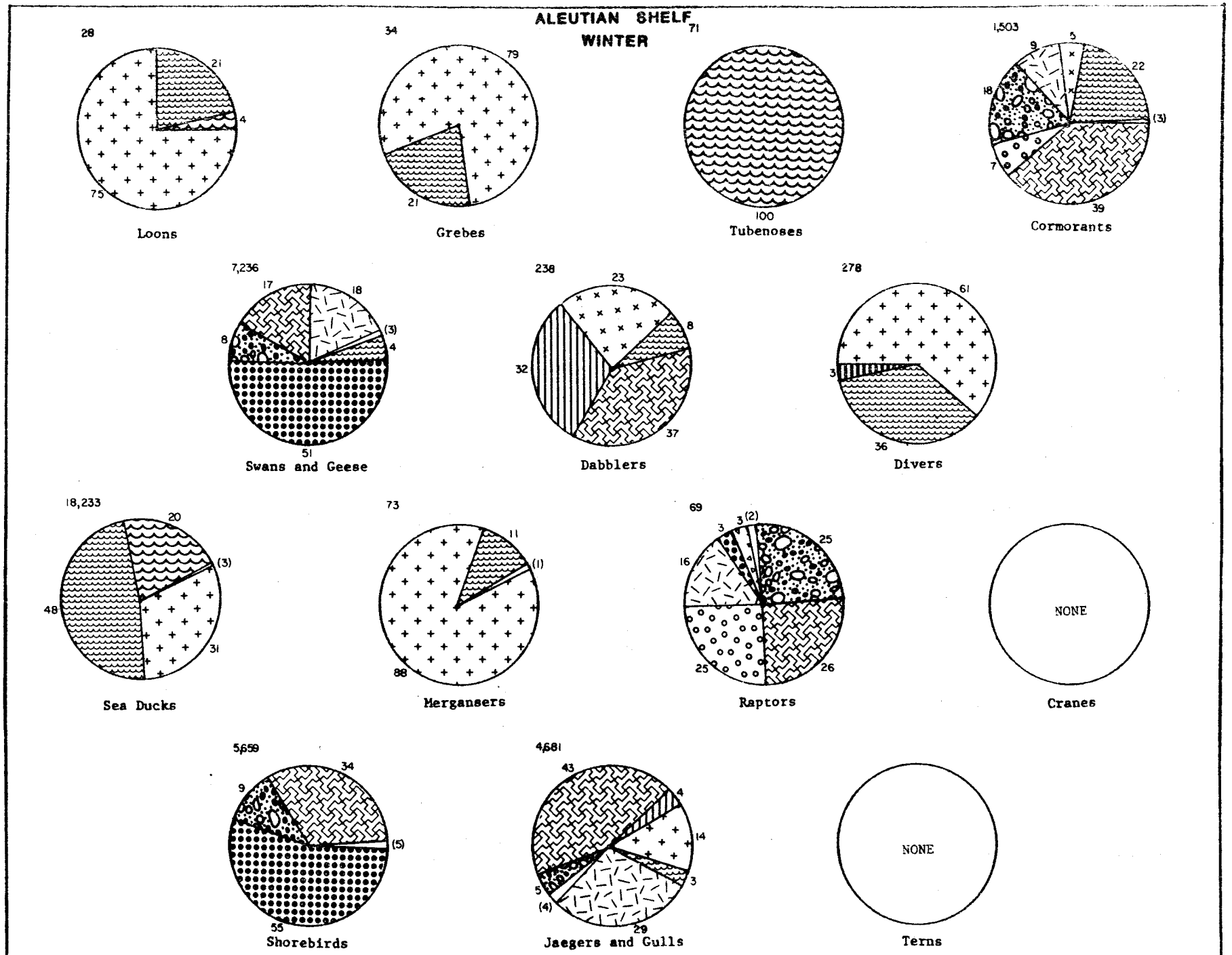
Two other sections had bird densities higher than 100 birds/km^2. Section 7, on the south side of Umnak Island, had 129 birds/km^2; most abundant were shorebirds (48 birds/km^2) and sea ducks (57 birds/km^2). Northwestern Unalaska Island (Section 3) had 51 sea ducks/km^2, 23 geese/km^2, 10 gulls and 10 alcids/km^2 out of a total of 103 birds/km^2.

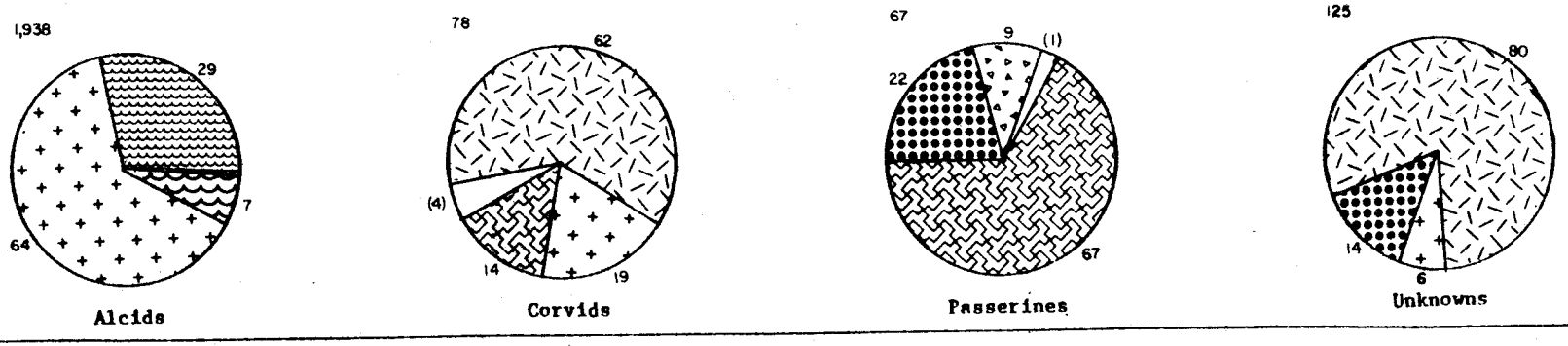
The low density of 13 birds/km^2 was found on the Bogoslof Island - offshore section. Most birds were gulls; however, Northern Fulmars were also found in measurable quantities (1 bird/km^2).

Overall, sea ducks were the most abundant bird group with 43 birds/km^2. Samalga Island had the densest population, and the other sections all had similar densities from 30-57 birds/km^2 and a mean of 43 birds/km^2. Composition of sea ducks in the region was 49 percent eiders, 33 percent scoters, 10 percent Harlequin Ducks and 9 percent Oldsquaw. Of identified eiders 65 percent were King, 27 percent Steller's and 8 percent Common. Seventy-three percent of identified scoters were Black, 25 percent White-winged and 2 percent Surf.

Seventeen geese/km^2 were recorded in the Aleutian Shelf survey, all Emperor Geese. Of over 7,000 observed, one-half were on Samalga Island. Highest densities of shorebirds were found in Sections 6 and 7 with a mean density of 13 birds/km^2. Except for Samalga Island, gull densities varied from 7 to 14 birds/km^2 in all sections. The mean was 11 birds/km^2. Fewer alcids and cormorants were seen. Only 5 alcids/km^2 were recorded overall, and the greatest density (10 birds/km^2) was in Section 3. The majority of alcids were murres. The mean density for cormorants was 4 birds/km^2 and similar densities were found in all sections but No. 6 where none were sighted.

Habitat Usage - Habitat preferences of each species group and the particular species group found on each habitat type during the winter survey of the Aleutian Shelf region are shown in Figs. 176 and 177. Birds were found on only 11 habitats. There was not as much habitat diversity here as in other regions of the study area. Exposed habitats are more predominant in the Aleutian Shelf, and most birds (62%) were found in that type. Bays provided habitat for 28 percent of the birds, 9 percent were found in offshore waters and less than 1 percent in lagoons.


ALEUTIAN SHELF
WINTER
28
21
4
75
Loons
34
79
21
Grebes
71
100
Tubenoses
1,503
9
5
22
18
(3)
7
39
Cormorants
7,236
17
18
8
(3)
4
51
Swans and Geese
238
23
8
32
37
Dabblers
278
61
3
36
Divers
18,233
20
(3)
48
31
Sea Ducks
73
11
(1)
88
Mergansers
69
3
3
(2)
25
16
25
26
Raptors
NONE
Cranes
5,659
34
9
(5)
55
Shorebirds
4,681
43
4
14
3
5
(4)
29
Jaegers and Gulls
NONE
Terns



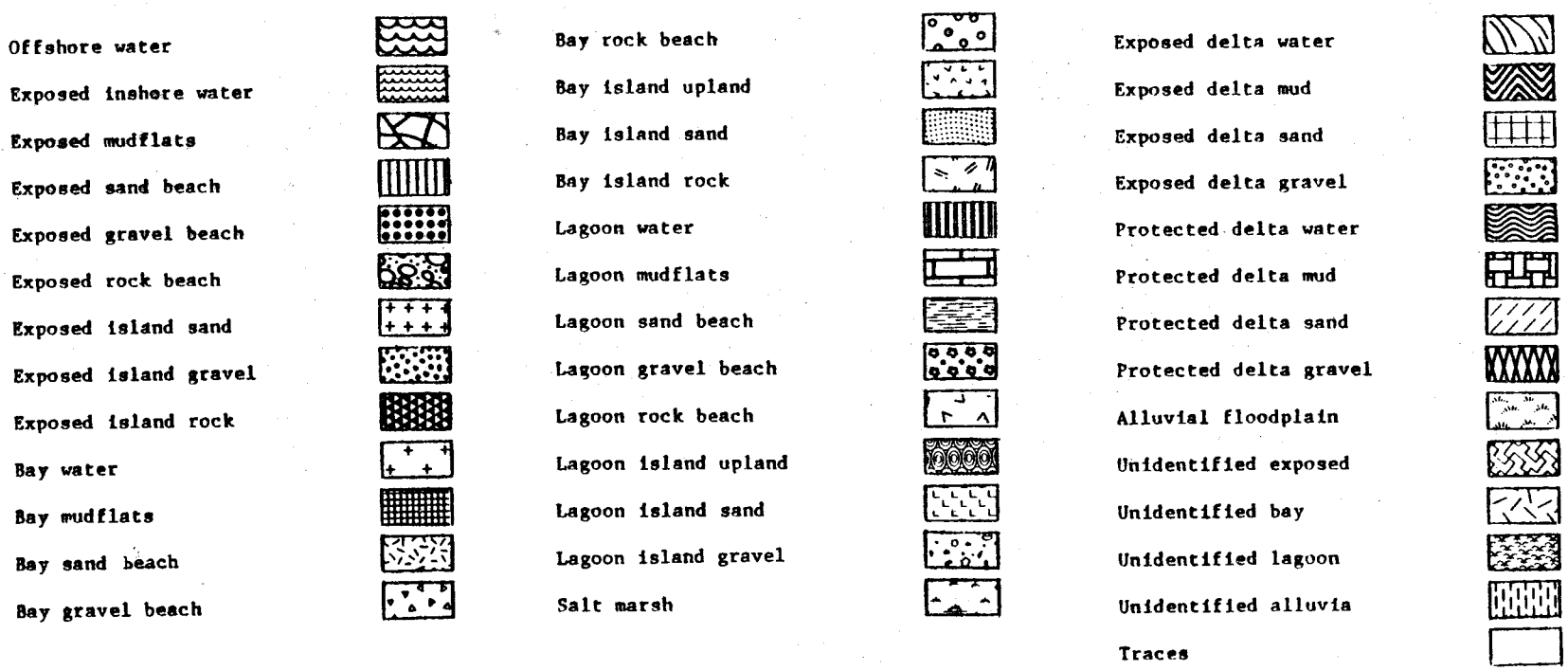
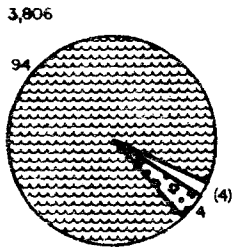
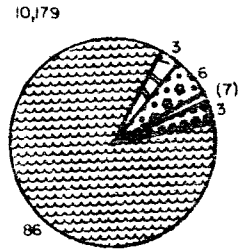


Fig. 176. Aleutian Shelf, Winter 1977. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

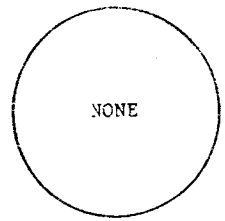
ALEUTIAN SHELF, WINTER



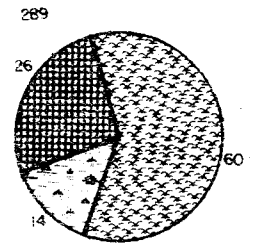
Offshore water



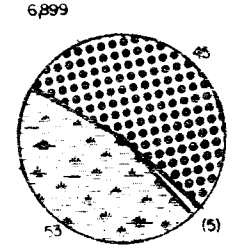
Exposed inshore water



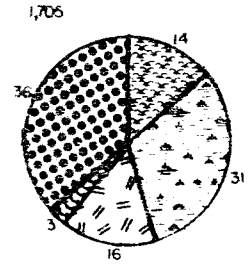
Exposed mudflats



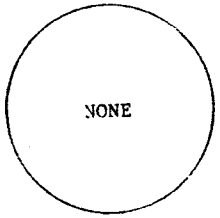
Exposed sand beach



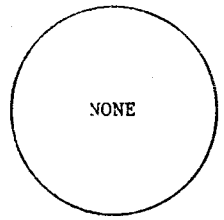
Exposed gravel beach



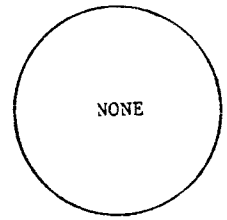
Exposed rock beach



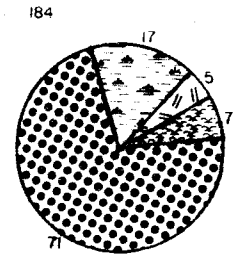
Exposed island sand



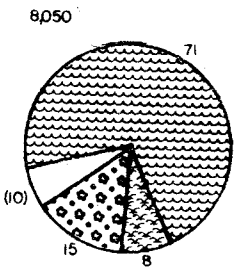
Exposed island gravel



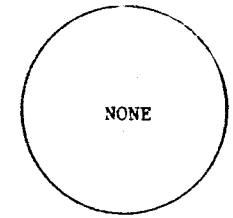
Exposed island rock



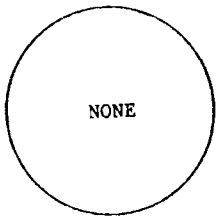
Bay water



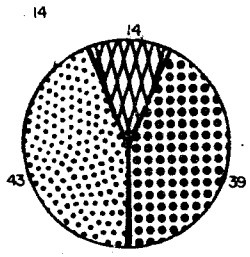
Bay mudflats



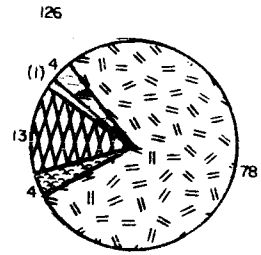
Bay sand beach



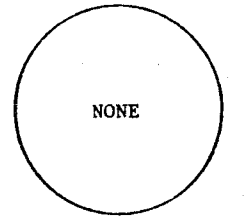
Bay gravel beach



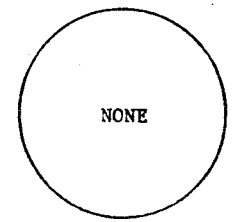
Bay rock beach



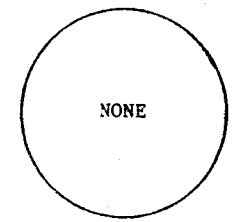
Bay island upland



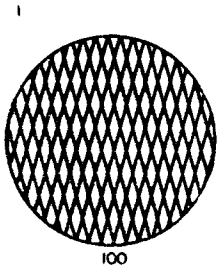
Bay island sand



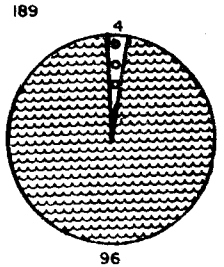
Bay island rock



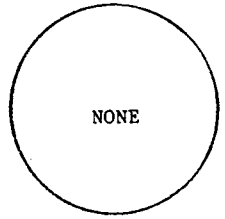
Lagoon water



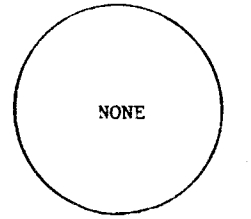
Lagoon mudflats



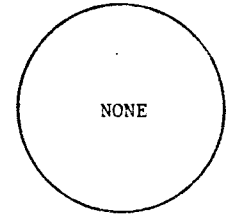
Lagoon sand beach



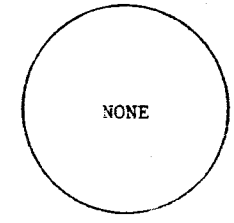
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

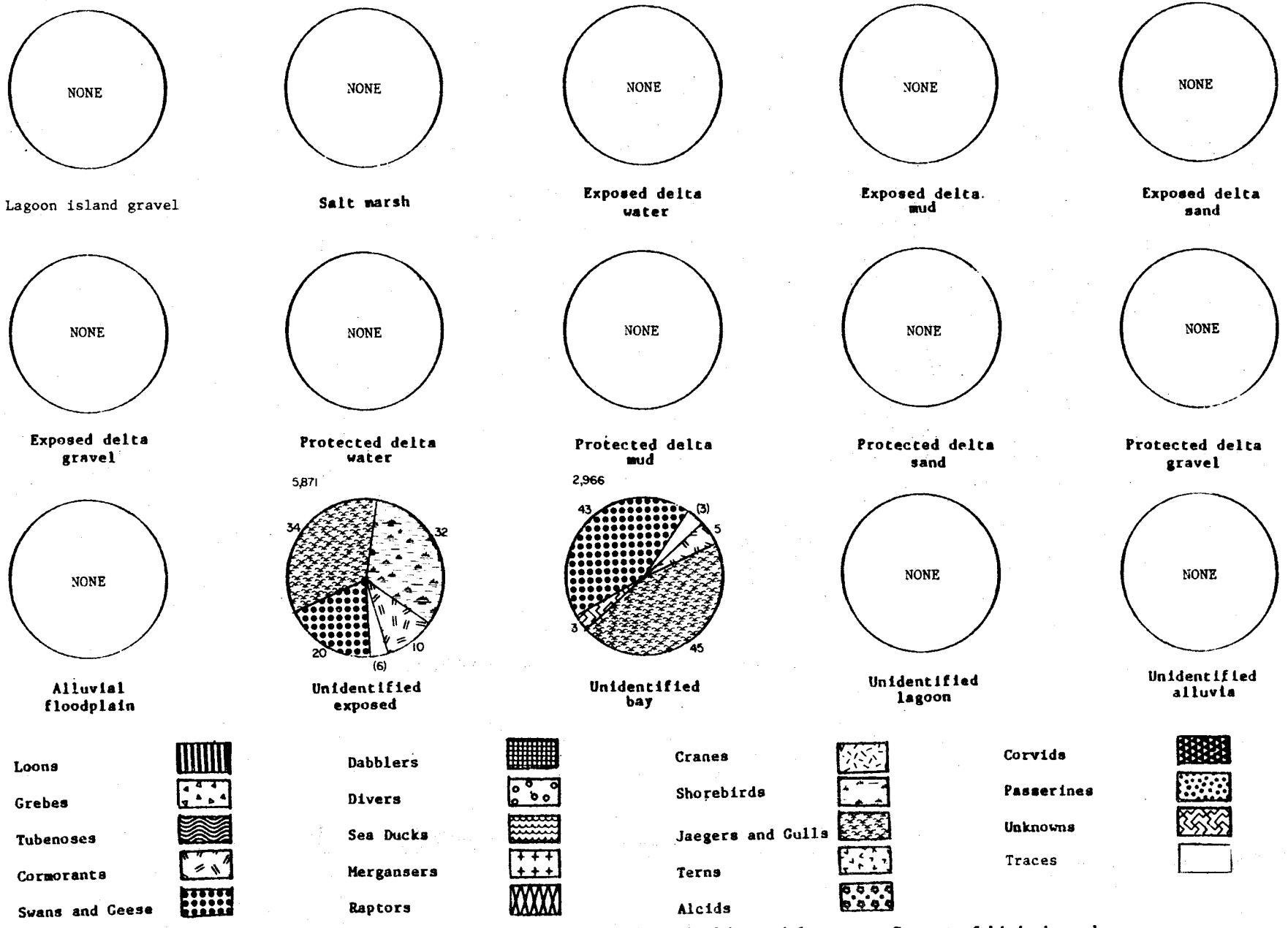


Fig. 177. Aleutian Shelf, Winter 1977. Marine bird usage of habitats as determined by aerial survey. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

One-fourth of the birds were on exposed inshore water habitat and sea ducks were the most abundant bird on that habitat. Eighty-six percent of the birds on exposed waters were sea ducks, 6 percent were alcids and 3 percent each were cormorants and geese. Bay waters contained 20 percent of the birds and again sea ducks were the most abundant (71%) bird group on the habitat. Others included alcids (15%), gulls (8%) and divers (2%).

Seventeen percent of the birds used exposed gravel beaches. Emperor geese and shorebirds comprised 53 and 45 percent of the birds on this habitat. On pelagic transects between islands, offshore waters were searched, and 9 percent of the birds were found on this habitat. Over 90 percent of the birds found were sea ducks, 4 percent were alcids and 1 percent tubenoses. Exposed rock beach was used by 4 percent of the birds and four species groups were most commonly found on it. These were geese (36%), shorebirds (31%), cormorants (16%) and gulls (14%).

The species group most frequently observed was sea ducks (45% of total) and they were primarily found on three habitats, exposed inshore water (48%), bay water (31%) and offshore water (20%). Over one-half the Emperor Geese, which were second in abundance with 18 percent of the total, were found on an exposed gravel beach. Most of the remainder had flushed from unspecified habitats in bays and along exposed habitats. Of the over 5,600 shorebirds observed on the survey, 55 percent used exposed gravel beaches, 34 percent were on unspecified exposed habitats and 9 percent on exposed rock beach. Only 1 percent were found in protected habitats.

Gull distribution was almost evenly divided between exposed and protected habitats. Fifty-seven percent were dispersed among all exposed habitats used by birds in the region on the winter survey. The remaining 43 percent were on bay habitats but most observations were not specified as to habitat type. Alcids were found on three habitats, bay water (64%), exposed inshore water (29%) and offshore water (7%). Over 1,500 cormorants were recorded, and they most frequently were found on exposed habitats. Only 21 percent were on bay habitats. As in other lease areas, rock was the preferred substrate of cormorants when they were not on the water.

VII. DISCUSSION

Bird Density - Although 33 bird surveys were conducted in this study and many birds were recorded, sample sizes were not large enough and surveys not uniform enough to statistically compare bird densities among regions, among different seasons within regions, or between the same seasons within regions. Nevertheless, obvious differences in bird densities existed between regions (Table 20), these can be interpreted and within the limits of the survey technique and compared to data gathered by others.

Table 20. Comparison of marine birds densities among regions in southcentral Alaska, by season. Data are based on aerial and boat surveys; survey trackline included both shoreline and pelagic areas. Values in Birds/km^2; T = trace, p = pelagic survey.

Region	NEGOA		KOD.	LOWER COOK INLET								S. AK. PEN.		N. AK. PEN.				N. BR. BAY		AL. AH.
Season	Sp	Su	Wn	Sp	Sp-p	Su	Su-p	Fa	Fa-p	Wn	Wn-p	Fa	Wn	Sp	Su-p	Fa	Wn	Sp	Su-p	Wn
Species Grouping																				
Loons	1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	1	T	T
Grebes	T	0	T	T	T	T	0	T	T	T	0	T	T	T	0	T	T	T	0	T
Tubenoses	0	0	0	0	T	1	2	T	1	0	T	0	T	0	402	T	0	0	0	T
Cormorants	1	1	1	T	T	3	T	3	T	1	T	3	3	T	T	1	T	2	15	4
Geese & Swans	2	0	T	7	0	T	0	3	0	T	0	227	3	60	0	268	3	7	0	17
Dabblers	7	0	4	15	T	3	0	15	T	2	0	14	T	11	0	23	T	9	0	1
Divers	7	0	5	23	T	1	0	1	T	4	0	4	1	2	0	1	T	12	0	1
Sea Ducks	9	49	20	38	12	38	17	14	3	15	3	10	18	26	1	97	33	10	10	43
Mergansers	1	0	T	1	T	T	T	T	0	T	0	T	T	1	0	T	T	1	0	T
Raptors	T	T	T	T	T	T	0	T	0	T	0	T	T	T	0	T	T	T	0	T
Cranes	T	0	0	T	0	T	0	0	0	0	0	0	0	T	0	0	0	T	0	0
Shorebirds	67	7	2	53	T	3	T	2	T	5	T	1	2	9	T	41	T	21	T	13
Gulls and Jaegers	45	284	2	52	2	70	4	26	2	3	1	17	9	31	16	19	13	13	6	11
Terns	7	32	0	T	T	T	T	0	0	0	0	0	0	1	T	T	0	1	T	0
Alcids	4	0	3	1	2	10	3	T	2	T	1	T	29	T	12	T	2	8	103	5
Corvids	T	T	1	T	0	T	0	1	0	1	0	T	T	T	0	T	T	T	0	T
Other Passerines	T	0	T	T	0	T	T	T	0	T	0	T	T	T	0	1	T	T	0	T
Other Birds	T	0	T	1	T	T	T	T	T	T	T	1	T	T	0	1	0	1	0	T
Total:	151	373	39	192	17	130	26	66	9	32	5	279	67	141	432	453	53	86	134	94

SPRING

Of four regions surveyed in spring, Lower Cook Inlet (LCI) supported the highest mean bird density (192 birds/km^2) and North-Bristol Bay (N-BB) the lowest (86 birds/km^2). Northeast Gulf of Alaska (NEGOA) and North-Alaska Peninsula (N-AP) had densities intermediate to the extremes (151 and 141 birds/km^2, respectively). Bird migration in spring generally follows similar patterns from year to year. It begins in April and lasts into June depending upon the species, the prevailing weather, and to a certain extent, the birds' age (non-breeding immature versus breeding adult). The only surveys conducted in April for this study were in LCI. All other spring surveys were in May. The high density for LCI may partially be a result of combining April and May surveys and, therefore, combining migration periods for more species of birds. There may be several reasons why observed bird densities in N-BB were realtively low. Many supratidal bird habitats were still frozen in early May (particularly in 1977), and habitat was not available to some birds. In addition N-BB is so close to prime staging areas farther south that birds migrating to the Yukon-Kuskokwim Delta and farther north do not require a stop to build fat reserves to reach nesting or more suitable staging habitat; or quantities of suitable staging habitat are not sufficient to stop large numbers of birds.

In spring, loons were found in large numbers (over 500) and in measurable densities (1 bird/km^2) only in NEGOA and N-BB. In both cases, these were mostly Red-throated and Arctic Loons. Grebes were never observed in abundance. I'm certain more were present, but were not recorded, because they dove at the approach of aircraft so were not counted. Goose densities were quite high (60 birds/km^2) in N-AP and quite low (2 birds/km^2) in NEGOA. Estuaries on N-AP are a major staging area for migrating Brant, Emperor and Canada Geese. They spend several weeks there before more northern areas open up in spring. It is not known how extensively estuaries in southern NEGOA are used in spring. Geese may continue up the coast to Controller Bay, Copper River Delta or areas farther north and west unless inclement weather stops them. Large numbers could then use areas like Dry Bay until improved weather permitted further migration. Most geese and dabblers migrate through NEGOA in the last half of April; therefore our May survey missed the peak of goose and dabbler migration. Because recorded densities were low, we could not determine which areas in NEGOA are used extensively by those bird groups.

We recorded substantially higher densities of sea ducks, divers and dabblers (38, 23 and 15 birds/km^2) in LCI than other regions in spring. This may be the result of the fact that more spring surveys were conducted in LCI, and the surveys covered a broader spectrum of the migration. However, LCI may serve as a crossroads for birds migrating overland to the north and those continuing along the ocean route for the Alaska Peninsula. Areas in Kachemak and Kamishak Bays provided ideal rest habitat for migrating diving and sea ducks.

Mergansers were recorded more frequently in spring. Densities of 1 merganser/km^2 were seen in each of the four regions in spring, the only season when measurable quantities were observed. Cranes were observed in trace amounts in all four regions. Most migrate on inland routes or overfly the coastal regions in spring.

Shorebird populations were densest in NEGOA and LCI (67 and 53 birds/km^2, respectively and least dense in N-BB and N-AP, 21 and 9 birds/km^2. Although all spring surveys were timed to coincide with shorebird migration, there were great differences in densities among regions. The logical interpretation is that shorebirds use the known migration corridor along the coast to major staging areas in Copper and Bering River Deltas. Some species, particularly Western Sandpipers, make a second stop in LCI. From there migration must proceed north and northwest to the Yukon-Kuskokwim Delta and beyond so that few shorebirds use the Alaska Peninsula for staging and only a part of the shorebird population uses N-BB. Some shorebirds using transoceanic routes do use estuaries in N-AP in spring.

Gull densities were relatively high (31-52 birds/km^2) in all regions in spring except N-BB where only 13 gulls/km^2 were found. However, if birds near colonies had been counted and the Walrus Islands had been surveyed, the gull density for N-BB would likely have been more comparable to other regions. Terns were most dense in NEGOA (7 birds/km^2) possibly because they are more concentrated along that coastline and disperse as they reach other parts of southcentral Alaska. North-Bristol Bay had the most dense alcid population, but this region also has the largest alcid breeding population of the four regions.

SUMMER

The only complete shoreline survey in summer was in LCI. In NEGOA there was only a partial survey and, therefore, data cannot be realistically compared. In both cases gulls and sea ducks were the most abundant bird groups. Many non-breeding scoters are found in both areas in summer. Gulls nest in large numbers in both areas, but most of the gulls observed in NEGOA were on beaches some distance from any colony. These were likely non-breeding birds that fed in the area and were counted while roosting on the beaches. Terns were abundant in NEGOA and uncommon in LCI. During over 2 months of on-the-ground or water survey work in Kamishak Bay only two terns were sighted. Apparently suitable habitat for terns is present only in the northern portion.

The only other study with comparable nearshore summer surveys for birds in southcentral Alaska was Dwyer et al. (1976). They found a mean density of 30 birds/km^2 in open water of Prince William Sound and a linear density of 70 birds/km^2 in shoreline habitats. Black-legged Kittiwakes, Marbled Murrelets, and Glaucous-winged Gulls were the most abundant species in open water. The same species and, additionally, Surf Scoters were abundant in shoreline habitats.

Summer pelagic survey techniques for this study differed enough so that comparisons between regions are not feasible. In LCI both boat and aerial surveys were conducted. Only 26 birds/km^2 were observed, and most of that number (17 birds/km^2) were sea ducks. Boat surveys were conducted between islands of the Walrus Islands in N-BB, and there alcids (murres) were the most abundant (103 birds/km^2). The mean density in that region was 134 birds/km^2. The summer aerial surveys in N-AP coincided with shearwater presence in the area and over 400 birds/km^2 were recorded. Most of these were shearwaters.

FALL

Three regions were surveyed in fall, two thoroughly, N-AP and LCI and one partially, South-Alaska Peninsula (S-AP). Mean densities were: 453 birds/km^2, N-AP; 279 birds/km^2, S-AP; and 66 birds/km^2, LCI. The N-AP fall density was the highest for all seasons in all regions. Estuaries along the Peninsula are prime staging habitat for migrating marine birds (particularly geese). Mean densities for four bird groups were highest in N-AP: geese 268 birds/km^2, sea ducks 97 birds/km^2, shorebirds 41 birds/km^2 and dabbling ducks 23 birds/km^2.

Geese in S-AP were nearly as abundant as in N-AP but only the southern three sections were surveyed. These sections are adjacent to Izembek Lagoon and Bechevin Bay and all contain eelgrass beds that are attractive to several waterfowl species. Geese primarily concentrated in three areas (Kinzarof, Thin Point/Old Man's and Big Lagoons) in S-AP and had a mean density of 227 bird/km^2. Brant, Emperor and Canada Geese were the major species. LCI supported densities of only 3 geese/km^2 in fall and most of those were found in Tuxedni Bay. Brant and Emperor Geese were not found in LCI in fall.

Gulls were the only birds that occurred in higher densities in LCI than in the other regions and the margin of difference was not great. There were 26 gulls/km^2 in LCI, 19 in N-AP and 17 in S-AP. In LCI there was a decrease in overall bird density from 192 birds/km^2 in spring and 130 birds/km^2 in summer to 66 birds/km^2 in fall. Major decreases resulted from the departure of sea ducks, gulls and alcids from the region.

Shorebirds were much more abundant in N-AP than in LCI or S-AP in fall (41 vs 2 and 1 birds/km^2, respectively). Certain species (e.g. Dunlin) likely build sufficient fat stores on N-AP estuaries in fall to enable them to bypass staging areas in LCI (Gill 1978). These same N-AP staging areas were used much less in spring by shorebirds than they were in fall (9 vs 41 birds/km^2).

The only other nearshore survey in southcentral Alaska to determine bird densities in fall was by King and McKnight (1969) in Bristol Bay. Their technique was to fly a saw-tooth pattern along the coast out to 19 km from shore. Most of their observations were in offshore waters but 80 percent of the birds were within 10 km of shore. They reported 124 birds/km^2, almost one-half of those were scoters.

WINTER

Winter shoreline bird densities were relatively high in Aleutian Shelf (AlSh) (94 birds/km^2), intermediate in S-AP (67 birds/km^2) and N-AP (53 birds/km^2) and low in Kodiak (39 birds/km^2) and LCI (32 birds/km^2). Although survey conditions were poor during the AlSh survey, many birds were recorded, particularly sea ducks (43 birds/km^2), Emperor Geese (17 birds/km^2), shorebirds (13 birds/km^2) and gulls (11 birds/km^2).

Sea ducks were the most abundant wintering bird recorded in all regions except S-AP, and in that area the survey technique utilized likely made alcids appear more dense than sea ducks even though they weren't. Predominantly offshore islands were flown in S-AP where many alcid colonies were located. Eiders were the most numerous sea duck in the two Bering Sea regions and scoters predominated in the three Gulf of Alaska regions. Diving and dabbling ducks were most dense in Kodiak and LCI while geese (Emperor's) prevailed in the three western regions.

Wintering shorebirds were found in all regions, the most (13 birds/km^2) in AlSh and the least (trace) in N-AP. Estuaries in N-AP were not searched in winter, and shorebirds may have been found there. However, shorebirds often use rocky habitats in winter and little of that habitat is present in N-AP. Presumably, Rock Sandpipers were the major wintering shorebird. Shorebirds were one bird group that was difficult to observe unless they flushed and, therefore, it was likely that many more were present than were actually recorded.

Gulls were the second most abundant wintering bird, but densities were greatly reduced from those in other seasons. As Black-legged Kittiwakes and other gulls moved offshore to winter, shoreline gull densities were reduced to as low as 2 birds/km^2 in Kodiak and a high of 13 birds/km^2 in N-AP. The low number in Kodiak was surprising. On the east coast of the United States, Kadlec and Drury (1968) found that Herring Gulls concentrated at major food sources near cities or at fishing ports. Perhaps on Kodiak most gulls were concentrated in or near the town of Kodiak and because we did not have a count unit there, our counts were low. Trapp (1977) found over 2,000 gulls in a total of 259 km^2 (8 gulls/km^2) in his survey in 1977, whereas we found about 1,800 gulls in 857 km^2 in 1976. However, we surveyed the entire Archipelago and Trapp (1977) only surveyed Kodiak Island. We found low gull densities on Afognak-Shuyak Islands. The 8,600 gulls recorded on N-AP were scattered all along the exposed sand beaches. Localized food sources such as the canneries in Kodiak are not found in N-AP, and the gulls were dispersed for feeding in winter. The net result of this may be a lower survival rate as suggested by Drury (1979) for the N-AP gulls.

The recorded high alcid density in S-AP was an aberration resulting from the survey type used, and the extremely low density (trace) in LCI can be explained similarly. Alcids were observed on the offshore transects in S-AP but not on shoreline counts of LCI because most were farther offshore. Few were seen on the west side of LCI but many alcids including murres, murrelets and Pigeon Guillemots were found in outer Kachemak Bay.

Corvids had measurable densities (1 bird/km^2) only in the two regions where Northwestern Crows were common (Kodiak and LCI). As corvids left spring and summer nesting areas, they became more abundant as scavengers along coastal beaches in fall and winter.

In other winter surveys in southcentral Alaska, techniques differed and results were not directly comparable to this study. From a boat, Dwyer et al. (1976) determined a linear density of 40 birds/km^2 along the shoreline and an offshore density of 20 birds/km^2 in Prince William Sound. Sea ducks, gulls and cormorants were the most abundant bird groups on the shoreline, and sea ducks, gulls and alcids predominated in open water. Trapp (1977) found 101 birds/km^2 in his aerial survey of Kodiak Island compared to 39 birds/km^2 for this report. Boat surveys by U.S. Fish and Wildlife Service in 1973 and 1975 around Kodiak found 129 and 147 birds/km^2, respectively (U.S. Fish and Wildlife Service 1973, 1975). Sea, diving and dabbling ducks were the birds most often found by Trapp (1977), whereas alcids and sea ducks were the most abundant birds recorded on the boat cruises.

Survey Technique Evaluation

It has been mentioned several times in this report that density data were not comparable because sampling techniques differed. Elaboration of this statement is warranted. Six types of aerial surveys were used in this study and surveys by others mentioned in the text were different as well. Physiography of the shoreline, number of observers available, and whether aircraft of opportunity were utilized, all helped determine what kind of technique was used. The preferred situation and the technique most used in this study included two observers and a pilot. Coverage was on both sides of the aircraft and approximately a 400 meter strip along the coast was searched for birds. In this case, the area covered was about double that by one observer. Most birds were observed on the shoreside of the aircraft but occasionally large rafts of birds were on the oceanside of the aircraft both within and beyond the 200 meter transect width. When surveying extensive supratidal areas, two observers were better able to accurately census the birds present.

When one observer was used on shoreline counts, the majority of birds were likely recorded because most birds were found on the beach or on nearshore waters. If a specified width was being surveyed so that a density in birds/km^2 was obtained, the density value would be much higher than in the technique where two observers were used.

Boat surveys add other biases when attempting shoreline counts. More offshore species would be recorded, birds on supratidal habitat may be missed and birds that dive from aircraft may be sighted from a boat.

Because of the observation differences inherant to the various survey techniques, data from different types of surveys are not directly comparable. For example, in this study a stratified-random sampling scheme with two observers was used on the Kodiak Archipelago. Large areas within bays,

including open water, were surveyed. We found 39 birds/km^2. Trapp (1977) used one observer and flew parallel to the shore around the coast of Kodiak Island only. His observations of 101 birds/km^2 is not directly comparable to the 39 birds/km^2 recorded in this study. Each is a good index if surveys are duplicated using the same technique as the previous one. Density values must be properly interpreted and not taken out of context of the type of survey conducted by those who wish to use the data for comparative purposes.

In an evaluation of waterfowl surveys on the east coast, Stott and Olson (1972) questioned the usefulness of aerial surveys to determine trends in wintering populations of sea ducks. Their preferred method was ground censusing with a spotting scope. In comparing the two techniques, they reported that aerial censuses found only 20 to 81 percent of the birds that ground counts did. The situation in New Hampshire is markedly different from that in Alaska. Stott and Olson (1977) surveyed 35 km of coastline (one observer was used on aerial surveys) and had a paved road the entire distance for ground surveys. In this study, survey stations were almost that long but all were in remote areas without roads. In our case, aerial surveys were essential and provided a useful tool as an index for coastal bird populations, but techniques to determine the indices should be standardized.

Spring Migration, Cape St. Elias

Several aspects of the spring bird migration past Cape St. Elias on Kayak Island need further discussion. Large numbers of certain groups of birds bypass the northern portion of NEGOA and Prince William Sound by migrating westerly from the Cape. These birds may not be affected by oil development in northern NEGOA. Other bird groups stop at Kayak Island to rest and feed or migrate diurnally back and forth past the Cape. These birds definitely could be affected by certain oil development related problems. Inclement weather stops many migrating birds and they concentrate in large numbers in southern NEGOA. When weather improves there is an immediate rush of migrating birds past the Cape. There, too, birds could be affected if oil was spilled when they were concentrated or habitat was lost because of development.

The magnitude of the loon migration past Kayak Island was much greater than expected. During the peak of migration, when an estimated 10,000 loons per day passed the Cape, many stopped to feed in rafts in nearshore waters. In May and June hundreds to tens of thousands of shearwaters fed in offshore waters surrounding the Cape. Aquatic birds like these two groups are highly susceptible to contamination by oil.

Some species groups, particularly dabbling ducks, would appear in great numbers during the improved weather after a storm. Because they appeared so quickly, it likely meant that they had waited out the storm in nearby coastal habitats. If this phenomenon occurs every spring, the locations of their stopovers must be found so that adequate protection can be given to the habitat.

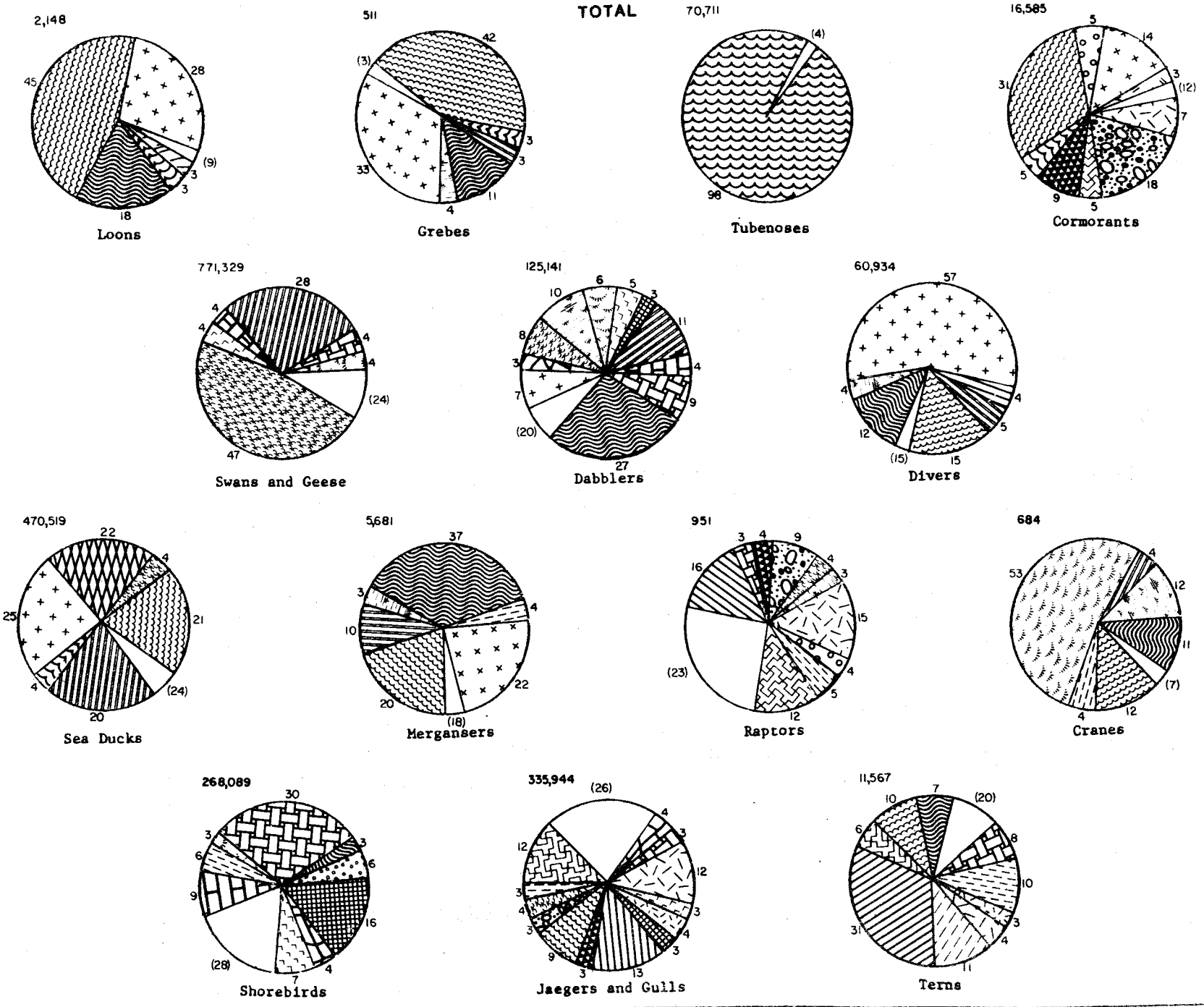
Thousands of Black-legged Kittiwakes moved back and forth past the Cape morning and evening for 2 months in spring 1977 and 1978. The exact cause of these diurnal movements was not determined. They moved northerly toward colonies in the morning and away from colonies toward exposed sand beaches in the direction of Cape Suckling in the evening. Whether they moved toward nocturnal feeding grounds and returned to the colony in the day or flew to bathing and roosting sites along the beach in the evening was not determined. Whatever the reason, the large population of birds remained vulnerable to oil pollution for this 2 month period by utlizing coastal habitats.

Murres and puffins from nearby colonies frequently rafted on waters around the Cape and diurnal movements of up to 10,000 murres were observed at the Cape in April. These murres may represent migrating birds from outside NEGOA. Both puffins and murres, because of their aquatic habits, are highly vulnerable to oil spills.

Habitat Usage

Although mentioned previously, the determination of habitat availability for each survey region could not be done for this report. Also, the amount of observation time spent in each habitat type was not recorded on bird surveys. In some surveys all habitat types of the region were searched for birds and in others only a few habitats. Therefore, the data presented on birds' use of habitats merely reflects where we found birds at the time of the survey. An absolute habitat preference by birds could not be determined; instead our data reflect relative habitat selection by birds in those habitats that were searched in this study. Combined information on habitat use by birds is shown in Figs. 178 and 179.

In most cases, the recorded habitat usage data for all birds combined (Table 21) reflected both the habitats which were normally found in the region and what habitats were surveyed within the region. However, several patterns in habitat usage were evident. The best data are available for Lower Cook Inlet because surveys were conducted in all seasons of the year, and similar areas were covered in the surveys. From spring and summer through fall and winter in LCI there was a gradual increase in the percentage of birds using lagoon habitats (Table 21). This amounted to a change from 2 to 15 percent of the birds. Conversely, there was a decrease from 7 to 1 percent in the birds found in exposed delta habitats from spring through winter. In salt marshes and protected delta habitats, most birds were found during migration periods, sping and fall, and in both cases the percentages were identical, 4 percent of the birds in salt marshes in spring and fall and 11 percent of the birds on protected delta in spring and fall. Exposed habitats were used by the most birds in summer and fall (44% and 42%, respectively) and bay habitats received most use in winter and spring (48% and 50%, respectively). Sampling wasn't sufficient in other regions to determine definite seasonal habitat changes within a region.


TOTAL
2,148
45
28
(9)
3
3
18
Loons
511
(3)
42
3
3
33
4
11
Grebes
70,711
(4)
98
Tubenoses
16,585
5
14
3
(12)
7
31
5
18
9
5
Cormorants
771,329
28
4
4
4
4
(24)
47
Swans and Geese
125,141
10
6
5
3
11
8
4
3
9
7
(20)
27
Dabblers
60,934
57
4
12
(15)
15
5
4
Divers
470,519
22
4
25
21
4
(24)
20
Sea Ducks
5,681
37
3
4
10
22
20
(18)
Mergansers
951
3
4
9
16
4
3
15
(23)
4
5
12
Raptors
684
4
53
12
11
(7)
4
12
Cranes
268,089
30
3
3
6
6
9
16
(28)
7
4
Shorebirds
335,944
(26)
4
3
12
12
3
3
4
4
3
3
9
3
13
Jaegers and Gulls
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(20)
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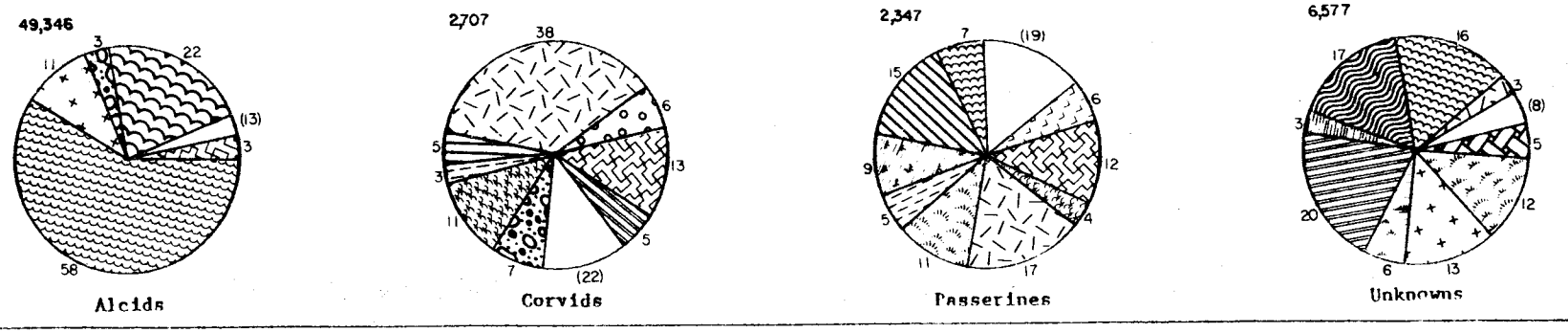
3
31
4
11
Terns



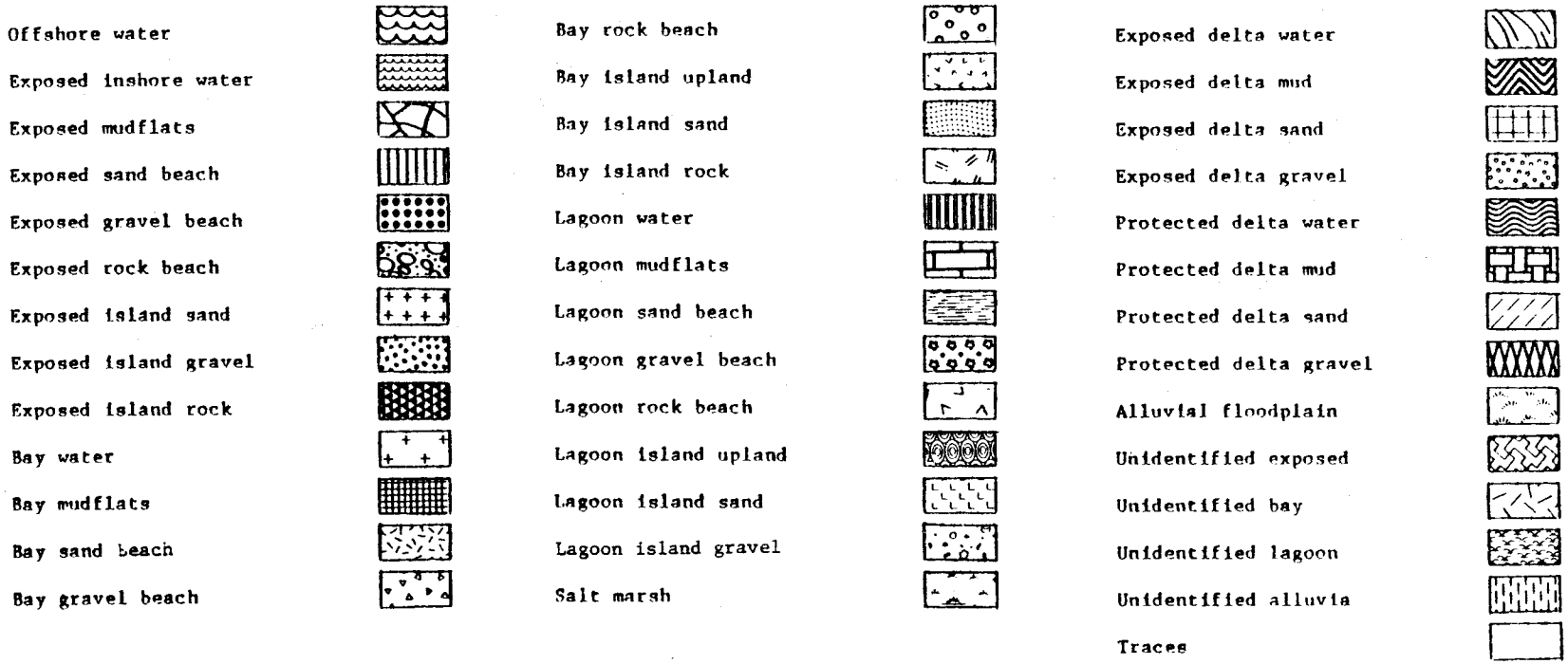
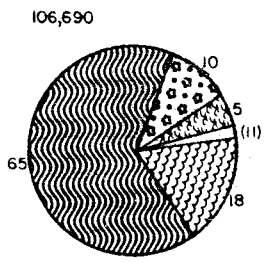
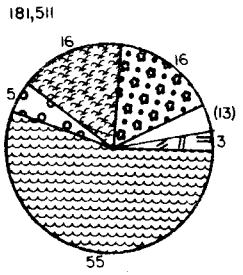


Fig. 178. Entire Study Area Total, 1975-1978. Habitat preference of marine birds as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of habitat types in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

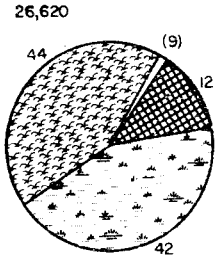
TOTAL



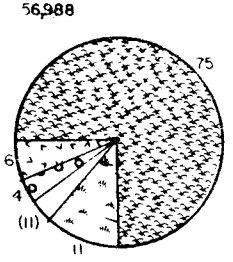
Offshore water



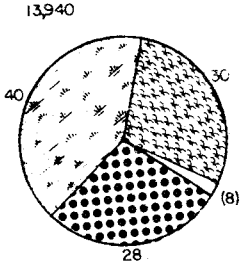
Exposed inshore water



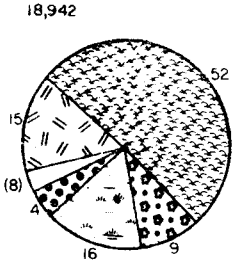
Exposed mudflats



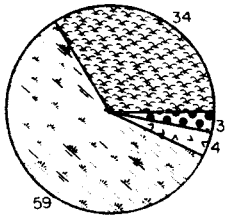
Exposed sand beach



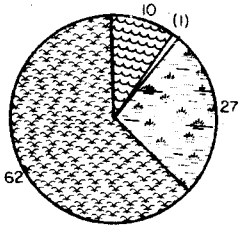
Exposed gravel beach



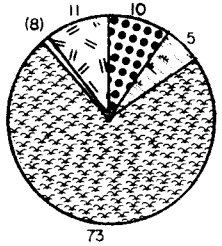
Exposed rock beach



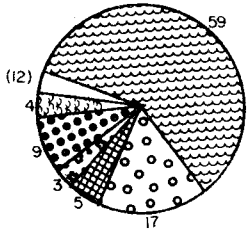
Exposed island sand



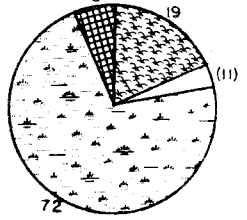
Exposed island gravel



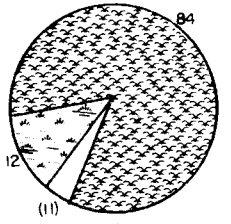
Exposed island rock



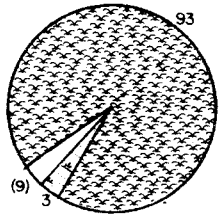
Bay water



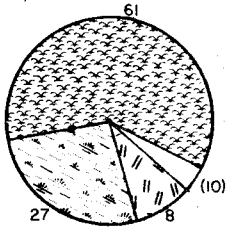
Bay mudflats



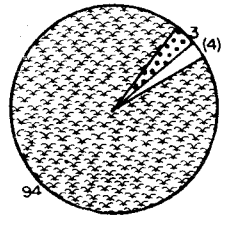
Bay sand beach



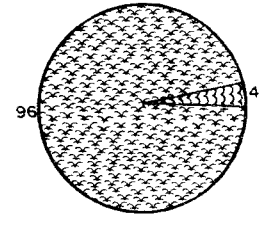
Bay gravel beach



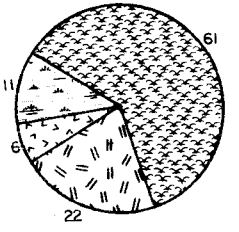
Bay rock beach



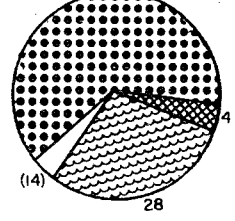
Bay island upland



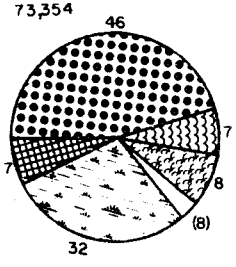
Bay island sand



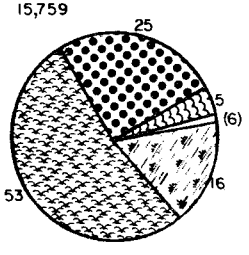
Bay island rock



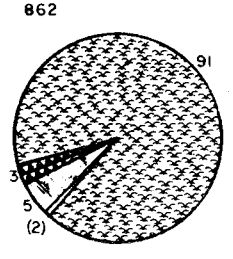
Lagoon water



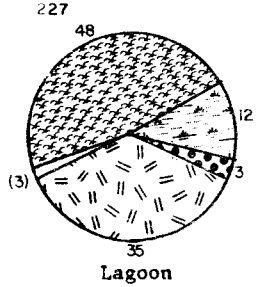
Lagoon mudflats



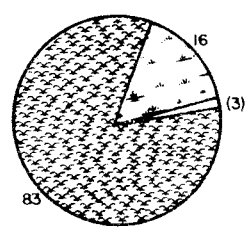
Lagoon sand beach



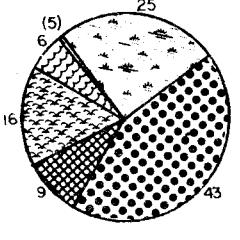
Lagoon gravel beach



Lagoon rock beach



Lagoon island upland



Lagoon island sand

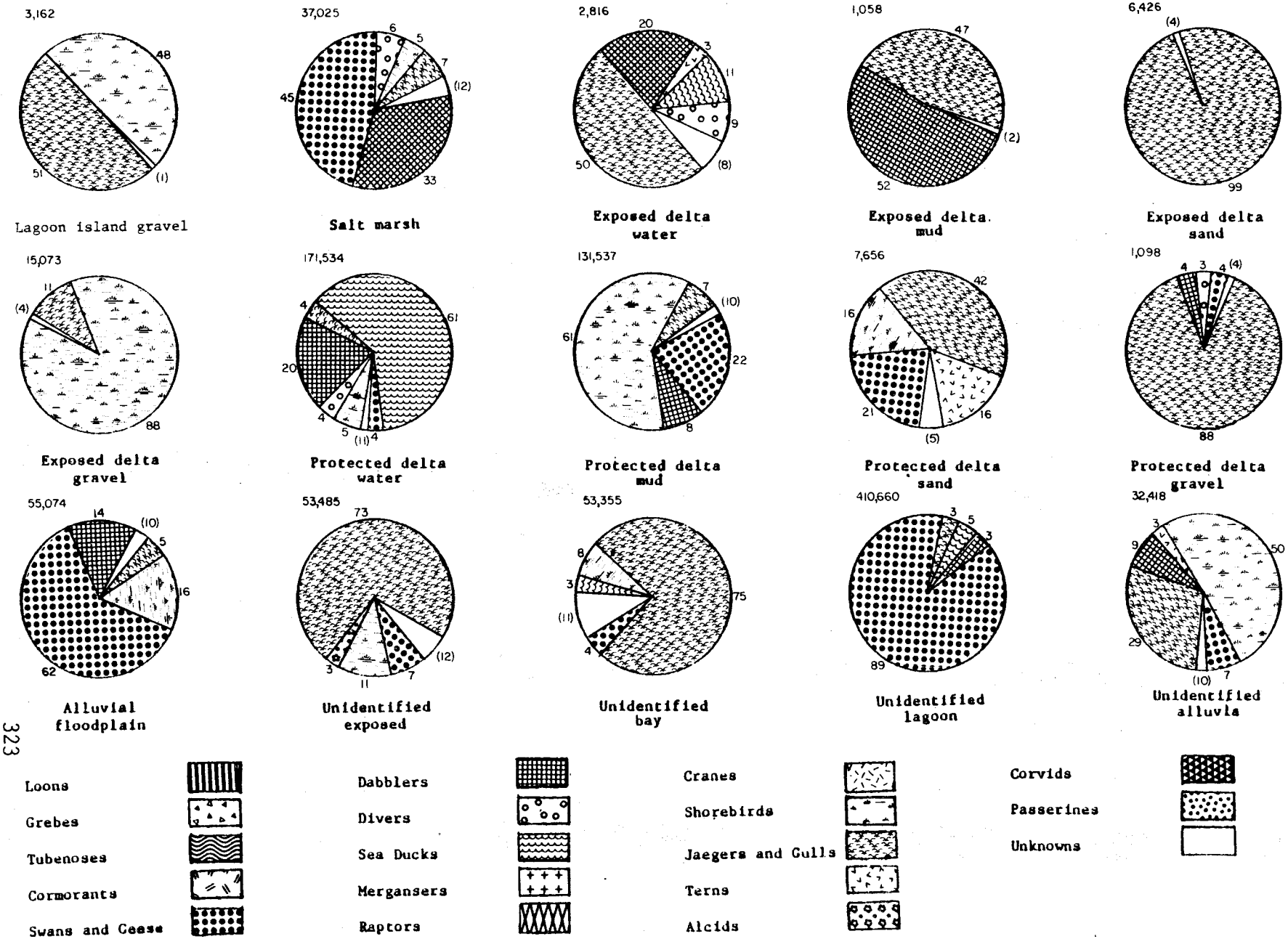


Fig. 179. Entire Study Area Total, 1975-1978. Marine bird usage of habitats as determined by aerial surveys. Percent of birds in each habitat type is shown at perimeter of circle; the number of bird groups in the trace (<3 percent) category is in parenthesis. Numbers at upper left are sample size.

Table 21. Comparison of seasonal and regional use of bird habitats in southcentral Alaska as determined by aerial surveys. Numbers represent percent of the total marine birds found in the survey area for each habitat type.

Habitat Type	NEGOA		KOD	Lower Cook Inlet				S AK Pen.		N AK Pen.			Br. Bay	Al. Sh.
	Sp	Su	Wn	Sp	Su	Fa	Wn	Fa	Wn	Sp	Fa	Wn	Sp	Wn
Offshore Water					5				7	Tr		6	4	9
Exposed Inshore Water	13	12	4	16	16	20	28	3	68	5	2	31	22	25
Exposed Mudflats	5			2	2	12	Tr			2	Tr		1	
Exposed Sand Beach	7	76	1	1	Tr	1	1	Tr	2	5	Tr	13	7	1
Exposed Gravel Beach	1			Tr	2	3	1			Tr		Tr	Tr	17
Exposed Rock Beach	2	8	Tr	Tr	5	3	1		5	Tr	Tr	Tr	3	4
Exposed Island Sand	Tr			1	Tr				Tr	Tr		Tr		
Exposed Island Gravel				Tr	Tr	Tr			Tr					
Exposed Island Rock	4			1	4	1	Tr		7				Tr	Tr
Bay Water	9	4	78	20	20	20	32	3	5	3	4	3	7	20
Bay Mudflats	9			17	4	2	6			Tr	Tr		2	
Bay Sand Beach	2	Tr	Tr	Tr	6	1			Tr	1		Tr	Tr	
Bay Gravel Beach	Tr		Tr	Tr	2	3	Tr		Tr	Tr	Tr		Tr	Tr
Bay Rock Beach	1	Tr	Tr	Tr	3	2	Tr		Tr	Tr	Tr		1	Tr
Bay Island Upland	Tr		Tr	Tr	Tr					Tr				
Bay Island Sand	Tr		Tr		Tr					1				
Bay Island Rock			1	Tr	1	1								Tr
Lagoon Water	Tr		5	1	1	6	12	79	1	28	21	32	1	Tr
Lagoon Mudflats	1			Tr	2	4	1	Tr		12	4	1	Tr	
Lagoon Sand Beach	Tr			Tr	Tr	Tr		2		3	1	Tr	Tr	
Lagoon Gravel Beach				Tr	Tr	Tr				Tr	Tr		Tr	
Lagoon Rock Beach			Tr	Tr	Tr	Tr	Tr			Tr	Tr		Tr	
Lagoon Island Upland	2									Tr	Tr	Tr		
Lagoon Island Sand	Tr									8	5	Tr		
Lagoon Island Gravel										1	Tr			
Salt Marsh	Tr		1	3	Tr	4		5	1	2	2	1	2	
Exposed Delta Water	Tr			Tr	1	1	Tr		Tr	Tr		Tr	Tr	
Exposed Delta Mud				Tr	Tr	1							Tr	
Exposed Delta Sand	1			Tr	Tr	Tr	1		1	2		4	Tr	
Exposed Delta Gravel	7			7	Tr	Tr	Tr						Tr	
Protected Delta Water			2	3	1	6	1		Tr	8	11	1	19	
Protected Delta Mud	27			1	1	2	Tr			10	6	1	4	
Protected Delta Sand	3		Tr	Tr	Tr	1				1	Tr	1	Tr	
Protected Delta Gravel	Tr			Tr	Tr	1				Tr				
Alluvial Floodplain	2		Tr	6	1	1				1	3		4	
Unidentified Exposed	Tr		1	6	15	1	2	2	2	Tr	1	2	4	15
Unidentified Bay	2		4	12	4	2	10	3	Tr	1	1	2	1	7
Unidentified Lagoon	Tr		1	Tr	Tr	1	2	3		2	38	2	2	
Unidentified Alluvium	3		Tr	Tr	4	1	Tr			4	Tr	Tr	15	

In comparing seasonal use of habitats among the regions, it was evident that birds used protected delta habitats much more frequently in spring and fall than in winter. From 11 to 42 percent of the birds were found on protected deltas in spring and fall and only 3 percent or less were found there in winter. Exposed delta habitats and salt marshes were used by few birds in all seasons. Other apparent trends likely reflected habitat availability or area surveyed.

Assuming that, in general, birds select similar habitats no matter which region they are in, data from all surveys were combined to get a "mean" habitat preference. By doing this, sampling biases may have been negated. Over 2 million birds were observed on all surveys, and the habitats on which they were found (excluding offshore water) in descending order of usage were: lagoon/embayment (44%), protected delta (19%), exposed (18%), bay/fjord (17%), salt marsh (2%) and exposed delta (1%).

About 0.5 million birds were on the four unidentified habitats. On unidentified exposed habitats most (73%) of the birds were gulls, on unidentified bay 75 percent were gulls, on unidentified lagoon 89 percent were geese and on unidentified protected delta 50 percent were shorebirds and 29 percent gulls.

On five identified habitats (excluding offshore water) there were 100,000 or more birds present. Four of these habitats were water. The most used habitat was lagoon water where 22 percent (337,168) of the birds were found. This was followed by bay water (13%), exposed water (12%) and protected delta water (11%). Protected delta mudflats supported 9 percent of the birds.

Species composition on these most used habitats varied somewhat but waterfowl were found on all five. On lagoon water 64 percent of the birds were geese and 28 percent sea ducks. Four waterfowl groups comprised the majority of birds on bay water. Most (59%) were sea ducks; 17 percent were divers, 9 percent geese and 5 percent dabblers. Sea ducks comprised 55 percent of the birds on exposed inshore water, and gulls and alcids each represented 16 percent of the total. Protected delta water was used most by sea ducks (61%) and dabblers (20%) while protected delta mud was used by shorebirds (61%) and geese (22%).

In looking at what habitats individual species groups used when all surveys were combined, we found that loons and grebes selected similar habitats. Most were on exposed inshore water followed by bay water and protected delta water for both groups. On a species basis, Common Loons were found most on bay water; Arctic Loons were found equally on bay, exposed delta and protected delta water; Red-throated Loons used exposed inshore water and protected delta water (Table 22). Red-necked Grebes used exposed inshore and protected delta water while Horned Grebes used exposed inshore and bay water.

Table 22. Relative use of coastal habitats by common marine bird species or groups as determined from aerial surveys in southcentral Alaska, 1973-1978. Numbers represent percent of the total for given species and includes birds combined from all surveys.

1 - Offshore Water
2 - Exposed Inshore Water
3 - Exposed Mudflats
4 - Exposed Sand Beach
5 - Exposed Gravel Beach
6 - Exposed Rock Beach
7 - Exposed Inland Sand
8 - Exposed Inland Gravel
9 - Exposed Inland Rock
10 - Bay Water
11 - Bay Mudflats
12 - Bay Sand Beach
13 - Bay Gravel Beach
14 - Bay Rock Beach
15 - Bay Inland Upland
16 - Bay Island Sand
17 - Bay Island Rock
18 - Lagoon Water
19 - Lagoon Mudflats
20 - Lagoon Sand Beach
21 - Lagoon Gravel Beach
22 - Lagoon Rock Beach
23 - Lagoon Inland Upland
24 - Lagoon Island Sand
25 - Lagoon Inland Gravel
26 - Salt Marsh
27 - Exposed Delta Water
28 - Exposed Delta Mud
29 - Exposed Delta Sand
30 - Exposed Delta Gravel
31 - Protected Delta Water
32 - Protected Delta Mud
33 - Protected Delta Sand
34 - Protected Delta Gravel
35 - Alluvial Floodplain
36 - Unidentified Exposed
37 - Unidentified Bay
38 - Unidentified Lagoon
39 - Unidentified Alluvia
n = Number of Birds in Sample

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	n
ColO	3	28								59								2								1					6					1				99
ArLo	3	14								29																3	25				25							Tr		203
RTlo	1	52								10		1						1								1	Tr				36						Tr			500
RNCr	1	33							1	22								2								9					33									129
HoGr	1	57								43																					4									89
NoFu	93	4								2																											1	1		120
Shea	98	1								Tr																											Tr	Tr		79,572
FTSP	78	11								11																														18
DCCo	2	27		6		41			3	17	Tr	Tr		2			Tr	Tr								Tr					Tr				Tr	Tr		Tr		1,713
PeCo	30	10				48				4				1			7										Tr													350
Swan		6		1						1	2							2								29	1				46	1	1		10	1			Tr		692
CaGo		Tr	Tr		Tr	Tr			Tr	Tr	Tr	Tr						21	10	Tr			Tr			8	Tr				1	5	Tr		16	Tr	Tr	37	Tr	167,607
Bean		Tr		Tr					Tr	1		Tr					Tr	35	3							Tr	Tr				Tr	Tr			Tr	Tr	Tr	61	Tr	437,581
EmGo		1		Tr	2	Tr	Tr		Tr	6	Tr	Tr	Tr			Tr		20	3	2				19		Tr					2	14	1	Tr	1	2	1	22	Tr	154,126
WFGo		1									4							2													16	8			31			1	38	278
SnGo		Tr										Tr						Tr								22					Tr				68	3			5	6,769
Mall		3	2	Tr	Tr	Tr				17	1	Tr						21	1					3		13	Tr	1			17	2	Tr	Tr	4	1	1	12	2	17,325
Gadw										8	1							4	3							22					25	6	16		4			1	11	309
Pint		1	Tr	Tr					Tr	2	4	Tr						10	6	Tr				13	Tr	8	Tr				22	7	Tr		5	Tr	1	18	3	43,059
GWTe		1	24	Tr	Tr					10	4		Tr					11	10							7	Tr				25	2			5	Tr			1	4,917
AmWi		2	1							10	1	Tr		Tr				19	2							2					41	16	Tr		4	Tr	Tr		2	3,014
NoSh		Tr	Tr							14	1							2								15	1				39	2			15		2		7	705
Scau	1	18	Tr	5		Tr				54	2	Tr						2								3	Tr		Tr		13	Tr			Tr	Tr		Tr	Tr	46,757
Gold	Tr	1				Tr				75								14								6					3			Tr		Tr			9,493
Buff	Tr	10								56								22								4	Tr				7				1					1,556
Olds	5	45	Tr	Tr						41								5								Tr	Tr				3				Tr		Tr			16,900
Harl	Tr	40		1	Tr	2				45	Tr			Tr				2								Tr	Tr				1				1					11,976
StEi	Tr	4								15	Tr							33	4	Tr				3		Tr					28						13			116,480
CoEi	16	31	Tr	Tr	1	Tr		Tr	Tr	25		Tr	Tr	Tr		Tr		8	Tr					2		1	Tr				14				Tr	Tr			Tr	15,075
KiEi	62	23		Tr						12								3													Tr					Tr				6,358
WWSc	24	31								40								2													2						Tr			10,106
SuSc	10	19		1						61								7									Tr				1									21,693
BlSc	4	31	Tr	1		Tr				25	Tr		Tr					4	Tr							Tr	Tr				35	Tr			Tr				Tr	43,599
CoMe		10		Tr					1	20		13						3								1					47					1			2	205
RBMe	Tr	23	Tr	2						21	Tr		1	Tr		Tr		6	Tr							4	1				35	Tr			Tr	Tr	Tr	Tr	5	4,022
BaFa		3	1	17	2	10	Tr		5	1	1	3	2	5	Tr		2	1	1	2	Tr	Tr	1	Tr		3			Tr		Tr	2	1	Tr	2	10	16	4	4	870
MaHa				11						4																7					7	21	4		21				25	28
Ptar										5																13									73		1		10	195
SaCr		12	Tr	Tr														4	1							12					11	Tr			53	Tr		Tr	5	683
BlOy		3				20			31	2	Tr		2	6	Tr		26																		2	6				767
Flov		1	9	29		Tr					5																				1	5		Tr	1	1	47		2	1,293
Turn		Tr		5	1	31					Tr	5		22								Tr				1					1		Tr		14	6	5	1	6	1,116
Whim						70					5																				10	5						10	29
Yell		40																								6						14			6				33	61
RoSa			3		5	67		14				4		1							4	2													Tr	1				812
Surf		19			4	7			18					51					1			Tr													Tr				743
Dowi			3	8						1																2					63				3			20	127
Phal	9	30		1						3								12								12									2				4	510
Jaeg	7	7	1	3					1	10		6	1					2								1	1				13	16	4		3	1	6	1	19	196
GlGu	4	10	2	11	1					1	1	1							5	2							1				15	5				19	11	6	4	81
GWGu	2	5	1	7	2	3	Tr	Tr	2	3	2	2	1	1	Tr	1	1	3	2	3	Tr	Tr	2	5	Tr	1	Tr	Tr	1	Tr	1	4	1	Tr	Tr	16	33	10	2	89,482
HoGu	Tr	9	6	22	3	5				1	1	15	Tr	2			Tr	Tr											Tr		3	2	3		Tr	Tr	14	Tr	12	1,940
MeGu	1	6	14	11	1	1			Tr	6	7	2	1	Tr		Tr		2	2	Tr		Tr	Tr	1		1	Tr	Tr	Tr	Tr	7	7	1	1	5	4	9	2	10	13,815
BoGu		2		10						3	1		Tr					52		Tr						Tr					17	1			Tr	2	3		8	412
Kitt	3	11	6	3	Tr	Tr	Tr		9	2	5		3	4			Tr	1		2	Tr		Tr	Tr		Tr	Tr				1	Tr	Tr	Tr		23	27	1	Tr	82,280
SaGu	9	5								2																2					27	5				14	8	21	7	119
Tern	1	10	Tr	31	Tr	Tr	1			2	Tr	3	Tr	Tr				1	1	1				1		1	1		Tr	Tr	7	8	11	Tr	1	6	4	2	10	11,567
Mule	46	24								18								13																					237
Murr	24	64				4				8	Tr							Tr																					38,709
PiGu	11	41		3		2				34				1				1		Tr											Tr					6			1,940
HoPu	11	56			Tr	1				28							3																			Tr			1,291
TuMu	11	30				Tr			4	3							2																			38	12			3,824
SeOw																													30						10	10		10	10
SnBu				15	2	Tr		1				Tr	1											8		8						2			3	21	34	6		992
BBMa		3				9			13	7		6	3	6																						13	34	4	1	68
CoRa		3	Tr	24	2	1			1	5	Tr	2	2	1	Tr			2	2	2	Tr	Tr				2			1		1	1	1		4	10	17	7	7	444
NWCr		Tr		1	1	8	Tr			1		Tr	1	7				5	1	Tr	1	Tr				2					Tr			1		14	42	12	3	2,195

Almost all tubenoses were on offshore water. Cormorants used exposed inshore water, exposed rock beach, bay water and exposed island rock. Swans primarily used protected delta water and salt marshes while geese used lagoon habitats. Brant, Canada and Emperor Geese were the most abundant birds in the study (all three species numbered over 100,000 birds), and all three used lagoon water and mudflats the most. The majority were found in North-Alaska Peninsula where lagoon and embayment habitat is plentiful. Brant were primarily restricted to lagoon water where eelgrass was found. Canada Geese used alluvial floodplains and Emperors used lagoon island sand and protected delta mud. Almost all Snow Geese were on alluvial floodplain.

Dabbling ducks were the most ubiquitous of waterfowl. They were found most abundantly on protected delta water, lagoon water and salt marshes but were found in measurable quantities on eight other habitats. Only subtle differences in habitat selection by the six most common dabbler species were evident. Pintails frequented lagoon island sand much more than other dabblers, Green-winged Teal were often on exposed mudflats and American Wigeon were more abundant on protected delta water and mud.

Over half the diving ducks were on bay water habitats. Most of the remainder used exposed inshore and protected delta water. Scaup, the most abundant diver, mirrored this habitat selection. Goldeneyes used exposed inshore water very little and three-fourths were found on bay water. Twenty-two percent of the Buffleheads used lagoon water, much more than the two other common diver species. Stott and Olson (1973) found in New Hampshire that Buffleheads almost exclusively used protected estuaries but goldeneyes were found in both exposed shoreline and protected waters.

There was an almost equal distribution of sea ducks among four water habitats: bay, protected delta, exposed inshore and lagoon. Analysis by individual species reflected a much different distribution, however, most Oldsquaws and Harlequin Ducks were found on exposed inshore and bay waters. Steller's Eiders were least abundant on exposed inshore and bay water and most abundant on lagoon and protected delta water. Common Eiders used all water habitats including offshore water while King Eiders were found most on offshore water, less on exposed inshore water, still less on bay water and were rare on lagoon and protected delta water. Of the scoters, White-wings were found most on exposed waters, Surfs in bay water and Blacks were the most abundant of the three in protected delta water.

Mergansers, both Common and Red-breasted, used the following habitats in decreasing order of abundance: protected delta water, bay water, exposed inshore water and lagoon water.

Bald Eagles, by a the most numerous raptor, were found on 32 of the 39 original habitat types. They were found most often on exposed sand beaches where they normally were feeding on carrion or roosting on driftwood. Eagles frequently used exposed rock beaches also. Others were scattered over a variety of habitats.

Less than 700 Sandhill Cranes were counted in all surveys and over one-half of these used alluvial floodplains. Most of the remainder were flying along the exposed coast in migration or were on salt marsh and protected delta water habitats.

Because many species of shorebird were observed (although not always identified) and each had its own habitat preferences, shorebirds were recorded on all but a few habitats. They were the second most widespread species group. As a group, they were found most often on protected delta mud, bay mudflats and lagoon mudflats. Habitat selections by species differed markedly. Black Oystercatchers used exposed island rock, bay island rock and exposed rock beach most often. Of identified habitats, plovers were found most on exposed sand beach, however, many used bay habitats that were not specified to substrate type during the survey. Most turnstones, Whimbrels and Rock Sandpipers used exposed rock beach. Bay rock beach was used by over half of the Surfbirds, and dowitchers were found on protected delta mud. Phalaropes utilized exposed inshore water and protected delta water. The preceding discussion does not take into consideration the thousands of shorebirds identified as only small, medium or large. It reflects only those positively identified to species which was a small portion of the total.

The only bird group found on all habitats was the gull/jaeger group. Nearly half the gulls were recorded on exposed habitats, particularly sand beaches and inshore water. About one-fourth were in bay habitats and the rest were dispersed in other habitats. The ubiquitous distribution of gulls in marine habitats is a boon to their survival in the face of increased coastal zone development (oil, gas and other). This and the gulls opportunistic feeding behavior may help populations reach a magnitude detrimental to other colonial nesting seabirds. The most common gulls in southcentral Alaska were Glaucous-winged Gulls, Black-legged Kittiwakes and Mew Gulls. On shoreline habitats there was not much difference among the three species as to which habitats they selected, except that kittiwakes were most frequently found on rocky habitats and Mew Gulls on sandy habitats. Glaucous-winged Gulls were found in small percentages on all habitats. Only about 200 jaegers were recorded on the surveys, and over one-half of these were on protected delta habitats.

Along the coast, terns were found most often on exposed sand beaches or flying over exposed inshore water, and a large percentage used protected delta sand, mudflats and water. Few were observed in bays and even fewer were in lagoons. However, most terns were recorded on spring surveys, and summer habitat selection may be different.

Most alcids selected exposed inshore waters, offshore waters and bay waters. Few were found in any other habitat. Nevertheless, murres and Tufted Puffins were not observed in bay waters as much as Pigeon Guillemots and Horned Puffins. Murres and Tufted Puffins restricted themselves to exposed or offshore waters. Fewer Pigeon Guillemots were observed on rock habitats than expected.

Twenty-eight habitats were used by corvids, but because Northwestern Crows are limited in their distribution, Common Ravens used the widest variety of habitats. Exposed sand beaches were the most common single habitat selected by Common Ravens. Most habitats of Northwestern Crows were not specified but over one-half used bay/fjord habitats. Crows outnumbered ravens five to one, and few Black-billed Magpies were sighted along the coast.

Snow Buntings were the most numerous "other passerine" that could be identified. They were most commonly seen along exposed, sandy beaches feeding in stands of beach rye. Many small sparrows were observed that could not be identified and likely many more were present, but not observed.

Impacts of Oil and Gas Development

Many previous studies have discussed the effects of oil on marine birds, particularly in regard to acute oil spills from tankers. A list of these references is found in Vermeer and Vermeer (1974 a,b). More recently, reports have been prepared pertaining to marine birds in Alaska waters. Trapp (1979) discussed threats to habitats that man has caused, or may have caused, on breeding seabirds in Alaska. He singled out the 70 most important seabird colonies in Alaska for discussion and developed a scoring system to determine relative importance of the colonies. ADFG (1978a and 1978b) summarized information on what effects oil and gas development may have on birds and other organisms in Northern Gulf of Alaska and Lower Cook Inlet. An excellent summary of most impacts that oil and gas development may have on biota including birds is provided in Hamilton et al. (1979). Although Lower Cook Inlet is emphazised, the information is applicable to all parts of Alaska. Suggested mitigation procedures are also included. Blackburn and Jackson (in press) presented an evaluation of potential impacts of oil and gas development in Lower Cook Inlet on pelagic and demersal fish. This study included summaries of how various aspects of oil development could affect many forage species used by birds and, therefore, one can infer indirectly how birds may be affected. Because these reports thoroughly summarize direct or indirect effects of oil and gas development on marine birds, discussion in this section will be restricted to results of this study.

King and Sanger (1979) devised a rating scheme for assessing the vulnerability of 176 marine-oriented birds to oil spills in the northeast Pacific region. The scheme was based on range, population, size, habits, mortality and season of exposure of marine birds, and a numerical index of relative

vulnerability was presented for all species. An index to the relative susceptibility of marine habitats to oil spills based on experience from oil spills in other parts of the world was adopted by Hayes et al. (1977). This index is based on geomorphology and not the biota present in, or on, the substrate. Indices from these reports were then applied to the bird populations assessed in this study. A mean oil vulnerability index (OVI) from King and Sanger (1979) was calculated for species groups used in this report by summing the index values for species frequently observed in southcentral Alaska and dividing by the number of species (Table 23). Except for raptors (Bald Eagles) all the highest ranked birds were those that spend much time on water. Species groups low on the list are those that either are very abundant and, therefore, have a lower OVI or they are less frequently found on marine habitats.

The 39 bird habitat types delineated in this report were arranged in increasing order of vulnerability to oil spills (Table 24) based in part on the oil spill vulnerability index of Hayes et al. (1977). This susceptibility index (Table 24) was not based on bird usage of the habitat but on the probability of contamination, the retention of oil in the substrate and an assumed rate of oil degradation. The two sections on water (Nos. 3 and 7 in Table 24) were not considered in the index by Hayes et al. (1977) but were ranked according to personal communications with G. H. Ruby. Ranking for water habitats is not for birds on the water but for the habitat itself.

Discretion must be used when applying these relative indices to determine the importance of coastal Alaskan habitats in relation to oil development. The index of Hayes et al. (1977) pertains largely to acute oil spills from platform blowouts or tanker leaks. Dames and Moore (1979a) discussed the importance of knowing what biological assemblages are in the substrate versus knowing only what substrate is present. The vulnerability of biological assemblages is not always directly related to geological characteristics. They also stated that occasionally the substrate in beach faces may differ from the substrate in adjacent low tide terraces. Applying the Hayes' susceptiblity index may, therefore, be erroneous or at least not detailed enough to discern these differences. The beach face may be sand, gravel, boulders or a combination of these and rate fairly high on Hayes' index but have low biological productivity. The adjacent intertidal terrace may be exposed mudflats (lower on Hayes' susceptiblity index) but be high in productivity. Birds normally would use the upper beach for roosting and would be less affected if oil soaked into the gravel or other substrate. However, they feed on the intertidal portion and would be greatly affected if forage species were killed by oil. The biological parameters must, therefore, be integrated with the geophysical at the time of initial surveys to get an accurate assessment of vulnerability to oil spills.

Table 23. Relative vulnerability of marine bird groups, in southcentral Alaska, to oil spills. Bird groups ranked by mean oil vulnerability index (OVI, see text).

Rank	Bird Group	$\bar{x}$ OVI	No. of Species
1	Alcids	77	(12)
2	Sea Ducks	70	(9)
3	Cormorants	59	(4)
4	Raptors	58	(1)*
5.5	Tubenoses	56	(6)
5.5	Mergansers	56	(2)
7	Loons	55	(4)
8	Divers	52	(7)
9	Geese & Swans	51	(7)
10	Gulls & Jaegers	44	(10)
11.5	Grebes	43	(2)
11.5	Terns	43	(2)
13	Shorebirds	42	(30)
14	Dabblers	36	(6)
15	Corvids	34	(2)**
16	Cranes	24	(1)

* Bald Eagle only; other raptors not applicable or rated.
** Black-billed Magpie not included.

Table 24. Assumed relative susceptibility of bird habitats to oil spills. Based in part on oil spill vulnerability index by M.O. Hayes (1977), and personal communication with C.H. Ruby. Arranged in order of increasing susceptibility* within the twelve classifications.

Lowest

1. Upland vegetation
   a. Dry coastal upland
   b. Bay/fjord island upland soil
   c. Lagoon/embayment island upland soil
   d. Exposed island upland soil

2. Exposed rock substrate
   a. Exposed delta rock
   b. Exposed coast rock beach
   c. Exposed island rock beach

3. Exposed marine waters
   a. Offshore waters
   b. Exposed delta water
   c. Exposed inshore water

4. Exposed sand substrate
   a. Exposed delta sand
   b. Exposed coast sand beach
   c. Exposed island sand beach

5. Exposed mud tideflats
   a. Exposed delta mud
   b. Exposed mud tideflats

6. Exposed gravel substrate
   a. Exposed delta gravel
   b. Exposed coastal gravel beach
   c. Exposed island gravel beach

7. Protected marine water
   a. Protected alluvial water
   b. Bay/fjord water
   c. Lagoon/embayment water

8. Protected sand substrate
   a. Protected alluvial sand
   b. Bay/fjord sand beach
   c. Bay/fjord island sand beach
   d. Lagoon/embayment sand beach
   e. Lagoon/embayment island sand beach

9. Protected rock substrate
   a. Bay/fjord rock beach
   b. Bay/fjord island rock beach
   c. Lagoon/embayment rock beach

10. Protected gravel substrate
   a. Protected alluvial gravel
   b. Bay/fjord gravel beach
   c. Bay/fjord island gravel beach
   d. Lagoon/embayment gravel beach
   e. Lagoon/embayment island gravel beach

11. Protected mud tideflats
   a. Protected alluvial mud
   b. Bay/fjord mud tideflats
   c. Lagoon/embayment mud tideflats

Highest

12. Protected sedge/grass marshes
   a. Protected alluvial vegetated floodplain
   b. Sedge/grass saltmarsh

* Criteria for habitat susceptibility are: probability of contamination, retention in the system/substrate and assumed rate of degradation.

Senner (1977) briefly discussed the definition of critical habitat and mentioned how nebulous the concept "critical" can be. His criteria for critical habitat included: number of individual organisms using a region, the relationship between an organism and the habitat in question and the likely effect on the organism if the habitat is degraded. Although not all these criteria were met in this study, a relative determination of "critical" habitats can be estimated keeping in mind the aforementioned limitations.

By combining information from the oil vulnerability index for bird groups, the susceptibility index for bird habitat and other available information, the relative importance of portions of the coastline to birds can be determined with a knowledge of species composition, distribution and abundance and their habitat usage. These "critical habitats" will be discussed by region, season, and what aspects of oil and gas development may be most harmful to birds.

Northeast Gulf of Alaska

In spring, loons had a high density on bay waters of Yakutat Bay. Both the oil vulnerability index (OVI) for loons and the oil susceptibility index (OSI) for bay water were of medium rating. Shore-based facilities in Yakutat Bay would likely be located on the south shore and, therefore, the greatest threat to loons congregating on the north shore would be catastrophic or chronic oil spills that damaged the birds themselves or there food resources.

Cormorants were densest at Kayak Island, a rocky, erosional shore rated as having low susceptibility by Ruby (1977). Although cormorants are vulnerable to oil, the residency time of oil reaching Kayak Island's exposed coast would not be long. Sources of oil would likely be large spills at platforms, pipeline leaks or tanker spills.

No dense concentrations of geese, dabbling ducks and diving ducks were found in the May survey of this study; however, estuaries south of Yakutat and the Copper-Bering River Deltas are used by all three groups. Habitats in the latter areas were marked highly susceptible by Ruby (1977), but he neglected to delineate the important protected estuarine tideflats and salt marshes south of Yakutat. Spilled oil would have high residency times in these areas and be detrimental to staging waterfowl for many seasons. Sea ducks were densest in Icy Bay in both spring and summer surveys. This is a proposed location for shore-based facilities, and habitats in the area have a medium to high OSI. Sea ducks, with a high OVI, would be affected by both chronic and acute oil spills as well as by disturbance from aircraft and boat traffic to onshore facilities.

Shorebirds, although rated low on the OVI scale, would be extremely vulnerable in the Controller Bay, Copper River Delta and Orca Inlet sections. The protected mudflats and mud-inhabiting forage organisms of shorebirds are highly susceptible to oil, and if this habitat is degraded,

millions of migrating shorebirds will not be able to build sufficient fat reserves to sustain continued migration. It would be acute spills from present tract locations that would cause the severest damage if oil reached the mudflats.

Thousands of gulls use NEGOA in spring and summer, and most use habitats with a low or medium OSI rating. Their overall OVI is also relatively low. Large gulls use such a variety of habitats and are such catholic feeders that the overall impact of oil and gas development may be less for them. Their low-lying, exposed barrier island breeding sites could become contaminated if oil spilled during a spring tide accompanied by strong winds. Increased air traffic to Cordova, if the city is used for support facilities to offshore drilling, could increase stress on nesting gulls in the Copper River Delta area. Black-legged Kittiwakes, which breed on Martin and Wingham Islands, have more restricted feeding habits and habitat selections. They could become contaminated with oil on their sand beach roost sites or while feeding in nearby waters. Physical disturbance from support facilities near their colonies may affect breeding success.

Terns, with a low OVI, selected habitats rated high on the OSI scale in spring. They were found in protected bays and deltas from Icy Bay to Yakutat Bay and at the mouth of the Ahrnklin River. In summer they used exposed sand beaches but nest sites are found in protected areas. Nesting colonies would be disturbed with increased aircraft traffic, and birds could become contaminated from catastrophic oil spills.

Alcids, which rest on nearshore waters, especially near their colonies at Wingham and Martin Islands, could easily become oiled during an acute spill from any source. Their aquatic habits make them one of the most vulnerable groups even though the OSI for their favored habitat is low. Disturbance at colonies could be another cause of low productivity. If shore-based facilities were near colonies, physical disturbance would flush birds from cliffs allowing eggs to fall off and increasing chances of predation on eggs and chicks.

Kodiak

Sea ducks were by far the most abundant bird group recorded in the winter survey, and this group is rated second only to alcids in vulnerability to oil. They were densest in the Chiniak Bay area and were found on protected bay waters throughout the archipelago. Bay waters had a moderate OSI rate but shoreline substrate and prey organisms of sea ducks may be much more susceptible to oil spills. Krasnow et al. (1979) found that Black Scoters wintering in Chiniak Bay mostly ate blue mussels (*Mytilus edulis*) and Oldsquaws preyed upon a variety of benthic organisms. If spilled oil harms the food source, even though it does not remain in the bay water habitat for a long period, it will be detrimental to the thousands of wintering sea ducks.

Diving and dabbling ducks, the next most abundant birds, were also found in protected bays and lagoons. Their OVI is lower than sea ducks because they spend more time in freshwater habitats, but in winter freshwater habitats freeze forcing these ducks to saltwater. Bay and lagoon waters have a moderate OSI rating. Dabblers were also commonly found on salt marshes and at mouths of streams. Salt marshes, in particular, are susceptible to oil because of its long residence time in that habitat.

The other abundant wintering bird group, alcids, were found almost exclusively on protected bay waters, and the bays in which they were most conspicuous were Kiliuda, Ugak and Uyak. Murres, the most common alcid, are highly vulnerable to oil and if populations of their food organisms are reduced, the effects would be long lasting. Krasnow et al. (1979) found that murres (n=4) in winter primarily ate walleye pollock (*Theragra chalcogramma*) in Chiniak Bay.

Proposed sites for oil terminals and service bases on Kodiak/Afognak Islands were Three Saints and Kazakof Bays (BLM 1977). During this study, Three Saints Bay was surveyed in its entirety, and sea ducks, alcids and diving ducks were the most abundant wintering bird groups. These birds would be highly vulnerable to spilled oil, either acute or chronic, from base facilities. Shoreline substrates in Three Saints Bay were rated medium to high by Hayes (pers. comm) on his susceptibility scale. Only the head of Kazakof Bay was surveyed in winter 1976 and diving ducks were the predominant species. The heads of all bays consistently contain habitats with the highest OSI rating, are used by large numbers of birds, and should be protected in the event of an oil spill. Kalsin Bay and St. Paul Harbor, also proposed as onshore base sites, are located in the area of densest wintering bird concentrations on Kodiak. Degradation of habitats and disturbances from facilities would be detrimental to those bird concentrations.

Overall in the Kodiak Archipelago, Hayes and Ruby (1979) determined that 34 percent of the shoreline was sheltered rocky headlands, 22 percent sand and gravel beaches, 17 percent eroding wave-cut platforms, 15 percent gravel beaches and 9 percent straight, rocky headlands. Sheltered rocky headlands, gravel beaches and sand/gravel beaches have high to moderate susceptibility to oil. Eroding, wave-cut platforms and straight, rocky headlands have a low susceptibility according to Hayes' index. In the winter survey of Kodiak, only 3 percent of the birds were found on all five of these habitats, however, many were on adjacent waters, particularly in sheltered portions, and would be affected if spilled oil harmed benthic organisms residing in these substrates.

Lower Cook Inlet

More information was gathered in Lower Cook Inlet by this research unit than in other regions of the study area. More information about Lower Cook Inlet from other biological and physical disciplines was made available, and a more detailed outline of impacts of oil and gas development

was requested. Therefore, more emphasis in this section will be placed on various aspects of development in several regions of Lower Cook Inlet. Discussion will be confined to possible effects to birds and their habitat as determined by this study. Other reports have adequately summarized effects on other organisms that are lower on the food chain than birds and which may be preyed upon by birds (Blackburn and Jackson in press., Hamilton et al. 1979 and Calkins 1979).

For example, entrainment by cooling systems will directly affect planktonic organisms but not birds. Drill cuttings and muds may make the water too turbid for pursuit-diving or plunging type birds to locate prey but otherwise do little to birds directly. Nevertheless, the muds may smother or contaminate benthic or planktonic organisms which are important food sources for birds.

Drilling Platforms: Both acute and chronic oil spills may occur on offshore platforms. Because not enough is yet known about the effects of chronic contamination in Alaska waters (although it has been suggested that this form of pollution may be more devastating than a catastrophic spill [Michael 1976]), a discussion of this source of pollution will not be undertaken.

Kachemak Bay - Although no platforms will be placed directly into Kachemak Bay, Dames and Moore (1979b) estimated that Kachemak Bay would be impacted by oil spills within 3 days of a hypothetical spill in the summer. The probability of exposure to oil in Kachemak Bay was 3 percent. Winds, and not current, were the driving force of the hypothetical spill because in the spring and summer, predominant winds are from the southwest (Hayes et al. 1977). No trajectory was predicted for winter months when prevalent winds are from the northeast and north. One would assume there would be a lower probability of oil entering Kachemak Bay in winter because of the prevailing northeast winds. It appeared from Dames and Moore's (1979b) figures that oil would pass through outer Kachemak Bay and enter the inner Bay.

Regardless of the season, if oil enters outer or inner Kachemak Bay serious damage could be done to bird populations. This region had either the highest, or one of the highest, bird densities in Lower Cook Inlet for all seasons in both pelagic and shoreline areas. Sea ducks, a highly vulnerable species group, were one of the dominant bird groups in all seasons and were found on both protected bay and exposed inshore waters. They, along with diving ducks, an abundant bird group in spring and winter, feed predominantly on benthic bivalves (Sanger et al. 1979) in mud or sand substrates.

Oil spills may not be as detrimental to gulls, the second most dense bird group in Kachemak Bay. They are ubiquitous in distribution and catholic in food habits and, therefore, their vulnerability is relatively low. Many were found at low tide on mudflats and fed upon barnacles, *Clinocardium*, crabs, and polychaetes (Dames and Moore 1979a), but food habit information for gulls in Lower Cook Inlet is sparse.

In spring shorebirds fed on protected mudflats of Mud Bay and Fox River Flats. These habitats are highly susceptible, and the prey species, *Macoma* and *Mya*, would be vulnerable to oil washing ashore. Dabblers, abundant only in the fall survey of Kachemak Bay, were found on bay, lagoon and river waters. According to Crow (1978), dabblers fed predominantly on plant material (*Puccinellia hultenii* and *Triglochin maritima*) and bivalves ("pink clams"). These food items are found on salt marshes and protected mudflats, both highly susceptible to oil spills.

During all of the year except summer outer Kachemak Bay had the highest pelagic densities of birds of all regions in Lower Cook Inlet. Alcids and sea ducks, the two most vulnerable groups, were the most abundant birds. Oil on these waters would harm large numbers of these birds. Because waters there are clear (versus turbid in many other parts of the Inlet) congregations of birds feed in this area. A winter concentration of up to 10,000 White-winged Scoters southwest of Bluff Point was documented (Erikson 1977) and has been observed in the same location during three winters. Black-legged Kittiwakes are also commonly observed feeding in Outer Kachemak in summer and fall. If they feed on sand lance (*Ammodytes hexapterus*) as they did at Chisik Island (Jones and Peterson 1979), any damage to sand lance populations by oil would also be harmful to kittiwakes.

Lower Central Zone - The Lower Central Zone of Lower Cook Inlet would contain most of the offshore drilling platforms and, therefore, have the greatest potential for acute oil spills. Although the extent of the shoreline in this zone is small, it was singled out as the most critical area in terms of time of impact of oil spilled from platforms and the probability of exposure to spilled oil. The exposed coast from Chinitna Bay to Oil Bay had few birds in all seasons and was rated in the lowest susceptibility categories for the substrate present (Hayes et al. 1977). Sea ducks in spring had the greatest density (21 birds/km^2) for that section of coast. In summer 1978, several feeding frenzies containing several hundred Black-legged Kittiwakes and many loons were observed along this coast. The kittiwakes may have been from the Chisik Island colony. Spilled oil would harm these birds and their food source as well.

Chinitna Bay, also in this zone, had a much richer avifauna than the exposed coast. Densities of about 100 birds/km^2, or more, were found in all seasons but winter. Extensive mudflats and salt marshes at the head of the bay provide ideal habitat for dabbling and diving ducks, shorebirds and gulls. Late April and May are the most critical periods, when shorebirds, diving and dabbling ducks stage in the area. Dames and Moore (1979a) found that *Macoma balthica* was the dominant species in the mudflats of Chinitna Bay, and this clam is a common food item of these birds. A colony of almost 1500 birds on Gull Island at the mouth of the bay would be vulnerable to oil throughout the summer. Tufted Puffins, the most abundant bird at the colony, frequently raft in the water around the island and would be particularly vulnerable.

Densities of birds in pelagic waters of the Lower Central Zone were relatively low. Sea ducks were abundant (58 birds/km^2) in summer, but most of these birds were comprised of a large flock of almost 4,000 scoters seen on a boat survey past Pomeroy Island. Other high densities in this zone were found in the portion nearest outer Kachemak Bay and Kennedy Entrance. Here, shearwaters and other species gathered in summer months. Both the scoters and shearwaters would be vulnerable to oil on the water as would their benthic and planktonic food organisms.

Kamishak Bay - Dames and Moore (1979b) did not single out areas in Kamishak Bay as high risk for boundary contact zones or probability of exposure to oil spills except on the eastern half of Augustine Island. However, their figures showed that Ursus Cove would likely be impacted and Amakdedori Beach accumulates much drift and would also likely receive oil in the event of a spill. Many vulnerable bird species congregate in Kamishak Bay in spring and summer. Alcids, the most vulnerable species group, are abundant only in summer. Tufted and Horned Puffins and Pigeon Guillemots are common breeders on islands and suitable rocky, shoreline habitats throughout Kamishak Bay. Common murres breed in abundance only on McNeil Islet in the southwest corner of the Bay. These species would be harmed by oil on the water but would be less threatened by oil contamination of shoreline habitats unless the oil affected prey organisms.

Sea ducks were found to be the bird group in Kamishak Bay most likely threatened by oil. They were abundant in spring and summer and they would be more vulnerable than most species because in summer they molt and would be flightless for a few weeks and, thus, would be unable to avoid spilled oil. In spring, sea duck concentrations were from the mouth of Douglas River to Akumwarvik Bay, at Chenik Head and in Bruin Bay. In summer, densest concentrations were in the vicininty of Iniskin Bay and in Akumwarvik Bay. Much of the time, they were on water over intertidal or immediately subtidal to exposed and protected mudflats and eroding, wave-cut platforms. Although the exposed habitats are not highly susceptible to oil spills, the sea ducks using the habitats would be vulnerable. Little work has been done on food habits of birds in Kamishak Bay, but scoters collected in summer 1978 were predominantly eating pelecypods (*Nucula tenius*, *Musculus discors* and *Macoma balthica*) and Harlequin Ducks ate gastropods (*Littorina saxatilis* and *L. sitkana*). Sea ducks were the most common wintering bird group in Kamishak Bay but were found in much lower densities and were clustered in various parts of southern Kamishak.

Two other bird groups would be sensitive to spring oil spills in Kamishak Bay. Scaup were abundant in all bays, and they also joined sea ducks in exposed areas. Shorebirds, too, used intertidal mudflats in many of the bays. All small bays within the Kamishak

Bay region were given a high OSI rating by Hayes et al. (1977). Oil would not be easily flushed from the protected mudflats, and it is likely that mortality of pelecypods and other invertebrates fed upon by birds would be heavy. A flock of over 10,000 shorebirds was also found on exposed delta gravel during spring migration. This habitat has a medium susceptibility to oil and food organisms present in the substrate were unknown.

Glaucous-winged Gulls were the only other common bird in Kamishak Bay. They were distributed throughout the Bay, were found on a variety of habitats, and fed in a variety of ways on, presumably, a variety of foods. Some of the habitats were highly susceptible to oil and others were of low susceptibility. The gulls fed on mudflats at low tide, surface-plunged to seize small fish and scavenged on spawned out salmon. Three gulls collected contained *Crangon septumspinosa*, *Clinocardium* sp., and several fish species including *Ammodytes hexapterus*, an unidentified gadid and a greenling (*Hexagrammos* sp.). Hundreds of non-breeding gulls summered in Kamishak Bay and roosted on intertidal sand, gravel and rock throughout the coastline of the bay. Black-legged Kittiwakes were found in relative abundance only near McNeil Cove and did not breed in Kamishak Bay. The widespread distribution of most gull species in Kamishak Bay would likely mean they would be vulnerable to oil spills in the long-term, and more able to rebound from losses with immigration from areas not damaged.

Kennedy Entrance - Dames and Moore (1979b) considered the shoreline from Dangerous Cape to Cape Elizabeth in Kennedy Entrance to be the secondmost susceptible area to oil spills in Lower Cook Inlet. Spills from proposed nearby wells would be driven quickly ashore by the frequent southwest winds of spring and summer (their model did not include winter data). Only the bays had a high OSI rating by Hayes et al. (1977). Much of the shoreline is exposed rocky habitat. The Barren Islands, an area used by over one-half million seabirds in summer (Bailey 1976), were not studied in this research unit. The extent of winter bird use in the Barren Islands is unknown except for pelagic surveys of Research Unit No. 337. Discussion of impacts in this region will be based on shoreline surveys and a pelagic transect across the mouth of Cook Inlet.

In spring, bird densities along the shoreline of Kennedy Entrance were low. Little typical staging habitat for birds is present. However, in summer, densities of gulls, shearwaters and cormorants increased markedly. The situation for gulls is similar to that mentioned in previous regions. They were found on a variety of habitats and are, therefore, less vulnerable. This was the only region in which shearwaters were found in abundance. They appeared in late spring and remained into the fall. They were found almost exclusively on pelagic waters. Oil may pass quickly through areas used by shearwaters unless a prolonged blowout occurs. Shearwaters

are moderately vulnerable to oil spills and would likely be affected if the spill occurred during their peak of abundance in Kennedy Entrance. Over 100 birds/km^2 were recorded in offshore waters of Kennedy Entrance by Erikson (1977). Erikson (unpubl. data) found that shearwaters in this area were eating sand lance, and suggested that any damage to their food source would force shearwaters to forage elsewhere in the Gulf of Alaska. Cormorants, spending most of their life on inshore water and, therefore, highly vulnerable to oil spills, reached their greatest Lower Cook Inlet densities in Kennedy Entrance. Several sites with high cormorant densities in the Chugach Islands may be far enough removed from oil spill trajectories to be vulnerable to oil. Summer and fall is the time when most cormorants would be affected in this region. Their exposed rock roost sites would be less affected because oil would have a low residence time on exposed surfaces.

Because the bays bordering Kennedy Entrance remain ice-free in winter, they were a wintering area for sea and diving ducks. The sea ducks began arriving in fall and remained in exposed inshore and bay waters until spring. Because of the high probability that oil would enter Port Graham and Koyuktolik Bay (Dames and Moore 1976b), sea ducks with a high vulnerability rating would be impacted. Finally, alcids, although not abundant on shoreline surveys, rest in abundance on Flat Island where Erikson (1977) estimated over 1,800 pairs of Tufted Puffins were breeding. This island colony is in the path of high risk trajectory for oil spills and, therefore, would be severely damaged if the spill occurred from April to September.

Kalgin Island - Because much of this region contains turbid water from glacial streams in Upper Cook Inlet, the Kalgin Island area does not host many feeding seabirds. The area contains the largest seabird colony in Lower Cook Inlet (except for the Barren Islands) on Chisik Island, but low bird densities north of the colony indicated the birds must forage south of this region. The trajectory model of Dames and Moore (1979b) predicted that Chisik Island and areas just north of Chisik would be impacted by oil spills. If not their foraging areas, the birds themselves stand a high risk of being affected. Species in the colony are those highly vulnerable to oil, Horned and Tufted Puffins, Common Murres and Black-legged Kittiwakes. The customary habit of these birds to sit on the water below nesting sites, make them vulnerable to oil on the water.

Much of this region was not included in the geomorphology study by Hayes et al. (1977), but Tuxedni Bay was, and it was given a high rating for oil susceptibility. In spring, these susceptible mudflat habitats were used by diving, sea and dabbling ducks and shorebirds, and in fall, geese and dabbling ducks were the predominant birds of Tuxedni Bay. Oil entering this bay would affect both the birds and the invertebrates on which they feed.

Oil spills may also come ashore on Kalgin Island. Swamp Creek on the east side of the island is the area most used by birds and also isa habitat that is most susceptible to oil spills. Dabbling ducks and geese were the most numerous birds during spring migration. The birds themselves are not as vulnerable as the habitat on which they stage at Swamp Creek.

Three other areas in this region have high OSI ratings and were used by large numbers of birds but were not in locations of high probability of exposure to oil in Dames and Moore (1979b). Mudflats and salt marshes of Bachatna Flats in Redoubt Bay supported densities of over 200 shorebirds, geese and dabbling ducks/km^2 in spring. The mouths of the Kenai and Kasilof Rivers are also staging habitat for geese, dabblers and cranes. Using Hayes et al.'s (1977) susceptibility rating, the mudflat areas are only moderately susceptible to oil spills, but the adjacent salt marshes would be highly susceptible. Because it is one of few areas used by migrating Snow Geese in spring, the Kenai River flats should be termed critical habitat for these birds. Gulls, too, used Redoubt Bay and the Kenai and Kasilof River mouths but rely heavily on cannery wastes for food and would be most affected if oiled on their roost sites on sand/gravel beaches. Sea ducks were abundant only in the area from Anchor Point to Ninilchik, but this area may be impacted from oil spilled by offshore platforms in the north portion of the lease area.

Bird densities in offshore waters of this region were low in all seasons. Birds from the Chisik Island colony may be traveling as far as 60 km to forage in outer Kachemak Bay and would not be vulnerable to oil spills in offshore waters of the northern portion of Lower Cook Inlet.

Shelikof Straits - This region was not studied as a part of the Lower Cook Inlet lease area. Limited data were gathered on the Alaska Peninsula side in winter 1977 and on the Kodiak Archipelago in winter 1976 and are discussed under those sections. A review of present knowledge of birds in Shelikof Straits was presented in Easton and Spencer (1979). They indicated a paucity of baseline data on birds in this region so that impacts from oil spills are unknown.

Potential Shore-Based Facilities Tanker Terminals

Kachemak Bay - In BLM's development scenario, oil terminal, LNG and production treatment facilities were suggested for the Anchor Point area as was a support base in Homer. Some of the adverse effects of installation of these facilities include habitat destruction during construction, physical disturbance by increased boat and aircraft traffic in the area, chronic, small oil spills during

loading operations and thermal pollution from LNG plants. If the site is located on coastal floodplains near the mouth of Anchor River, some marine bird habitat will be destroyed. Although this is not a major staging or nesting area, various species of waterfowl and shorebirds do use these habitats. The greatest amount of bird use in this area comes from sea ducks feeding in nearshore waters in spring. Erikson (1977) suggested that the heaviest use of this area was in winter. Physical disturbance would likely have a severe impact on sea duck use. Tankers and support vessels travelling to and from terminals would flush birds from their feeding grounds. Because Kachemak Bay has the highest density of marine birds in all seasons for Lower Cook Inlet, the increase in traffic to Anchor Point (either from Homer by helicopters or across outer Kachemak Bay by tankers) may displace birds from traditional feeding areas, or at least increase stress on birds during periods when this may be detrimental to bird populations. Chronic oil spills or other pollution from onshore terminals may have the greatest long-term effects on birds. Due to the proximity of the Anchor Point site to the rich waters of outer Kachemak Bay, any contaminants drawn south into the Bay would affect the entire food chain below birds and, eventually birds would be affected. If closed cooling systems are used at these sites, no direct effects to birds will result. However, some of their prey species may be affected. Thermal pollution from an open cooling system may attract birds to where they would be more concentrated and, therefore, more vulnerable to oil or other pollution. No reports on the effects of thermal pollution on birds in northern waters were found.

Kennedy Entrance - The greatest threat from onshore facilities located in the Port Graham to Port Chatham area would be if pollution (oil, thermal, or other contaminants) entered outer Kachemak Bay and affected marine birds or their food organisms in that area. In waters adjacent to onshore sites, only a few bird groups would be affected. In summer, shearwaters may be adversely impacted by increased tanker traffic to the terminal. Assuming that ballast is properly disposed of into onshore cleaning facilities, physical disturbance caused by the tankers would be the greatest impact. Cormorants, sea ducks and diving ducks may be physically disturbed on inshore waters near terminals in fall and winter, or contaminated if small spills occur at the terminal. Other bird groups use waters near proposed terminal sites but in smaller numbers. Erikson (1977) documented Port Chatham as a goose staging area. Brant fed in eelgrass beds at the head of the bay in spring 1976, but the annual magnitude of annual use by geese is unknown. Increased helicopter traffic to terminal sites may stress Tufted Puffins nesting on Flat Island.

Kalgin Island Area - A production treatment site has been suggested for the north shoreline of Tuxedni Bay, with an overland pipeline to an existing terminal at Drift River. Construction of the facilities would likely have minimal impact on marine birds. However, low level pollution from hydrocarbons and other contaminants into waters near the site could have substantial impact on birds using Tuxedni Bay and Chisik Island. The same discussion for chronic and acute oil spills at drilling platforms applies to onshore facilities. Thousands of birds use Tuxedni Bay in spring, summer and fall, and if food organisms for birds are reduced by chronic pollution, the effects on birds would be substantial. If crew changes at the site required helicopter traffic, a corridor must be established to avoid disturbing seabird colonies at Chisik and Duck Islands. The overland pipeline to Drift River would not impact marine birds. Similarly, the proposed pipeline from Anchor Point to Nikiski would not affect marine birds unless a leak occurred into rivers draining into Lower Cook Inlet.

Pipelines:

Kachemak Bay - The actual pipeline laying operations would have minimal impact on birds. There would be temporary physical disturbance, sediments would be resuspended temporarily and some food organisms of birds would be destroyed. Once production started, a break in the pipeline or chronic leaks from the line would be extremely damaging to the abundant avifauna of outer Kachemak Bay. Details on species composition and critical time periods have already been mentioned in a previous section.

Lower Central Zone - Pipeline laying operations would not substantially affect birds of this zone. Bird densities were low in all seasons throughout the area except for waters adjacent to outer Kachemak Bay and in the vicinity of Chinitna Bay. Spills from pipeline breaks were discussed under drilling platforms. Small, chronic leaks in the leased portion of this zone would be less damaging than those nearer concentration areas for birds.

Kennedy Entrance - A similar discussion, as mentioned above, for pipe laying operations would be true for Kennedy Entrance. Spills from pipeline breakage would be similar to those covered under drilling platform spills.

Kalgin Island Area - The laying of pipe to the Redoubt Point area would cause only temporary disturbance to birds. Discussions of oil spill damage to birds under the drilling platform section apply in the case of pipeline breaks.

Tanker Routes (Tanker Spills Along Routes) See section on drilling platforms for the effects of acute oil spills in each of the regions of Lower Cook Inlet.

Physical Disturbance (Aircraft & Boat Traffic) This topic was discussed under the potential shore-based facilities section. In general, boats continually moving through concentrations of birds on traditional feeding areas may displace them to less productive feeding areas or cause stress detrimental to the birds. If the frequency of the traffic is low, little damage would result. Helicopter traffic is most stressful to birds and invariably causes them to flush. Corridors need to be established around colonies and concentration areas.

South-Alaska Peninsula

No offshore lease sales are planned for this region, except in the Shelikof Straits area, which extends from Cape Douglas to Wide Bay. However, the region could be impacted by development in the southern portion of the Kodiak lease area or if pipelines cross the Alaska Peninsula from the Bering Sea lease areas. Specific locations for onshore facilities are not presently known. Discussion will deal only with the impact having the potential of causing the greatest damage (acute oil spills) under existing conditions. Information from other investigators on habitat susceptibility and nearshore benthos is lacking.

Too few data were gathered in south-Alaska Peninsula for this study to be able to adequately predict effects of oil spills. Only partial surveys were flown in fall and winter. Fall surveys of the southern three sections in the region revealed that geese were the most numerous bird group. Although geese have only a moderate OVI rank, they could be seriously affected because the habitats they use for staging are highly susceptible to oil spills. They fed primarily in lagoons on eelgrass which is found on intertidal mudflats or shallow water areas. Salt marshes, another habitat of high susceptiblity, were frequently used by dabbler and diving ducks. Any oil reaching areas where these birds fed or roosted would remain for several years, preventing further use by these birds. Sea ducks were mainly found on exposed waters where oil would harm the birds as it floated toward shore, but where longevity of oil was short. Gulls were on a variety of habitats in fall and impact on them would be minimal in many areas. Spilled oil moving through False Pass poses the greatest threat to gulls during fall in the southern part of this region. Few other highly vulnerable birds were recorded in this survey.

Few shoreline habitats were searched in the winter survey to determine which bird species would be affected by oil development. The species groups most vulnerable to oil, alcids and sea ducks, were the two groups found in greatest numbers. Most alcids (murres) were on the water near known murre colonies and would be vulnerable to oil as long as it remained in the area or if their food populations were diminished by the oil. Sea ducks were scattered throughout the region which is ice-free in winter and would be similarly affected by oil spills. Emperor Geese were most abundant in the Shelikof Strait section. They would be affected if oil contaminated their food sources, including marine algaes, barnacles and blue mussels, on exposed rocky shores where the birds were most

frequently found. Cormorants, too, were found along exposed rocky shores throughout the region, but the birds themselves would likely be as vulnerable to oil as their food (largely fishes) because of the cormorants' propensity for water. Black-legged Kittiwakes joined murres on the water near colonies and, as such, would be susceptible to oil on the water. Most of the habitats with the highest OSI rating were not searched in this survey.

North-Alaska Peninsula

As with many of the regions in this study, no specific information on locations of onshore facilities, pipeline corridors or tanker traffic lanes was available for North-Alaska Peninsula. Discussion will be limited to effects on birds and their habitats from acute oil spills. Less variety of coastal habitats is found in this region compared to other regions in the study area and, in general, habitats are either exposed sand and gravel beaches or protected lagoons and embayments. The former has a low susceptiblity to oil and latter is highly susceptible. The estuaries also had the highest bird densities in fall of any area studied in southcentral Alaska. Any oil and gas development in this region would have to insure the utmost protection for these estuaries. Only the most numerous bird groups will be discussed, and they will be arranged in order of decreasing vulnerability to oil.

Suitable habitat for nesting alcids (the most vulnerable bird group) is scarce in the region, and this group was abundant only in waters around colonies on Amak Island and Sea Lion Rock in summer. Few were observed inshore in other parts of North-Alaska Peninsula and would not, therefore, be impacted by oil. Sea ducks, on the other hand, were abundant inshore in all seasons of the year. Although many were found on the less susceptible exposed habitats (particularly at promontories along exposed coasts), the greatest concentrations were just inside lagoon and embayment mouths near sand and gravel spits. It is likely they fed on benthic molluscs in the mud and sand of the lagoons, embayments, bays and river deltas. In any season, oil entering these estuaries could affect thousands of sea ducks. For Steller's Eiders the impact would be for a large portion of the North American population.

Cormorants, like alcids, have little suitable nesting and roosting habitat in this region. They were most abundant in the southern portion of North-Alaska Peninsula and would, therefore, be vulnerable only in that region. Their preferred rocky habitats would not be greatly harmed and comparatively few individuals would be affected by oil development. Shearwaters, however, moved into pelagic waters around Amak Island by the hundreds of thousands in summer and could be severely impacted by a large oil spill. More information on this group will likely be presented in the final report of Research Unit No. 337. Mergansers were abundant only in spring and at that time primarily used fluviatile waters that are presumably less susceptible to spilled oil than many habitats.

Moderately vulnerable diving ducks were most common from Egegik north in spring and in Herendeen Bay in fall. Several of the habitats in which they were commonly found (salt marsh, protected alluvial, lagoon and bay waters) are relatively susceptible to oil damage. Diving ducks frequently fed on water over intertidal mudflats, both exposed and protected. If populations of their food organisms, which are often benthic bivalves, are diminshed by oil contamination, diving ducks would be affected on their spring and fall migration staging areas.

The mean OVI of 51 (Table 23) for geese and swans suggests only a moderate vulnerability to oil. Low vulnerabilities for Canada, White-fronted and Snow Geese were combined with moderate vulnerabilities for swans and high vulnerabilities for Brant and Emperor Geese to get the mean. Estuaries on North-Alaska Peninsula are used by the entire North American populations of Emperor Geese and Black Brant (*Branta bernicla nigricans*), both rated 70 OVI points by King and Sanger (1979). Not only do the geese using North-Alaska Peninsula lagoons have a high vulnerability rating, but they also were the group found in greatest densities in both spring and fall and were using habitats that are highly susceptible to oil contamination. The major migration staging area for Brant is Izembek Lagoon where the geese feed on eelgrass. Emperor Geese also eat eelgrass when at Izembek Lagoon but eat other vegetation (marine algae and heath berries) and benthic invertebrates in other lagoons. Canada Geese were found in all estuaries from Swanson Lagoon to Egegik Bay in fall and also at the mouth of the Kvichak River in spring. These geese were found most commonly where salt marsh habitats were abundant. They frequently grazed on halophytic vegetation but also fed on berries in the tundra and flew to marine waters and mudflats for roosting. The population of Snow Geese returning from Wrangel Island in Siberia in the fall normally stages at Ugashik Bay and vicinity. The importance of the North-Alaska Peninsula estuaries to migrating geese cannot be overemphasized. When the value of these estuaries to unique and large populations of sea ducks is added to that of geese, the necessity of protecting the estuaries from degradation by contamination, disturbance, or habitat destruction is multiplied.

Gulls were found in moderate densities throughout the North-Alaska Peninsula region in all seasons and on a wide variety of habitats. Frequently they were observed on flat, sandy beaches which have a low OSI on the Hayes et al. (1977) scale. Black-legged Kittiwakes nested on sandstone bluffs at Cape Seniavin and were observed bathing and roosting on nearby river mouths. Foraging areas were not found. In winter, only large gulls remained but in relatively high densities. Oil development may affect a portion of the population but the overall impact would, presumably, be minimal.

Terns were abundant only in spring surveys but were observed in all offshore sections in summer. By the October surveys, they had left the area. Their use of exposed habitats in spring would make them less vulnerable to impacts by oil pollution in that season. Their summer distribution and habitat use were not discerned in this study.

In spring, shorebirds were most numerous in the northern portion of North-Alaska Peninsula on exposed mudflats. For that reason, impacts of oil and gas development would be less. In fall, the region was utlized more heavily by staging shorebirds. At this time, they frequented all estuaries along the coast. Many fed on intertidal mudflats in lagoons or near river mouths. Gill (1978) reported that Dunlin spent approximately 110 days in Nelson Lagoon building necessary fat reserves to sustain them on a trans-Gulf of Alaska migration to Oregon and California. If oil destroys food required for this flight, serious damage could be done to that and other species of shorebird.

In spring, dabbling ducks, like shorebirds, were most abundant on the northern portion of North-Alaska Peninsula (from Port Heiden to Kvichak River), and in fall dabblers were common in all estuaries of the region. The habitats they preferred in all seasons were those with the greatest susceptibility to oil contamination, salt marshes, protected intertidal mudflats, alluvial floodplains and waters of lagoons and rivers. Dabbling duck populations have a low OVI because they are numerous and widespread in North America. However, certain subpopulations would be threatened if important staging areas were inundated with oil that lasted several years. By adding dabbling ducks and shorebirds to the list of birds using North-Alaska Peninsula estuaries for a necessary migration stop to build fat reserves before continuing migration, it magnifies the importance of these areas and the critical need for their protection.

North-Bristol Bay

No offshore oil and gas lease sales are presently scheduled for the vicinity of the North-Bristol Bay region. Effect of development would likely come from oil spills in lease areas to the southwest. Only those species using the coast in spring and the Walrus Islands in summer were documented in this study.

The most vulnerable species, alcids, were abundant in only the section from Cape Peirce to Cape Newenham, sites of major seabird colonies. In 1976 murres were already present on 28 April and Tufted Puffins arrived on 17 May (Petersen and Sigman 1977). These birds would be vulnerable to oil when rafted in the water below nesting cliffs and when foraging at sea. Their eggs or young would be affected if adults brought oil back to the nests on their feathers.

Sea ducks were not abundant in most of North-Bristol Bay. Densities were greatest in Nushagak Bay and west of Kulukak Bay. Possibly many sea ducks bypass the upper portion of Bristol Bay and migrate north across the bay from North-Alaska Peninsula staging areas. However, several flocks of a few thousand King Eiders were observed in Nushagak Bay on 8 May 1977 outside the survey transect. Black Scoters predominated along the coast. Large quantities of oil on bay and nearshore waters would pose the greatest threat to these birds.

Concentrations of diving ducks (primarily scaup) were recorded in successive spring seasons in the Flounder Flats area of Nushagak Bay. The area was obviously an important staging area, and if oil damaged populations of prey species, or the spill occurred in May and drifted into the bay while scaup were present, serious damage could be done. Mud was the likely substrate under the water from foraging diving ducks. Mudflats in protected areas would retain oil long enough to affect birds for several successive seasons.

Nanvak Bay was the only area where geese occurred in dense concentrations. Oil entering that confined area would damage an important staging area. In other sections, geese were found on alluvial floodplains where the longevity of oil would be great if it got into sedge/grass meadows during a flood tide.

Black-legged Kittiwakes and Mew and Glaucous-winged Gulls were at nesting colonies in large numbers by the May surveys. Away from breeding locations, gulls were in moderate or low densities yet were found in all sections, and as in other regions, used a variety of habitats. Mew Gulls would be affected if oil reached the alluvial floodplains on which they established breeding territories. The vulnerability of kittiwakes would be greatest on exposed inshore waters where the birds rafted or if their food supply were adversely affected by oil. The impact of oil pollution would be greatest for gulls at Cape Peirce, Cape Newenham and the Walrus Islands.

On their migration to more northerly breeding areas, shorebirds used North-Bristol Bay in relatively large numbers. The majority used alluvial mudflats and floodplains. These habitats would be damaged for extended periods if inundated with oil because they are difficult to clean and natural processes would act slowly in these areas. Assuming that these staging areas are necessary to build sufficient energy stores in shorebirds to continue their spring migration, an oil spill could severly affect those populations.

Like shorebirds, dabbling ducks were most dense at the mouth of Kvichak River and they used vulnerable alluvial habitats along with shorebirds. The same discussion about oil impacts as in the preceding paragraph applies here. The probability of oil reaching these habitats has not been calculated.

Other aquatic bird groups of lower densities could be affected if oil reached North-Bristol Bay. Cormorants were on inshore waters near nesting sites and mergansers and loons staged in moderate densities on inshore and fluviatile waters. Oiling of these birds would be common if an acute spill occurred nearshore. Perhaps the toxic, aromatic compounds would be gone from oil travelling a long distance to this area and food organisms of these birds would not be as greatly affected.

Aleutian Shelf

The Aleutian Shelf region, as defined in this study, could be potentially affected by oil and gas development in the St. George Basin lease area, the old Aleutian Shelf lease area south of Umnak and Unalaska Islands and the newly created North Aleutian Shelf lease area north of Unimak Island. Development scenario have not yet been constructed to show where onshore impacts will be. Facilities would likely be placed in this region only for the south Aleutian Shelf lease area and that sale has been indefinitely postponed. Therefore, the likely impacts will be from acute oil spills from the two northern lease areas and increased disturbance resulting from the use of Unalaska Village as a staging area. Time and money constraints allowed only one survey in the region. Winter was chosen because the islands are ice-free in winter, and it was assumed that this area was used by many wintering birds. Also, the severity of storms in winter would increase the likelihood of catastrophic impacts from oil.

Sea ducks were the only bird group abundant in all sections. Most were recorded on exposed inshore waters, a habitat with a low OSI. Exposure time to sea ducks would be relatively short as oil should not remain long on exposed water. Sea ducks found on bay water (the second most frequently used habitat) would be exposed to oil for longer periods of time. The food habits of these birds have not been studied in this region, but they likely eat benthic crustaceans and pelecypods as in other areas. Any oil damage to their prey populations would force these sea ducks to other wintering areas.

The other highly vulnerable seabirds, alcids, were not abundant on nearshore waters during this winter survey. If this is an annual situation, impacts from oil development on alcids would be low. In this season, alcids are more abundant in offshore waters. An estimated 100,000 murres died in a "wreck" from severe storms in outer Bristol Bay in 1970 (Bailey and Davenport 1972), which indicated that many murres were present in offshore waters in winter.

Emperor Geese were recorded in moderate numbers on exposed rocky coasts throughout the region. High numbers were present on northwest Unmak and extremely high densities occurred on Samalga Island. The habitat used by these birds in winter has a low OSI. The birds, too, may be somewhat protected if rebounding wave action prevents most oil from splashing the birds and their feeding areas. Oil contamination of their intertidal food organisms would cause the most long-term harm to wintering goose populations. Oil splashing ashore onto roosting or feeding birds would directly harm the geese.

Large gulls (few small gulls were recorded) were equally abundant in protected and exposed habitats and were moderately dense throughout the region. Greatest concentrations were on Samalga Island. As in other regions, the versatility of gulls in food habits and widespread distribution on various habitats would lessen the impact of oil development on this group.

Shorebirds were abundant in only two locations, on the gravel beaches of Samalga Island and on gravel or rock on the south side of Umnak Island. Presumably, most shorebirds were Rock Sandpipers. Longevity of oil on their exposed habitats is short which would reduce chances of oil-bird contact. A greater threat would be the destruction of prey items through oil contamination. Most Rock Sandpipers winter no farther south than Alaska and damage to wintering habitats could severly impact this uncommon species.

The only other high bird densities were for dabbling and diving ducks on the beach of Samalga Island. Because geese, sea ducks, shorebirds and gulls also reached highest densities on this island, it should unequivocally be classified critical wintering habitat for marine birds, and necessary steps should be taken to protect it from any oil and gas impacts. Surrounding waters and intertidal rocks were also used by many harbor seals and sea otters.

If Dutch Harbor/Unalaska is used for a staging facility for offshore development, there will be substantial increases in helicopter and boat traffic in Unalaska Bay. From ground observations, it was apparent that gurry from active crab canneries has artifically inflated numbers of certain marine bird species near town. Other birds were normally distributed throughout the bay. Physical disturbance will likely displace the more shy species and place some stress on those remaining.

VIII. CONCLUSIONS

Northeast Gulf of Alaska

During the early May survey, shorebirds and gulls were the predominant species groups. The area from Cape Suckling to Cordova had the highest densities of birds and requires the greatest degree of protection from possible impacts of oil and gas development. Shorebirds primarily used protected mudflats, a habitat that is highly susceptible to oil spills. Large gulls used a variety of habitats and, therefore, may be less vulnerable to spilled oil. Alcids would be vulnerable on water near their colonies at Wingham and Martin Islands. More information needs to be gathered during the waterfowl migration period, especially in estuaries south of Yakutat.

Spring migration corridors past Cape St. Elias indicated that some species bypass staging areas at Copper River Delta. Other species used waters around the Cape for feeding and resting and would, therefore, be vulnerable to oil spilled in spring.

During limited summer surveys, gulls were abundant on sand beaches from Icy Cape to Cape Suckling. Non-breeding sea ducks were found in greatest numbers in Icy Bay. No coastal bird survey work has been done in fall and winter in NEGOA, and such surveys are necessary to adequately assess potential impacts of oil and gas development.

Kodiak

Sea ducks were the most abundant wintering marine bird on all but the Afognak/Shuyak section of the Kodiak Archipelago. In that section, diving ducks, the second most numerous species overall, predominated. Low densities of alcids and gulls were also found. Because most of the birds were found in protected bay/fjord habitats, oil contamination reaching these waters would affect over 80 percent of the birds wintering on inshore habitats.

Lower Cook Inlet

During spring coastal surveys, shorebirds were the most abundant bird group and gulls were second in abundance. Gulls were densest in summer and fall while sea ducks predominated in winter. Almost half the gulls in spring and over one-fourth the gulls in summer were Black-legged Kittiwakes associated with the Chisik Island colony. Other gulls were scattered throughout the Inlet in a variety of habitats. Sea ducks were one of the most abundant groups in all seasons. They are very vulnerable to catastrophic oil spills and the habitats and food organisms they select are also highly susceptible to damage from oil. Therefore, they are a group that likely will be highly affected by adverse impacts of oil and gas development.

Both inner and outer Kachemak Bay had one of the highest bird densities for all seasons. In winter, birds concentrated in this area while few were found on the west side of Lower Cook Inlet. Because birds concentrated near Anchor Point, a lower probability of impact from oil and gas development would result if onshore facilities were placed at Cape Starichkof or more northern areas.

Kamishak Bay was important to sea ducks, diving ducks and shorebirds in spring and to sea ducks in summer. North of Tuxedni Bay birds were abundant only at river deltas and salt marshes. These habitats are highly susceptible to oil because of the long retention time.

In offshore waters of Kennedy Entrance, the species group most vulnerable to adverse impact of oil and gas development (excluding Barren Island colonies) would be shearwaters during summer. Sea ducks were the most abundant bird in offshore waters throughout Lower Cook Inlet in all seasons.

South-Alaska Peninsula

Although little bird survey work was conducted in this region, the lagoons of Cold and Morzhovoi Bays were found to be very important to staging geese in fall. Exposed habitats in winter contained several concentrations of murres near islands where they breed in summer. Sea ducks were the only other commonly observed species group on exposed habitats in winter. Both alcids and sea ducks are highly vulnerable to oil spills.

North-Alaska Peninsula

Estuaries on North-Alaska Peninsula were found to have the greatest bird densities of any region in the southcentral Alaska study area. In spring, geese, sea ducks, gulls and dabbling ducks were found in abundance. In fall, the same species groups were found plus shorebirds. Longevity of spilled oil in these estuaries would likely be of a duration to affect bird populations for several years. Several unique bird species use these estuaries exlusively for migration staging and a major portion or all of the North American or world populations would be affected if oil entered the estuaries.

Shearwaters were extremely abundant in offshore waters at the southern end of the Peninsula in summer. In winter, sea ducks were found in both lagoon and exposed inshore habitats and most gulls used exposed sand beaches. Few other bird groups were observed in measurable quantities during winter.

North-Bristol Bay

This region had lower bird densities in spring than other regions of the study area. It is likely on the edge of the migration corridor for shorebirds flying toward breeding grounds. Relatively low waterfowl densities may mean that many ducks and geese fly over Bristol Bay when heading for northern staging and nesting areas. However, Flounder Flats was very important to scaup on two suscessive spring surveys. Protected delta habitats were those most used by birds. Sea birds from large colonies at Capes Peirce and Newenham and the Walrus Islands were not censused in these aerial surveys.

Aleutain Shelf

Exposed inshore habitats were found to be important wintering habitat for sea ducks, Emperor Geese, Rock Sandpipers and large gulls in the eastern Aleutian Islands. Samalga Island was the section supporting the highest bird densities and merits special protection from adverse impacts of oil and gas development. Inclement weather precluded comprehensive surveys to further substantiate the importance of this region to wintering marine birds.

Species composition and abundance of birds change quickly during spring and fall migrations, and this fact must be taken into consideration when interpreting survey data. One survey per season provides an inadequate data base upon which to make concrete conclusions about bird densities and habitat usage. Coastal bird survey techniques must be identical to allow direct comparison of results. It would be helpful to standardize coastal survey techniques in future studies. Also, habitat availability as well as habitat preferences of birds should be recorded in all surveys.

The substrate of a habitat *per se* is not an absolute indicator of susceptibility to oil spills for birds. Consideration must be given to biological productivity of birds' prey organisms in the substrate types and to the various uses of the substrates (feeding, roosting, nesting).

The relative vulnerability to oil spills of each bird species or group varies markedly. Population size and distribution, reproductive potential, and propensity for marine waters all play a role. In this study, the bird groups with the highest calculated index for potential damage from oil spills were alcids and sea ducks.

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ACKNOWLEDGMENTS

Many people merit special recognition for contributing to various aspects of this study. First and foremost are those that risked their lives flying at low altitudes in occasionally marginal weather to census birds and map habitat types. Fellow observers were M. Allen, W. Ballard, V. Berns, J. Butcher, W. Donaldson, D. Erikson, J. Faro, M. Isleib, N. Johnson, R. Johnston, D. Kurhajec, R. MacIntosh, D. McDonald, D. Timm and J. Sarvis. The many pilots who returned us safely also deserve a special thanks.

W. Cunningham and S. Stanford provided copious notes from bird observations at Cape St. Elias.

D. Calkins generously provided equipment and logistic support that were necessary to carry out the project.

Data processing, correcting and summarization would not have been possible without the continued generous support and patience of M. Crane and his assistant M. Allen. G. Hansen also helped in data summarization.

The painstaking job of figure and diagram drawing was accomplished admirably by L. Anderson, A. Meyer and C. Riedner.

A special thanks is due L. Lewis, R. Thompson and A. Gamble who had the unenviable task of deciphering my handwriting and typing this and the many interim reports.

For reviewing the manuscript and giving many helpful suggestions, I wish to credit P. Baird, D. McKnight, K. Pitcher, K. Schneider and D. Timm.

Moral support needed to complete the report was given by G. and G. Riedner.

My tracker, R. Swope, was instrumental in providing much needed support throughout the project.

Lastly, I thank those that indirectly supported the project and apologize to those whom I may have forgotten to acknowledge.

Table A1. Definitions of some habitats used in this study.

	Water Types
Protected shoreline:	Indented coast where shoreline is three or more times the width of the opening.
Bay[1]:	A large estuary with a relatively high degree of flushing.
Lagoon[1]:	A relatively shallow estuary with very restricted exchange with the sea and no significant fresh water inflow.
Embayment[1]:	A relatively small and shallow estuary with rather restricted flushing and significant freshwater inflow.
Fjord[2]:	A long, narrow deep inlet from the sea between steep cliffs and slopes. (Characterized by having an underwater sill and shallower water near the mouth - Author.)
Unprotected shoreline:	Coastal shoreland exposed to open ocean with a high energy beach.
Brackish pond or lake:	A body of water within the coastal floodplain that is influenced by saltwater during storm tides.
Fresh water pond or lake:	A body of water containing no measureable salt water and found above the coastal floodplain.
	Physiographic Feature
Coastal floodplain:	The area of shorelands extending inland from the normal high tide line to the maximum storm water level.
Salt chuck:	An intertidal estuary with a restricted outlet, with or without fresh water inflow.
	Other definitions are self-explanatory.

[1]From Clark, J. 1974. Coastal Ecosystems. Ecological Considerations for Management of the Coastal Zone. The Conservation Foundation. Washington, D.C. 178pp.

[2]From Morris, W. Ed. 1970. The American Heritage Dictionary of the English Language. American Heritage Publishing Company, Inc. and Houghton Mifflin Company. New York. page 497.

Table A2. Number of birds in each species group within regions of southcentral Alaska by season as determined from aerial, coastal bird surveys in 1975 - 1978.

Species Group	NEGOA		Kodiak	Lower Cook Inlet								S. AK. Pen.		North Alaska Peninsula				N. Br. Bay		Al. Sh.
	Sp	Su	Wn	Sp	Su-p*	Su	Su-p*	Fa	Fa-p*	Wn	Wn-p*	Fa	Wn	Sp	Su-p*	Fa	Wn	Sp	Su-p*	Wn
Loons	523	6	96	115	9	165	2	91	12	100	7	58	27	135	2	138	35	584	1	28
Grebes	20	0	5	108	2	8	0	85	1	11	0	3	11	38	0	37	17	123	0	34
Tubenoses	0	0	0	0	5	1,006	550	3	217	0	6	0	5	0	68,798	82	0	0	0	39
Cormorants	485	32	963	1,542	81	2,617	0	2,872	16	681	37	418	1,253	57	63	1,293	292	1,714	521	1,503
Geese and Swans	1,759	0	131	7,802	0	86	0	2,659	0	2	0	29,711	1,336	87,253	0	623,965	2,154	7,235	0	7,236
Dabblers	5,660	0	3,208	16,652	30	2,314	0	13,144	4	1,502	0	1,857	191	15,597	0	54,605	5	10,131	0	238
Divers	6,042	0	4,465	26,309	16	1,141	0	1,105	85	3,174	0	564	246	2,507	0	1,899	108	12,872	0	278
Sea Ducks	7,619	2,996	16,975	42,493	4,724	38,523	147	12,187	708	12,697	1,879	1,258	7,031	37,832	131	226,465	21,181	10,143	372	18,233
Mergansers	815	0	207	1,252	1	316	0	315	0	253	0	26	21	1,031	0	109	15	1,238	0	73
Raptors	190	11	164	51	2	59	0	41	0	55	0	25	93	58	0	62	41	27	0	69
Cranes	80	0	0	251	0	13	0	0	0	0	0	0	0	173	0	0	0	167	0	0
Shorebirds	58,049	442	1,343	69,531	17	3,067	2	1,645	16	4,640	3	177	971	13,184	29	95,864	15	22,394	6	5,659
Gulls and Jaegers	39,061	17,231	1,814	59,495	752	62,764	338	23,050	520	2,386	406	2,250	3,716	44,335	2,720	45,220	8,628	13,607	208	4,681
Terns	6,411	1,926	0	15	7	434	31	0	0	0	0	0	0	1,359	28	1	0	1,354	1	0
Alcids	3,687	0	2,936	610	794	9,674	255	211	394	365	397	7	11,711	43	2,115	246	1,146	8,719	3,645	1,938
Corvids	25	3	590	129	0	85	0	709	0	786	0	8	71	40	0	63	73	44	0	78
Other Passerines	65	0	23	2	0	230	0	42	0	28	0	4	20	143	0	1,461	150	112	0	67
Other Birds	53	0	106	980	49	159	32	168	9	399	3	93	1	273	0	3,353	0	774	0	125
Total	130,544	22,647	33,026	218,337	6,489	122,661	1,357	58,327	1,982	27,079	2,738	36,459	26,704	204,058	72,604	1,054,863	33,860	91,238	4,754	40,279
No. of Surveys	1	1	1	5	2	2	1	2	2	3	3	1	2	2	2	2	3	3	1	1
Total area (km^2)	863	61	857	1138	389	979	153	891	223	846	538	131	399	1451	171	2328	642	1067	36	427

* Aerial pelagic surveys
** Boat pelagic survey

Table A3. Sample sizes of birds observed on coastal aerial and boat surveys in south central Alaska, 1975 - 1978. Data arranged by region and season.

Lease Area	MEGOA		KODIAK	LOWER COOK INLET								S. AK. PENIN.		N. AK. PENIN.				N. BRISTOL BAY		ALEUTIAN SHELF
Season	Spring	Summer	Winter	Spring		Summer		Fall		Winter		Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Winter
Type	Shoreline	Shoreline	Shoreline	Shoreline	Pelagic	Shoreline*	Pelagic	Shoreline	Pelagic	Shoreline	Pelagic	Shoreline	Shoreline	Shoreline	Pelagic	Shoreline	Shoreline	Shoreline	Pelagic**	Shoreline
Survey Time (hrs:min.)	13:06	2:02	9:51	18:10	7:15	82:32	2:28	12:17	5:18	13:26	7:48	unk.	9:52	14:17	6:51	unk.	8:30	15:33	8:33	5:19
Area (km^2)	863	61	857	1138	389	979	153	891	223	846	538	131	400	1451	171	2328	642	1067	36	427
Species or Group (4 letter code)																				
CoLo	38	-	-	20	-	19	-	4	-	-	-	2	-	4	-	-	-	7	-	-
LgLo	3	-	-	-	-	1	-	8	4	19	4	-	25	9	-	48	26	5	-	24
ArLo	24	-	-	3	-	63	-	1	-	-	-	1	1	24	-	1	-	78	-	-
RTLo	156	-	-	14	-	26	-	-	-	-	-	5	-	49	1	9	-	237	1	-
AmLo	105	5	1	9	3	28	-	58	2	3	-	-	-	35	-	17	5	97	-	-
Loon	197	2	95	69	6	28	2	20	6	78	3	50	1	14	1	63	4	140	-	4
RNGr	8	-	-	1	-	3	-	25	-	-	-	-	1	22	-	7	10	40	-	4
HoGr	9	-	-	13	-	-	-	-	1	-	-	-	1	5	-	-	-	56	-	6
Greb	3	-	5	94	2	5	-	60	-	11	-	3	9	11	-	30	7	27	-	26
Fulm	-	-	-	-	-	-	54	-	12	-	6	-	5	-	-	4	-	-	-	39
Shea	-	-	-	-	5	1,006	496	-	194	-	-	-	-	-	68,774	78	-	-	-	-
FTSP	-	-	-	-	-	-	-	3	11	-	-	-	-	-	1	-	-	-	-	-
Petr	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	-	-	-	-	-
Tube	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
DCCo	42	-	-	38	-	717	-	143	-	-	-	-	12	11	-	-	-	206	-	12
LgGo	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PeCo	-	-	-	-	-	250	-	-	-	-	-	-	-	-	-	-	-	-	85	-
RFCo	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
SmCo	32	32	23	76	3	55	-	124	4	13	1	-	10	6	48	10	292	475	390	44
Corm	394	-	940	1,428	78	1,594	-	2,605	12	668	36	418	1,231	40	15	1,283	276	1,033	46	1,445
GBHe	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WhSw	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	67	-	-	-	-
Swan	13	-	-	122	-	45	-	-	-	-	-	-	5	179	-	147	5	97	-	-
CaGo	1,164	-	-	4,245	-	19	-	2,633	-	-	-	14,307	-	591	-	143,787	-	861	-	-
Bran	40	-	-	380	-	7	-	-	-	-	-	9,678	-	54,733	-	367,678	-	5,065	-	-
EmGo	-	-	131	-	-	-	-	-	-	2	-	5,686	1,331	31,059	-	106,349	2,149	183	-	7,236
WFGo	33	-	-	-	-	15	-	25	-	-	-	-	-	22	-	-	-	183	-	-
DKGo	473	-	-	29	-	-	-	-	-	-	-	78	-	285	-	2,890	-	571	-	-
SnGo	36	-	-	3,026	-	-	-	1	-	-	-	-	-	384	-	3,047	-	275	-	-
Mall	473	-	2,412	2,381	-	261	-	3,319	1	1,436	-	1,145	176	219	-	5,247	2	162	-	88
Gadw	32	-	12	7	-	2	-	16	-	-	-	-	-	139	-	79	-	6	-	7
Pint	721	-	14	4,436	-	366	-	641	-	-	-	550	-	7,415	-	24,626	-	4,290	-	-
GWTe	150	-	-	1,144	-	73	-	1,567	-	-	-	15	-	132	-	846	-	90	-	-
EuWi	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AmWi	549	-	2	902	-	173	-	834	-	-	-	-	-	61	-	445	-	68	-	-
NoSh	161	-	-	196	-	30	-	18	-	-	-	-	-	209	-	2	-	89	-	-
Dsbb	3,573	-	768	7,585	30	1,409	-	6,749	3	66	-	147	15	7,422	-	23,360	3	5,426	-	143
Redh	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-
RNDu	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Canv	22	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-
GrSc	-	-	40	-	-	1	-	8	-	-	-	-	-	57	-	5	-	35	-	-
Scau	3,398	-	527	24,030	15	1,132	-	876	85	3,174	-	75	2	2,314	-	1,253	10	12,568	-	21
Gold	884	-	3,364	1,290	1	4	-	177	-	2,738	-	434	206	33	-	160	26	37	-	139
Buff	127	-	486	370	-	4	-	5	-	296	-	30	38	20	-	50	-	32	-	98
DlDu	1,609	-	3	611	-	-	-	39	-	3	-	25	-	83	-	431	72	192	-	20
Olds	232	-	4,251	4,126	113	14	1	62	18	2,333	405	2	588	1,024	-	342	1,143	996	6	1,278
Harl	336	-	1,613	1,316	100	2,791	-	765	-	810	6	566	300	308	-	374	201	1,101	30	1,356
StEl	-	-	1,522	31	15	-	-	9	65	25	145	76	196	23,272	-	85,264	3,966	252	-	1,642
CoEl	-	-	208	1,477	1,675	2,771	103	335	108	714	491	5	40	1,196	1	4,933	55	479	-	484
RlEl	-	-	495	-	70	-	-	-	-	60	9	-	110	34	-	30	986	603	1	3,960
SpEl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-
LgEl	-	-	-	-	-	-	-	-	120	-	-	-	233	276	-	1,228	2,925	54	-	662
Eide	-	-	1,028	11	463	1	-	195	7	162	39	-	38	410	-	2,297	6,392	467	1	158
WWSc	356	132	583	3,416	21	3,164	1	199	9	212	112	9	126	81	39	746	73	141	232	391
SuSc	1,664	292	647	4,772	3	10,041	2	2,306	60	2,047	14	2	82	2	3	69	2	12	2	26
BlSc	167	4	2,085	9,399	71	556	40	535	-	799	62	129	914	6,358	-	16,842	498	4,372	3	1,155
DWSc	-	-	-	-	-	87	-	-	-	-	-	-	74	-	-	-	1	-	-	-
Scot	4,212	2,566	2,694	11,523	1,013	18,280	-	6,624	304	4,509	535	68	2,147	1,890	88	34,976	1,131	1,376	95	3,105
SeDu	652	2	1,983	6,422	1,180	818	-	1,157	17	1,006	61	401	2,183	2,981	-	79,364	3,808	336	2	4,016
CoMe	70	-	39	126	-	-	-	16	-	8	-	-	-	4	-	-	4	15	-	3
RBMe	579	-	33	789	1	296	-	256	-	96	-	-	21	625	-	92	7	1,183	-	47
Smew	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Merg	166	-	135	341	-	20	-	43	-	149	-	24	-	402	-	27	4	38	-	23
Duck	53	-	105	975	37	158	-	161	-	399	1	93	1	259	-	3,304	-	737	-	120
RTHa	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BnEa	177	10	139	45	1	56	-	39	-	54	-	25	93	50	-	54	41	14	-	69
Eagl	-	-	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MaHa	9	1	-	4	-	3	-	1	-	-	-	-	-	2	-	2	-	6	-	-
Gyrf	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-
Falc	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	2	-	-
Rapt	-	-	-	2	1	-	-	1	-	1	-	-	-	1	-	-	-	3	-	-
Ptar	-	-	-	-	-	-	-	-	-	-	-	-	-	14	-	49	-	37	-	5
SaCr	79	-	-	251	-	13	-	-	-	-	-	-	-	173	-	-	-	167	-	-
SePl	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SpSa	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	6	-	-
LeSa	-	-	-	-	-	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WeSa	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NoPh	-	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Phal	112	1	-	-	4	10	2	-	1	-	-	-	-	20	28	-	-	303	-	-
SmSh	17,681	-	779	29,818	1	2,296	-	155	-	464	3	132	-	5,790	-	66,978	-	11,592	-	6

Table A3. (cont.)

Lease Area	NEGOA		KODIAK	LOWER COOK INLET								S. AK. PENIN.		N. AK. PENIN.				W. BRISTOL BAY		ALEUTIAN SHELF
Season	Spring	Summer	Winter	Spring		Summer		Fall		Winter		Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Winter
Type	Shoreline	Shoreline	Shoreline	Shoreline	Pelagic	Shoreline*	Pelagic	Shoreline	Pelagic	Shoreline	Pelagic	Shoreline	Shoreline	Shoreline	Pelagic	Shoreline	Shoreline	Shoreline	Pelagic**	Shoreline
GoPl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-
BBPl	106	-	-	1	-	4	-	-	-	-	-	-	-	508	-	-	-	2	-	-
Plov	-	-	-	-	-	-	-	-	-	-	-	-	-	624	-	-	-	17	-	-
RuTu	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-
BlTu	424	-	-	-	-	17	-	15	-	-	-	-	-	37	-	-	-	445	-	-
Turn	-	-	-	-	-	-	-	-	-	-	-	-	-	158	-	-	-	16	-	-
Sand	3	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	5	-	-
Yell	26	-	-	1	-	-	-	1	-	-	-	-	-	4	-	8	-	23	-	-
WaTa	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RoSa	25	-	6	-	-	86	-	-	-	10	-	-	110	71	-	-	-	489	-	15
Dunl	104	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Surf	320	-	-	143	-	219	-	61	-	-	-	-	-	-	-	-	-	-	-	-
Bowl	103	-	-	-	-	4	-	-	-	-	-	-	-	17	-	-	-	3	-	-
MaSh	11,852	441	170	29,908	12	163	-	1,403	15	3,567	-	-	671	3,941	1	20,830	13	3,832	6	5,539
BlOy	14	-	262	19	-	139	-	-	-	-	-	20	190	-	-	-	-	-	-	99
WhIm	-	-	-	1	-	15	-	-	-	-	-	-	-	4	-	-	-	-	-	-
WaGo	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Godw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
LgSh	3,242	-	-	159	-	6	-	-	-	1	-	-	-	415	-	704	-	98	-	-
MaSh	23,556	-	126	470	-	3	-	-	-	598	-	25	-	1,592	-	7,344	-	5,545	-	-
PuJa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-
PaJa	89	9	-	-	-	-	-	-	-	-	-	-	-	4	-	2	-	16	-	-
LTJa	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	-	-	1	-	-
Jaeg	25	3	-	1	-	2	-	-	-	-	-	-	-	-	5	-	-	14	-	-
GlGu	2	-	-	1	-	-	-	-	-	6	-	-	2	44	3	-	5	12	-	6
GWGu	5,375	126	591	9,051	588	13,883	63	4,743	96	446	254	1,519	1,514	6,955	919	31,066	4,730	3,841	9	2,426
BeGu	1,597	5	-	92	-	80	-	123	1	1	2	-	-	7	-	12	-	10	-	-
CrGu	-	-	-	-	-	1	-	13	-	-	-	-	-	-	-	-	-	-	-	-
LgGu	667	1,920	171	6,736	-	348	-	131	60	245	55	10	146	7,558	-	927	1,167	1,734	23	1,076
MeGu	1,429	498	186	1,827	14	868	-	2,928	14	473	51	106	51	2,756	-	733	12	1,808	-	57
BoGu	90	-	-	9	-	1	-	6	-	-	-	-	-	17	-	270	-	19	-	-
Kitt	13,257	1,165	1	28,922	72	25,163	165	2,126	184	-	2	319	917	5,326	1,048	1,312	3	2,115	166	2
SaGu	-	3	1	1	-	-	-	1	1	-	-	4	2	21	8	55	-	22	-	-
DBGu	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SmGu	27	1,541	20	290	-	318	-	1,674	36	79	4	115	46	336	-	2,217	7	13,607	-	11
Gull	16,502	11,961	844	12,565	78	22,100	110	11,305	128	1,136	38	177	1,038	21,293	736	8,626	2,704	3,825	3	1,103
ArTe	540	39	-	-	6	235	24	-	-	-	-	-	-	3	-	-	-	437	-	-
AlTe	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tern	5,871	1,884	-	15	1	199	7	-	-	-	-	-	-	1,356	28	1	-	917	1	-
MaMu	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Murl	-	-	18	9	5	121	11	7	2	21	30	-	-	1	-	-	-	-	-	-
PaAu	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-
CrAu	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aukl	-	-	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SpAl	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	455	-	-	157
SmAl	9	-	259	14	78	4	13	42	8	231	25	7	5	2	196	91	264	5	-	147
CoMu	-	-	-	-	-	99	-	-	-	-	-	-	-	-	-	-	-	-	4	-
Murr	3,550	-	2,431	18	547	4,416	199	90	351	58	325	-	11,700	34	1,880	113	422	7,968	3,491	1,013
PiGu	15	-	34	325	58	712	-	29	16	11	11	-	5	6	-	1	3	402	68	27
BoPu	103	-	-	1	2	917	7	-	-	-	-	-	-	-	-	-	-	4	36	-
TuPu	-	-	-	242	100	3,353	21	-	-	-	-	-	-	-	39	-	-	25	39	-
Puff	10	-	-	-	-	48	-	-	4	-	-	-	-	-	-	-	-	313	-	-
LgAu	-	-	64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MeAl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
LBAl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	4
LgAl	-	-	37	1	4	2	3	3	11	36	1	-	-	-	-	40	-	-	-	437
Alci	-	-	-	-	-	-	1	40	2	8	5	-	-	-	-	1	-	2	-	152
SnOw	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
SEOw	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-	3	-	2	-	-
BeKi	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TrSw	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
BkSw	-	-	-	-	-	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ClSw	-	-	-	-	-	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Swal	38	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WaPi	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dipp	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
CoRe	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SaSp	1	-	-	-	-	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GCSp	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PoSp	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spar	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	3	-	-	-	-
SaBa	-	-	-	1	-	13	-	1	-	-	-	-	20	-	-	936	-	-	-	21
Fric	-	-	-	1	-	2	-	2	-	-	-	-	-	-	-	29	-	-	-	1
BBMe	-	-	20	9	-	5	-	6	-	16	-	1	11	-	-	-	-	-	-	-
CoRa	9	-	8	13	-	49	-	7	-	22	-	7	28	40	-	63	73	44	-	78
WWCr	16	3	562	107	-	31	-	696	-	748	-	-	32	-	-	-	-	-	-	-
Robi	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VaTh	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pasa	62	-	22	-	-	39	-	38	-	27	-	4	-	143	-	493	150	111	-	45
Bird	-	-	-	-	-	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-
LgBi	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
SeBi	-	-	-	-	12	-	32	-	1	-	2	-	-	-	-	-	-	-	-	-
Total:	130,544	22,647	33,026	218,337	6,489	122,661	1,357	58,327	1,982	27,079	2,738	36,459	26,704	204,058	73,886	1,054,863	33,860	91,238	4,717	40,279

* Includes boat and walking surveys.
** Boat survey

Table A4. Relative index, by season, of bird densities for selected marine species from shoreline surveys in southcentral Alaska.

Species *	NEGOA		Kod.	Lower Cook Inlet				S. AK. Pen.		N. AK. Pen.			Br. Bay	Al. Ah.
	Sp	Su	Wn	Sp	Su	Fa	Wn	Fa	Wn	Sp	Fa	Wn	Sp	Wn
RTLo	t	o	o	t	t	o	o	t	o	t	t	o	t	o
RNGr	t	o	o	t	t	t	o	o	t	t	t	t	t	t
Shea	o	o	o	o	+	o	o	o	o	o	t	o	o	o
DCCo	t	o	o	t	t	t	o	o	t	t	o	o	t	t
CaGo	+	o	o	+	t	+	o	+++	o	t	+++	o	t	o
Bran	t	o	o	t	t	o	o	++	o	++	+++	o	+	o
EmGo	o	o	t	o	o	o	t	++	+	++	+++	+	t	++
Mall	t	o	+	+	t	+	+	+	t	t	+	t	t	t
Pint	t	o	t	+	t	t	o	+	o	+	++	o	+	o
Scau	+	o	t	++	+	t	+	t	t	+	+	t	++	t
Gold	+	o	+	+	t	t	+	+	t	t	t	t	t	t
Olds	t	o	+	+	t	t	+	t	+	t	t	+	t	+
Harl	t	o	+	+	+	t	t	+	t	t	t	t	+	+
StEi	o	o	+	t	o	t	t	t	t	++	++	+	t	+
CoEi	o	o	t	+	+	t	t	t	t	t	+	t	t	+
WWSc	t	+	t	+	+	t	t	t	t	t	t	t	t	t
SuSc	+	+	t	+	++	+	+	t	t	t	t	t	t	t
BlSc	t	t	+	+	t	t	t	t	+	+	++	t	+	+
RBMe	t	o	t	t	t	t	t	o	t	t	t	t	+	t
BaEa	t	t	t	t	t	t	t	t	t	o	t	t	t	t
SmSh	++	o	t	++	+	t	t	t	o	+	++	o	++	t
MeSh	++	+	t	++	t	+	+	o	+	+	++	t	+	++
LgSh	+	o	o	t	t	o	t	o	t	+	t	o	t	t
GWGu	+	+	t	+	++	+	t	+	+	+	++	+	+	+
MeGu	+	+	t	+	t	+	t	t	t	+	t	t	+	t
BLKi	++	++	t	++	++	+	o	+	+	+	+	t	+	t
ArTe	+	++	o	t	t	o	o	o	o	t	t	o	+	o
Murr	+	o	+	t	+	t	t	o	++	t	t	t	+	+
PiGu	t	o	t	t	t	t	t	o	t	t	t	t	t	t
HoPu	t	o	o	t	t	o	o	o	o	o	o	o	t	o
TuPu	o	o	o	t	+	o	o	o	o	o	o	o	t	o
CoRa	t	o	t	t	t	t	t	t	t	t	t	t	o	t
NWCr	t	t	t	t	t	t	t	o	t	o	o	o	o	o

o = no birds t = less than 1 bird/km^2 + = 1 to 10 birds/km^2 ++ = 11 to 100 birds/km^2 +++ = 101 to 1000 birds/km^2

* Only represents individuals identified to species (e.g. only 43% of the scoters were identified to species).

FINAL REPORT

NOAA-OCSEAP Contract: 01-06-022-11437
Research Unit: RU-339
Principal Investigators: C. J. Lensink
J. C. Bartonek

AN ANNOTATED BIBLIOGRAPHY OF LITERATURE ON ALASKA WATER BIRDS

by

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December 15, 1980

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INTRODUCTION

The demand for information on birds in Alaska has surged within the past few years, primarily because of the need to adequately assess the impacts of a wide range of planned developments. The accompanying increase in studies of avian populations has resulted in a growing need for a comprehensive bibliography of Alaska ornithology. An initial effort by Bartonek and Lensink (1978) provided a list of published and unpublished references on marine birds, but this list was only marginally useful because it lacked adequate indexing and annotation of references cited. Their bibliography, however, plus those of Cade (1953) and Gabrielson and Lincoln (1959), provided the basis and primary reference sources for our work.

In the present bibliography, we have attempted to compile all substantive references addressing water birds in Alaska, as this group of birds appears to be most vulnerable to repercussions of development, particularly along the coast. However, the works cited comprise an estimated 70-80% of all literature on birds in Alaska, and this volume thus provides an initial source of references on terrestrial birds. This bibliography, which contains 1554 citations, is current for most journal sources through 1979 and most of 1980. The content of each paper has been summarized, and we have indexed the citations by subject, species, and geographic location to make the bibliography a more useful reference. Furthermore, the bibliography has been designed to facilitate future inclusion of references that have been omitted or that will be published in the rapidly growing body of literature on Alaska birds.

CONTENTS

The bibliography includes both published and unpublished materials. Inclusion of the latter was considered essential because they represent a large part of information available on Alaska birds and are the primary source of data for many areas. Although we have attempted to include most published references, our search of non-technical publications has been cursory, and references to popular publications have been omitted unless they contributed information not available from technical sources.

For references published prior to 1976, we used electronic data reference systems, including the Fish and Wildlife Service Reference Service (Denver Public Library), BIOSIS, NTIS, Ocean Abstracts, and Dissertation Abstracts, to assist in our bibliographic search. However, we found visual searches of key references and periodicals more productive for both number of citations and thoroughness of search. For references published after 1976, we relied entirely on visual search of common journals and hard copy bibliographic sources. These included, but were not limited to: Arctic,

Auk, Canadian Field-Naturalist, Condor, Ecology, Ecological Monographs, Ibis, Journal of Field Ornithology (formerly Bird-Banding), Journal of Wildlife Management, Murrelet, Pacific Seabird Group Bulletin, Wader Study Group Bulletin, Western Birds, Wildlife Review and Wilson Bulletin. American Birds was also reviewed, but only for major articles. Much valuable information in the form of seasonal observations on numbers, distribution, and identification is also included in American Birds, and any effort to study a species or regional avifauna should include a thorough review of this publication.

In choosing references for this bibliography, we have been selective and have omitted general references or papers which include information on Alaska only as part of a larger area or topic, e.g., a book on North American birds and many taxonomic references. However, we have included such references when the reviewer considered them of particular importance to Alaska ornithology. The focus of this bibliography is on reports of field studies conducted in Alaska or other papers dealing specifically with Alaska ornithology.

We have also omitted most Environmental Statements in our list of references although many of them contain excellent discussions or checklists of regional avifaunas. While ornithologists interested in specific areas or regions of the state should be aware of this important source of information, such accounts are nearly always based on primary sources we have included.

We have been most selective in our treatment of unpublished materials. In general, we attempted to include all unpublished materials that contain substantive information not included in formal publications.

The progression of reports emanating to or from government agencies frequently includes field or quarterly reports, annual reports, and final reports. In such progressions, information in quarterly reports may be almost totally redundant of that in annual reports, and information in annual reports redundant of that in final reports. However, at times, useful data are lost with more extensive editing, and field reports often contain information of significant value not summarized elsewhere. In cases for which redundancy was obvious, we cite only the most significant reports, usually the annual or final reports. For other agency reports which form a continuing series, e.g., Annual Reports of National Wildlife Refuges, we have usually cited only the series rather than the contents of individual reports to avoid unnecessary redundancy. However, contents of unusual significance may be cited separately. Of such series, quarterly and annual reports for Federal Aid in Wildlife Restoration issued through 1959 by the U.S. Fish and Wildilfe Service and subsequently by the Alaska Department of Fish and Game are among the most important in that they discuss all work conducted under this major program, much of which is never summarized in formal publications.

FORMAT

The bibliography is divided into four sections, each of which is in effect a separate bibliography as listed below:

I. Seabirds
Procellariiformes
Diomedeidae (albatrosses)
Procellariidae (fulmars, shearwaters, and petrels)
Hydrobatidae (storm-petrels)
Pelecaniformes
Phalacrocoracidae (cormorants)
Charadriiformes (in part only)
Stercorariidae (jaegers and skuas)
Laridae (gulls and terns)
Alcidae (alcids)

II. Waterfowl and Other Water Birds
Gaviiformes (loons)
Podicipediformes (grebes)
Anseriformes (swans, geese, and ducks)
Ciconiiformes (herons)
Gruiformes (cranes, rails, and coots)

III. Shorebirds
Charadriiformes
Haematopodidae (oystercatchers)
Charadriidae (plovers)
Scolopacidae (sandpipers and allies)
Phalaropidae (phalaropes)

IV. Avifauna

The division of the bibliography into four sections is based on both the species addressed and the nature of the reference material. A reference which addresses particular species or group(s) of birds has been placed under the appropriate section(s): seabirds, waterfowl, or shorebirds. A reference was included in the avifauna section if it 1) was of a general nature, usually in narrative form, and contained little specific reference to individual species; 2) treated the entire avifauna of an area, often in the form of annotated accounts or a checklist; 3) represented specimen records of a number of diverse species; or 4) was a detailed paper concerned with a particular species or group of species, yet included, usually in appendices, information on the entire associated avifauna. Papers of this nature, totaling 62, are indicated in the avifauna section by an asterisk preceding the number, showing that the citation also occurs in one or more of the other bibliographies. Many of the references which appear only in the avifauna section contain significant and detailed in-

formation on individual species, and should not be overlooked. In addition, some of these references address species which are not treated elsewhere in the bibliography.

Within the separate sections, each reference includes the citation, a brief summary or evaluation of content, and key words that identify the region and locality of study, family and/or species of concern, and subject of discussion. The particular reviewer's initials appear at the end of each summary. One hundred forty-three of the citations were either not reviewed or have summaries quoted from another source.

A total of 6 regions and 18 subregions are identified (Table 1, Figure 1). The boundaries of regions and subregions are adapted from the U.S. Geological Survey hydrographic divisions for reporting data on water quality and are also used by other federal and state agencies for water resource planning. The boundaries of subregions follow topographic divides between major drainage systems. These often delineate corresponding changes in vegetation or in the distribution and abundance of birds. We consider the identification of regional literature particularly important to agencies or industrial organizations requiring information for evaluating the effects of developments such as hydropower sites, drainage programs, and conversion of land to agriculture; for determining the effects of pollution; or for evaluating resources associated with wildlife refuges, parks, or other major areas of frequent concern. Specific localities to which references pertain have also been identified. All place names are those used by the U.S. Board of Geographic Names and are those which appear on topographic maps published by the U.S. Geological Survey. References which pertain to many regions or to Alaska as a whole are included in the category "Alaska, General."

The taxa of birds which are addressed in a particular reference are identified. Within the sections on seabirds, waterfowl, and shorebirds, families or subfamilies are indicated; particular species are also listed if they are treated in depth or they are few in number. If all or most of the families within the group are addressed in a reference, the key word is simply "seabirds," "shorebirds," or "waterfowl." Within the section on avifauna, the groups of birds which have been addressed are listed as "seabirds," "shorebirds," "waterfowl," and "other." Generally, we have noted in the summary the number or percentage of typically water-associated species addressed in each reference. Specific water bird species are listed only in the rare cases where space allows.

The subject matter of each reference is identified by one or more of 34 relatively broad subject categories (Table 2). Within each of the four sections of the bibliography, citations are listed alphabetically by author and numbered sequentially for indexing. Separate indexes for geographic area, taxonomic group, and subject are provided for the seabird, waterfowl, and shorebird sections. The avifauna section has been indexed by subject and geographic area only.

A bibliography of references, particularly one which includes unpublished materials, is not very useful if cited references are not available. During preparation of this bibliography we have attempted to acquire or identify the source of references cited. Most current publications are available in major libraries. Most unpublished materials and copies of long out-of-print references cited may be examined in the library, U.S. Fish and Wildlife Service, Anchorage, or in reprint files of the Marine Bird Section, National Fisheries Research Center, U.S. Fish and Wildlife Service, Anchorage. While it is not possible for the Service to provide copies of such materials to all persons, serious investigators with specific needs may examine references in the Fish and Wildlife Service office and may be furnished copies of materials they require.

ACKNOWLEDGMENTS

We thank Martha Shepard, Cathy Vitale, and Mary Ferber of the U.S. Department of Interior, Alaska Resources Library, Anchorage, and Janet Ballard, U.S. Fish and Wildlife Service Library, Anchorage, for their help in obtaining many of the lesser known or hard to obtain references. Nancy Harrison (NMH), Jan Greilich (JLG), Patrick Gould (PJG), and Gerald Sanger (GAS) helped by reviewing references and in preparing the final bibliography. Karleen Boskofsky and Marva Stevens are especially thanked for typing the manuscript. This bibliography was initiated with funding provided by the Bureau of Land Management through interagency agreement with the National Oceanic and Atmospheric Administration, and managed by the Outer Continental Shelf Environmental Assessment Program. Additional funding for its completion was provided by the Office of Biological Services and Migratory Bird Programs of the Fish and Wildlife Service.

Table 1. Regions and Subregions

A. ALASKA, GENERAL

B. ALEUTIANS

C. ARCTIC
   1. Beaufort
   2. Chukchi
   3. Kotzebue Sound

D. BERING SEA
   1. Norton Sound
   2. Yukon Delta
   3. Bristol Bay
   4. Bering Sea Islands

E. GULF OF ALASKA
   1. Kodiak
   2. Cook Inlet
   3. Copper River
   4. Northern Gulf
   5. Prince William Sound
   6. Southeastern Alaska

F. INTERIOR ALASKA
   1. Innoko
   2. Kuskokwim
   3. Tanana
   4. Koyukuk
   5. Upper Yukon

G. NORTH PACIFIC

Table 2. Subject Categories

1. Abundance - censuses, population estimates, etc.
2. Age and sex composition
3. Anatomy - includes morphology
4. Annotated list
5. Archaeology
6. Behavior
7. Bibliography
8. Breeding biology - generally comprehensive, but includes natural history accounts
9. Checklist - without annotation other than coded summary of abundance or status
10. Disease and parasites
11. Distribution
12. Disturbance, effects of
* Evolution (See Taxonomy)
13. Fishing, effects of
14. Food - includes food resources, foraging, behavior, and trophics
15. Growth
16. Habitat - characteristics, requirements, use, protection, etc.
17. Management - laws and regulations, conservation, harvest, protection, etc.
* Methods (See Techniques)
18. Migration - includes wandering, dispersal, staging, etc.
* Molt (See Plumage)
19. Mortality
20. Physiology
21. Plumage - development, molt, etc.
22. Pollution, effects of - includes incidence of threats, etc.
23. Population dynamics - synthesis of information on population size and structure, growth, reproductive performance, etc.
24. Predation
25. Public interest - popular rather than technical content
26. Rehabilitation - care of injured, diseased, or oiled birds
27. Reproduction - reproductive performance, rates, success, etc.
28. Research - analysis of research needs, programs, etc.
29. Specimen record - museum's or collector's reference to a particular bird or egg
30. Status - well-being of population or species
31. Subsistence use
32. Taxonomy - includes evolution
33. Techniques - includes methods
34. Zoogeography

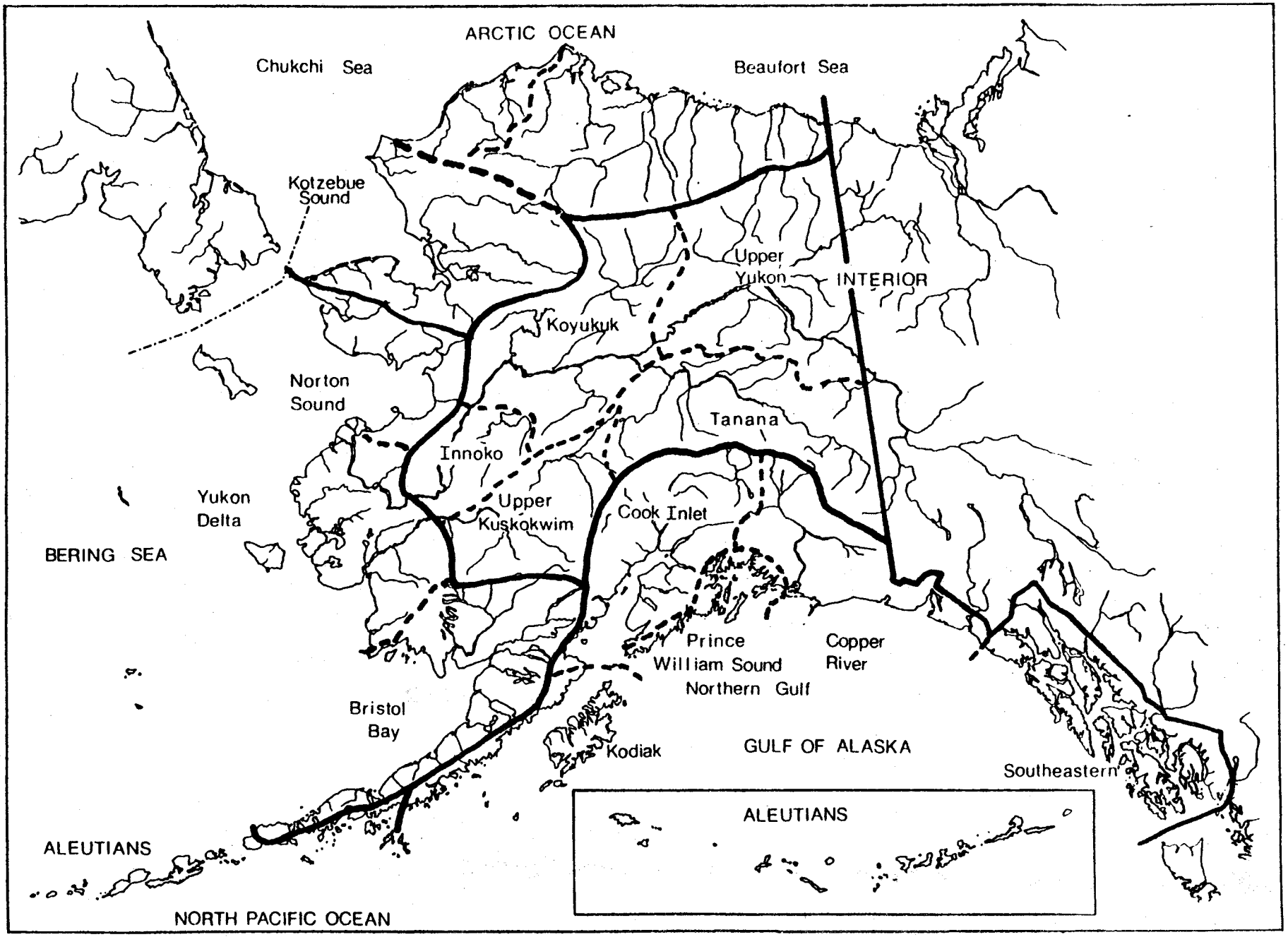

Figure 1. Regional and subregional boundaries of Alaska.

REVIEW OF ORNITHOLOGY IN ALASKA

Alaska ornithology had an auspicious beginning when in 1741 Georg Steller, who accompanied the Bering Expedition, obtained specimens and made extensive notes on birds he observed during the voyage. This early promise did not continue, and the first major ornithological accounts were based on the observations and collections obtained during the third voyage (1778 to 1779) of the great English explorer Captain James Cook. Localities described by Cook included Prince William Sound, Unalaska, Cape Newenham, St. Matthew Island, and Norton Sound. The observations and the collections, which included nine type specimens, were subsequently described in Latham's A General Synopsis of Birds published in several volumes from 1781 to 1785, and in Pennant's Arctic Zoology published in 1785.

Russian scientists did not make a major effort to obtain information on birds until more than a half century later (1840 to 1849) when Ilja Wosmessenski collected specimens for the Academy of Sciences. These specimens are still preserved in the Zoological Institute, Academy of Sciences, USSR, and Gabrielson and Lincoln were able to obtain a list of 341 specimens of 90 species while working on their monograph of the birds of Alaska (Gabrielson and Lincoln 1959).

Interest in Alaska ornithology increased dramatically during the period of American Exploration which was initiated by the Russian-American Telegraph Expedition (1865 to 1867). The scientific party included William Healy Dall, who was placed in charge after the death of Robert Kennicott. When the expedition was abandoned in 1867, Dall remained in Alaska at his own expense to complete work that had been planned. Much of the information obtained by the Telegraph Expedition was from coastal regions visited earlier (Dall 1873, 1874; Dall and Bannister 1869). However, Dall's observations on the Yukon River, which he explored up to Fort Yukon, were a significant contribution, being the first major study of inland habitats.

Dall's work was soon followed by that of Lucien Turner (1874 to 1881) and Edward W. Nelson (1877 to 1885). Both obtained specimens of more than 250 species and subspecies (Turner 1886, Nelson 1887). Nelson's work was particularly important for he described the major faunal areas of Alaska and he was the first to provide extensive information on abundance, behavior, and natural history of individual species of birds.

In the decades following the work of Dall, Turner, and Nelson there was continued wide interest in Alaska avifauna. Most work focused on compilation of regional avifaunas; a few of the important contributors were:

Murdoch*	1881 - 1883	Pt. Barrow
McIlhenny	1897 - 1898	Pt. Barrow (see Stone 1900)
Grinnell	1896 - 1899	Sitka/Kobuk R./Kotzebue Sound
Osgood	1899 - 1902	Yukon R./Cook Inlet/Alaska Pen.
Dixon	1907 -1926	Southeastern/Prince William Sound/ Arctic Coast/Interior
Swarth	1909 - 1919	Southeastern
Bent	1911	Bering Sea
Brooks	1913	Semidi Is./Arctic Coast
Willett	1912 - 1926	Southeastern
Bailey	1919 - 1921	Southeastern/Arctic
Murie, O.J.	1920 - 1937	Interior/Yukon Delta/Alaska Pen./ Aleutian Is.

This productive period in Alaska ornithology (about 1865 to 1950) culminated in the publication of Birds of Alaska by Gabrielson and Lincoln in 1959, which remains the most important reference on Alaska birds. In preparing this monograph, the authors had access not only to published materials and the collections of the Smithsonian and other museums, but also to unpublished reports, notes, and diaries of past and present personnel of the Bureau of Biological Survey, the Alaska Game Commission, and the Fish and Wildlife Service. Thus, Birds of Alaska provides a uniquely comprehensive summary of all work that had been accomplished to the time of its publication.

Gabrielson and Lincoln considered the period from about 1900 to 1958 to be the "modern period" in that there was a shift from extensive exploratory work to more intensive surveys of restricted areas. In retrospect, we would include most of the work up to about 1950 in the exploratory period, as emphasis remained on investigation of new regions and on collection of specimens to extend regional lists of species. By the end of this period, the distribution patterns of most species were reasonably well defined.

A much more dramatic shift in direction of ornithological research occurred after World War II. Regional occurrence, range extensions, and records of new species continued to be a matter of interest, but avian research became more diverse. Studies began to address discrete topics such as the ecology and habitat requirements of individual species, the role of birds in ecosystems, the adaptation of birds to Arctic environments, population dynamics, problems related to management, and finally, the probable impacts of myriad development programs or activities.

*See references listed for each of these individuals.

Within these past three decades, most of the studies on Alaska birds have been directed through a few major contributors. The University of Alaska, primarily through the efforts of Brina Kessel and Daniel Gibson, has been a continuing focal point for information on distribution and zoogeographical relationships of Alaska birds and maintains collections of growing importance. Kessel and Gibson (1978) provided a major supplement to the Birds of Alaska, which extensively revised information on status and distribution for about half of the species originally treated, and extended the list of known species from 321 in 1958 to 387 in 1978. This increase in the recorded number of species reflects the major expansion of ornithological research in recent years.

The Arctic Health Research Center, subsequently incorporated in the Institute of Arctic Biology, University of Alaska, has emphasized studies of physiological adaptations of birds to Arctic environments. Lawrence Irving, former director of the Institute, and his colleagues have also contributed to many other aspects of ornithology and have conducted comprehensive avifaunal studies, including detailed analyses of habitat relationships, for many regions of Alaska.

Since 1951, Frank Pitelka of the Museum of Vertebrate Zoology, Berkeley, with many students and colleagues, has continued work on birds at the Naval Arctic Research Laboratory at Point Barrow, and elsewhere on the Arctic Slope. Work at Barrow has included studies of evolution, population dynamics, breeding behavior, and trophic relationships of shorebirds, as well as studies of time-energy budgets, distribution within biotic communities, and predator-prey relationships.

Research conducted by the Fish and Wildlife Service has focused primarily on collection of information necessary for management of migratory waterfowl, endangered species, and national wildlife refuges. Additional work has addressed populations and habitats likely to be affected by existing or proposed development projects. Annual surveys of breeding populations, assessment of production, and analysis of habitat requirements continue to be of high priority. Although the primary purpose of such surveys is to meet short-term management needs, the accumulated data on populations, reproduction, and distribution provide a unique base for evaluating long-term climatic, physical, biological, or anthropogenic changes in the environment, as well as the cumulative or compensatory relationships of such changes.

National wildlife refuges, particularly Clarence Rhode National Wildlife Range, have also sponsored many in-depth studies of the population dynamics and ecology of individual species. These studies have usually been conducted in cooperation with universities, as such discrete topics are particularly adaptable to research by graduate students. Under similar cooperative agreements with the Fish and Wildlife Service, students of Milton Weller, Iowa State University, have studied the water birds and wetland habitats of the Arctic Slope in relation to petroleum development. The Fish and Wildlife Service expanded these studies during the past five years, and conducted additional studies on the avifauna of Prince William Sound in relation to expanding petroleum development.

The latest major impetus to ornithological research in Alaska began in 1975, with funding through the interdisciplinary Outer Continental Shelf Environmental Assessment Program (OCSEAP), an effort designed to assess potential impacts of offshore petroleum development. Papers by King (1973) and Sowl and Bartonek (1974) had earlier called attention to the woeful inadequacy of information and current research on marine birds. Only crude information had been available on the distribution of populations, on the size, location, and composition of nesting colonies, and on the ecology of individual species. Research on birds of estuarine and marine environments became an important part of OCSEAP in 1976. Although programs of the Fish and Wildlife Service supplement that of OCSEAP, the combined effort is considered by many persons involved to be too little and too late. However, research on marine birds in Alaska between 1976 and 1978 was likely the most concentrated research effort ever directed primarily at non-game species.

This major program has involved scientists from the Fish and Wildlife Service, Alaska Department of Fish and Game, and several universities. It is additionally unique in being truly interdisciplinary, with information being collected simultaneously on oceanography, fisheries, invertebrates, marine mammals, and other physical and biological factors which influence the ecology of marine birds. Preliminary results of this research program are impressive, with most information being summarized in Annual or Final Reports of Principal Investigators published by the National Oceanic and Atmospheric Administration which manages the program for the Bureau of Land Management.

Although funding available from OCSEAP diminished appreciably in 1978 and has continued to decline, that from other sources is expanding and work in ornithology over the long-term appears likely to increase and diversify.

SEABIRDS - BIBLIOGRAPHY

1. ABBOTT, C.G. 1929. Ross Gulls for dinner. Condor 31:132.

   Besides the gastronomic emphasis of this note, there is mention of an unusual concentration of thousands of these birds around Barrow in late September 1928. REG

   Arctic - Chukchi (Barrow)
   Gulls and terns
   Ross' Gull
   Subsistence, distribution, abundance

2. AINLEY, D.G., and G.A. SANGER. 1979. Trophic relations of seabirds in the northeastern Pacific Ocean and Bering Sea. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:95-122.

   This paper reviews the literature on the diets of seabirds found in the northeastern North Pacific Ocean and Bering Sea, and broadly characterizes the diet of each species. More research is needed on seabird feeding relations so the ecological roles of marine birds can be defined and placed in perspective. MRP

   North Pacific
   Bering Sea
   Seabirds
   Food, research

3. AMARAL, M.J. 1977. A comparative breeding biology of the Tufted and Horned Puffin in the Barren Islands, Alaska. M.S. thesis. Univ. Washington, Seattle. 98 pp.

   This paper presents data collected on the breeding biology of Horned and Tufted Puffins. Aspects of their breeding biology are compared with information presented in the literature for all puffins. Factors influencing breeding success on East Amatuli Island are assessed. MRP

   Gulf of Alaska - Kodiak (Barren Is.)
   Alcids
   Horned Puffin, Tufted Puffin
   Breeding biology

4. AMARAL, M.J., and D.A. MANUWAL. 1978. A comparative breeding biology of the Tufted and Horned Puffin in the Barren Islands, Alaska. Pac. Seabird Group Bull. 5(1):40-41. (Abstract)

This paper describes and compares aspects of the breeding biology of Horned and Tufted Puffins. The most important factors influencing nesting success are discussed for both species. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Alcids
Horned Puffin, Tufted Puffin
Breeding biology

5. ANDERSSON, M. 1973. Behaviour of the Pomarine Skua Stercorarius pomarinus Temm. with comparative remarks on Stercorariinae. Ornis Scand. 4:1-16.

This paper describes displays and hunting behavior of the Pomarine Jaeger, and describes relationships between their behavior and ecology. A preliminary review of behavior patterns and relationships in the Stercorariinae is included. MRP

Artic - Beaufort (Nuvagapak Pt.)
Jaegers
Pomarine Jaeger
Behavior, taxonomy

6. ANONYMOUS. 1970. Bird deaths mount in Alaska. Marine Poll. Bull. 1:66.

This note records the oiling of an estimated 10,000 birds in the Kodiak Island archipelago during February and March 1970, from an unknown source of crude or bunker oil. Those species identified and others probably affected are listed. CMH

Gulf of Alaska - Kodiak
Cormorants, gulls and terns, alcids
Pollution, public interest, mortality

7. ANTHONY, A.W. 1934. A new petrel for North America. Auk 51:77.

A specimen of Cook's Petrel, collected in the Aleutian Islands, represents the first North American record. CMH

Aleutians - (Adak Is.)
Fulmars and shearwaters
Cook's Petrel
Distribution, specimen record

8. ARNOLD, L.W. 1948. Observations on populations of North Pacific pelagic birds. Auk 65:553-558.

This paper reports census results for the 17 species recorded on a cruise through the Aleutian Islands and Gulf of Alaska during summer 1944. Numbers and locations are reported in tables, and distribution is briefly discussed for several species. CMH

Gulf of Alaska
Aleutians
North Pacific
Seabirds
Distribution, abundance

9. AUSTIN, O.L., JR. 1952. Notes on some petrels of the North Pacific. Bull. Mus. Comp. Zool. Harv. Coll. 107(7):391-407.

This paper discusses the taxonomic status of populations of three gadfly petrels and six storm-petrels, separated on the basis of meristics, plumage, and geographic distribution. Of these species, only Cook's Petrel and Leach's Storm-Petrel are known to occur in Alaska waters. CMH

North Pacific
Fulmars and shearwaters, storm-petrels
Cook's Petrel, Leach's Storm-Petrel
Distribution, taxonomy, anatomy, plumage

10. BAILEY, A.M. 1926. Additional records from Arctic Alaska. Condor 28:246.

Specimens of three species collected at Barrow and Wainwright are recorded, including Least and Crested Auklets. CMH

Arctic - Chukchi (Barrow, Wainwright)
Alcids
Crested Auklet, Least Auklet
Distribution, specimen record

11. BAILEY, A.M. 1929. The Siberian Bank Swallow and other records from Point Barrow, Alaska. Auk 46:550-551.

Specimen records of three species of gull collected in September 1929 are reported. REG

Arctic - Chukchi (Barrow)
Gulls and terns
Thayer's Gull, Ivory Gull, Black-legged Kittiwake
Specimen record, distribution

12. BAILEY, A.M. 1931. Specimens from Point Barrow, Alaska. Condor 33:78.

Several specimens of Puffinus tenuirostris are reported from the "sea ice" during November and December 1929. Many of the specimens were "caught in the ice, some frozen solidly, and others still alive, too weak to rise." REG

Arctic - Chukchi (Barrow)
Fulmars and shearwaters
Short-tailed Shearwater
Specimen record, distribution

13. BAILEY, A.M. 1934. Ring-billed Gull from Barrow, Alaska - a correction. Condor 36:248.

A specimen of Larus canus was misidentified as Larus delawarensis (Bailey and Bishop, Condor 36:169, 1934). REG

Arctic - Chukchi (Barrow)
Gulls and terns
Ring-billed Gull, Mew Gull
Specimen record, distribution

14. BAILEY, A.M. 1956. The Bean Goose and other birds from St. Lawrence Island, Alaska. Auk 73:560.

This note presents the first record of a Bean Goose (Anser fabalis serrirostris) collected in North America, and records specimens of six other uncommon species collected on St. Lawrence Island between 1950 and 1953. CMH

Bering Sea - St. Lawrence Is.
Fulmars and shearwaters, gulls and terns
Short-tailed Shearwater, Ivory Gull
Distribution, specimen record

15. BAILEY, A.M., and L.B. BISHOP. 1934. Additional records for the Barrow region, Arctic Alaska. Condor 36:169.

This short note reports specimens of six species not previously recorded from the Barrow region, including the Ring-billed Gull, Parakeet Auklet, and Hudsonian Godwit. REG

Arctic - Beaufort (Colville R., Cape Halkett), Chukchi (Barrow)
Gulls and terns, alcids
Ring-billed Gull, Parakeet Auklet
Distribution, specimen record

16. BAILEY, E.P. 1973. Discovery of a Kittlitz's Murrelet nest. Condor 75:457.

This report of a Kittlitz's Murrelet nest found near Cold Bay in July 1972 was the fourth nesting record for this species in Alaska. REG

North Pacific - (Alaska Peninsula)
Alcids
Kittlitz's Murrelet
Reproduction, distribution

17. BAILEY, E.P. 1973. Kittlitz's Murrelet, report on a rare bird. Alaska Mag. 39(8):33.

This is a brief account of the discovery of a Kittlitz's Murrelet nest, written for the general public. Included are color pictures of the egg, downy young, and nesting habitat. CMH

North Pacific - (Alaska Peninsula)
Alcids
Kittlitz's Murrelet
Public interest

18. BAILEY, E.P. 1975. Proposed Alaskan seabird refuges (slide presentation). Pac. Seabird Group Bull. 2(1):40-41. (Abstract)

This gives a brief overview of the marine resources found along coastal Alaska, and emphasizes the need for coastal wildlife refuges. MRP

Alaska
Seabirds
Habitat, public interest, management

19. BAILEY, E. 1977. Breeding seabird distribution and abundance along the south side of the Kenai Peninsula, Alaska. Pac. Seabird Group Bull. 4(1):21-22. (Abstract)

The area along the south side of the Kenai Peninsula between Cook Inlet and Seward was surveyed from June 19 to July 14, 1976. The largest concentrations of birds are noted. MRP

Gulf of Alaska - Prince William Sound
Fulmars and shearwaters, gulls and terns, alcids
Northern Fulmar, Fork-tailed Storm-Petrel, Glaucous-winged Gull, Black-legged Kittiwake, Common Murre, Kittlitz's Murrelet, Rhinoceros Auklet, Horned Puffin, Tufted Puffin
Abundance, distribution

20. BAILEY, E.P. 1978. Breeding seabird distribution and abundance in the Shumagin Islands, Alaska. Murrelet 59:82-91.

This paper provides population estimates, by island, of the 18 species of seabirds found breeding on the Shumagin Islands. Most of the data was gathered on reconnaissance surveys during three summers, but information from historical and recent studies is also summarized. The presence of red foxes is discussed in relation to the distribution of seabirds on the islands. CMH

North Pacific - (Shumagin Is.)
Seabirds
Distribution, abundance, annotated list, predation

21. BAILEY, E.P. 1978. Breeding seabird distribution and abundance in the Shumagin Islands, Alaska. Pac. Seabird Group Bull. 5(1):50-51. (Abstract)

This paper presents information on the distribution and abundance of seabirds on the Shumagin Islands. The influence of red and arctic foxes on seabird distribution is discussed. MRP

North Pacific - (Shumagin Is.)
Seabirds
Abundance, distribution, predation

22. BAILEY, E.P. 1978. Breeding seabird distribution and abundance of the Sandman Reefs, Alaska. Pac. Seabird Group Bull. 5(2):78. (Abstract)

The author estimates the populations of diurnal seabirds on 31 islands of the Sandman Reefs. MRP

North Pacific - (Sandman Reefs)
Seabirds
Abundance, distribution

23. BAILEY, E.P. 1979. Summer distribution and abundance of marine birds between Mitrofania and Sutwik Islands south of the Alaska Peninsula. Pac. Seabird Group Bull. 6(2):39. (Abstract)

This paper reports on the abundance and distribution of seabirds found on islands and adjacent mainland from Mitrofania to Sutwik during a survey in July 1979. MRP

Gulf of Alaska - Kodiak (Alaska Peninsula)
Seabirds
Abundance, distribution

24. BAILEY, E.P., and G.H. DAVENPORT. 1972. Die-off of Common Murres on the Alaska Peninsula and Unimak Island. Condor 74:215-219.

This paper documents a massive die-off of Common Murres in Bristol Bay during an intense storm in April 1970. Aerial and ground surveys were conducted to determine the number of birds cast ashore and specimens were examined for cause of mortality. CMH

Bering Sea - Bristol Bay (Alaska Peninsula)
Alcids
Common Murre
Mortality

25. BAIRD, P. 1978. Comparative ecology of Arctic and Aleutian Terns. Pac. Seabird Group Bull. 5(1):45-46. (Abstract)

This paper describes habitats used by Arctic and Aleutian Terns in the Sitkalidak Strait area of Kodiak Island. Amount of vegetative cover and nesting chronology are assessed as factors influencing reproductive success. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Gulls and terns
Arctic Tern, Aleutian Tern
Habitat, reproduction

26. BAIRD, P.A. 1979. Changes in reproductive success and food habits of three marine birds at Kodiak Island, Alaska. Pac. Seabird Group Bull. 6(2):27. (Abstract)

This paper reports on the breeding success and foods of Glaucous-winged Gulls, Black-legged Kittiwakes, and Tufted Puffins in 1977 and 1978. Interspecific differences are noted. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Gulls and terns, alcids
Glaucous-winged Gull, Black-legged Kittiwake, Tufted Puffin
Reproduction, food

27. BAIRD, P.A., and M.A. HATCH. 1979. Breeding biology and feeding habits of seabirds of Sitkalidak Strait, 1977-1978, pp. 107-186. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

A two-year study of the comparative breeding biology and feeding ecology of five species of seabirds was conducted on Kodiak Island. Differences in productivity are discussed in relation to presumed prey availability. Appended is an annotated list of all birds and mammals observed in 1978. Of the 36 species of birds noted, 24 are water-associated. CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Gulls and terns, alcids
Glaucous-winged Gull, Black-legged Kittiwake, Arctic Tern, Aleutian Tern, Tufted Puffin
Breeding biology, abundance, food, growth, population dynamics, annotated list

28. BAIRD, P.A., and R.A. MOE. 1978. The breeding biology and feeding ecology of marine birds in the Sitkalidak Strait area, Kodiak Island, 1977, pp. 313-524. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators. Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

Detailed information on the abundance, habitat use, and reproductive and feeding ecology is presented for Glaucous-winged Gulls, Black-legged Kittiwakes, Arctic and Aleutian Terns, and Tufted Puffins. Sightings of eight species of shorebirds and two other species of seabirds are summarized. CMH

Gulf of Alaska - Kodiak (Sitkalidak Strait)
Gulls and terns, alcids
Glaucous-winged Gull, Black-legged Kittiwake, Arctic Tern, Aleutian Tern, Pigeon Guillemot, Horned Puffin, Tufted Puffin
Breeding biology, food, habitat, growth, abundance

29. BAIRD, S.F. 1869. On additions to the bird-fauna of North America, made by the Scientific Corps of the Russo-American Telegraph Expedition. Trans. Chicago Acad. Sci. 1:311-325.

In this paper, the Aleutian Tern and four land bird species are described as new to science. (From T. J. Cade, 1953, A Synoptic Review of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen). CMH

Alaska
Gulls and terns
Aleutian Tern
Specimen record

30. BARTELS, R.F. 1973. Bird survey techniques on Alaska's north coast. M.S. thesis. Iowa State Univ., Ames. 47 pp.

This paper evaluates aerial survey techniques for estimating bird populations, and reports on the distribution of postbreeding waterfowl in Alaska Arctic coastal waters. MRP

Arctic - Beaufort
Seabirds
Techniques

31. BARTONEK, J.C. 1968. A Survey of Migratory Bird Problems in Alaska for the Purpose of Identifying Research Needs. Unpublished progress report. U.S. Fish and Wildlife Service, Northern Prairie Wildlife Research Center, Jamestown, N.D. 36 pp.

This paper identifies and discusses potential problems arising from resource development and hunting, describes responsibilities of various management agencies, and suggests specific research projects which should be conducted in the state. CMH

Alaska
Seabirds
Management, research

32. BARTONEK, J.C., R. ELSNER, and F.H. FAY. 1974. Mammals and birds, pp. 23-28. In E.J. Kelley and D.W. Hood (eds.), PROBES: A Prospectus on Processes and Resources of the Bering Sea Shelf, 1975-1985. Public Inform. Bull. 74-1. Univ. Alaska, Inst. Mar. Sci., Fairbanks.

This paper broadly discusses the bird and mammal resources of the Bering Sea. Their ecological and economic importance, and potential conflicts with mineral and petroleum exploitation and the fishing industry are assessed. Recommendations for research are made. CMH

Bering Sea
Seabirds
Research, management, pollution

33. BARTONEK, J.C., and D.D. GIBSON. 1972. Summer distribution of pelagic birds in Bristol Bay, Alaska. Condor 74:416-422.

The authors report on the distribution and abundance of 32 species of pelagic birds observed in Bristol Bay during July and August 1969. MRP

Bering Sea - Bristol Bay
Seabirds
Distribution, annotated list, abundance

34. BARTONEK, J.C., J.G. KING, and H.K. NELSON. 1971. Problems confronting migratory birds in Alaska. Trans. N. Am. Wildl. Conf. 36:345-361.

This paper provides a general review of the principal nesting habitats of breeding waterfowl, shorebirds, and seabirds; identifies the state and federal agencies managing these habitats; and discusses the types of resource development which may adversely affect birds. Recommendations for research and for protection of avian habitats are made. MRP

Alaska
Seabirds
Management, research

35. BARTONEK, J.C., and D.N. NETTLESHIP (eds.). 1979. Conservation of Marine Birds of Northern North America. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11. 319 pp.

This research report contains papers presented during the International Symposium on the Conservation of Marine Birds of Northern North America, May 13-15, 1975. Topics include marine environment of birds; status of marine bird populations; the biology and ecology of marine birds in the north; conflicts between the conservation of marine birds and uses of other resources; programs and authorities related to marine bird conservation; and conservation of marine birds in other lands. MRP

Alaska
Seabirds
Abundance, distribution, fishing, food, habitat, management, mortality, pollution, population dynamics, predation, research, status, taxonomy, zoogeography

36. BARTONEK, J.C., and S.G. SEALY. 1979. Distribution and status of marine birds breeding along the coasts of the Chukchi and Bering Seas. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:21-31.

This paper describes the status and distribution of the species of marine birds breeding along the coasts of the Chukchi and Bering Seas, and identifies gaps in our knowledge of the area. Recommendations for further research are presented. MRP

Arctic - Chukchi
Bering Sea
Seabirds
Distribution, status, research

37. BÉDARD, J. 1966. New records of alcids from St. Lawrence Island, Alaska. Condor 68:503-506.

This note records the occurrence of four species of alcids rare in or new to the St. Lawrence Island area. Measurements of specimens are given, and the potential breeding status of each species is discussed. CMH

Bering Sea - St. Lawrence Is.
Alcids
Dovekie, Black Guillemot, Marbled Murrelet, Ancient Murrelet
Distribution, status, specimen record

38. BÉDARD, J. 1967. Ecological segregation among plankton-feeding Alcidae (Aethia and Cyclorrhynchus). Ph.D. thesis. Univ. British Columbia, Vancouver. 177 pp.

Not reviewed.

Bering Sea - St. Lawrence Is.
Alcids
Parakeet Auklet, Crested Auklet, Least Auklet
Habitat, breeding biology, food, anatomy, abundance

39. BÉDARD, J. 1969. Adaptive radiation in Alcidae. Ibis 111:189-198.

This paper traces the adaptive radiation of the Alcidae, through a detailed study of the morphology of the feeding apparatus, body size, and specialized feeding habits of each species. CMH

Alaska
Alcids
Taxonomy, food, anatomy

40. BÉDARD, J. 1969. Feeding of the Least, Crested, and Parakeet Auklets around St. Lawrence Island. Can. J. Zool. 47:1025-1050.

The author examines the feeding habits of three plankton-feeding alcids nesting on St. Lawrence Island to determine the amount of niche segregation and overlap. Composition of diet, foraging habits, and morphology of feeding apparatus are considered. CMH

Bering Sea - St. Lawrence Is.
Alcids
Parakeet Auklet, Crested Auklet, Least Auklet
Food, anatomy

41. BÉDARD, J. 1969. The nesting of the Crested, Least, and Parakeet Auklets on St. Lawrence Island, Alaska. Condor 71:386-398.

This paper, based on a four-year study, presents a detailed analysis of segregation in selection of nesting habitat by three species of auklets. All major colonies on the island are catalogued, and population estimates of Least and Crested Auklets are given for each colony. The relationship between nesting densities of these two species and the physical parameters of the habitat are examined. CMH

Bering Sea - St. Lawrence Is.
Parakeet Auklet, Crested Auklet, Least Auklet
Habitat, abundance, breeding biology

42. BÉDARD, J. 1976. Coexistence, coevolution, and convergent evolution in seabird communities: A comment. Ecology 57:177-184.

Relying largely on information gathered during his own studies of alcids in the Bering Sea region, the author delivers a comprehensive criticism of Cody's comparison (Ecology 54:31-44, 1973) of an alcid community of Washington with one of Iceland. CMH

Bering Sea
Alcids
Breeding biology, food, anatomy

43. BEHLE, W.H. 1941. Additional data concerning the subspecific status of the cormorants of Great Slave Lake. Condor 43:286-289.

Brief reference is made to specimens of Phalacrocorax auritus from Kodiak, Alaska. REG

Gulf of Alaska - Kodiak (Kodiak Is.)
Cormorants
Double-crested Cormorant
Taxonomy

44. BENDIRE, C. 1895. Notes on the Ancient Murrelet (Synthliboramphus antiquus), by Chase Littlejohn, with annotations. Auk 12:270-278.

This paper reports general observations of the Ancient Murrelet and other nocturnal species nesting on islands south of the Alaska Peninsula in 1894. Included are notes on behavior, nesting habitat, egg coloration and size, and the taking of birds and eggs for subsistence. "Large" flocks of Crested Auklets were noted at sea. CMH

North Pacific - Alaska Peninsula
Gulf of Alaska - Kodiak (Alaska Peninsula)
Storm-petrels, alcids
Fork-tailed Storm-Petrel, Leach's Storm-Petrel, Ancient Murrelet, Cassin's Auklet, Crested Auklet
Reproduction, habitat, behavior, subsistence, distribution

45. BENT, A.C. 1918. Pterodroma gularis in North America. Auk 35:221-222.

This note reports two specimens of Pterodroma gularis (= P. inexpectata, Scaled Petrel) from Alaska, the first and second records of this species for North America. REG

North Pacific - (Alaska Peninsula)
Aleutians - (Kiska Is.)
Fulmars and shearwaters
Scaled Petrel
Distribution, specimen record

46. BENT, A.C. 1919. Life Histories of North American Diving Birds. U.S. Natl. Mus. Bull. 107. 245 pp.

This is one part of the classic series on the life histories of North American birds. Accounts include detailed observations of various aspects of each species' life history. MRP

Alaska
Alcids
Abundance, behavior, breeding biology, distribution, food, habitat, migration, plumage, status, subsistence

47. BENT, A.C. 1921. Life Histories of North American Gulls and Terns. U.S. Natl. Mus. Bull. 113. 345 pp.

This is one part of the classic series on the life histories of North American birds. Accounts include detailed observations of various aspects of each species' life history. MRP

Alaska
Jaegers, gulls and terns
Abundance, behavior, breeding biology, distribution, food, habitat, migration, plumage, status

48. BENT, A.C. 1922. Life Histories of North American Petrels, Pelicans, and their Allies. U.S. Natl. Mus. Bull. 121. 343 pp.

This is one part of the classic series on the life histories of North American birds. Accounts include detailed observations of various aspects of each species' life history. MRP

Alaska
Albatrosses, fulmars and shearwaters, storm-petrels, cormorants
Abundance, behavior, breeding biology, distribution, food, status, habitat, migration, plumage

49. BENT, A.C. 1929. A flight of Ross' Gulls. Auk 46:224-225.

The author reports an unusual observation of thousands of Ross' Gulls close to shore at Barrow in late fall 1928. Subsistence use is mentioned, and a description of the fresh, adult winter plumage is given. Ivory Gulls are noted as scarce that fall. CMH

Arctic - Chukchi (Barrow)
Gulls and terns
Ivory Gull, Ross' Gull
Abundance, plumage, subsistence

50. BIDERMAN, J.O., and W.H. DRURY. 1978. Ecological studies in the northern Bering Sea: Studies of seabirds in the Bering Strait, pp. 751-838. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report provides information on the abundance, phenology, activity patterns, reproductive success, and feeding ecology of 11 species of seabirds nesting on Little Diomede Island in 1977. Data on the pelagic distribution of murres and auklets are also presented. Implications of petroleum development are discussed. CMH

Arctic - Chukchi
Bering Sea - Little Diomede Is., Norton Sound
Cormorants, gulls and terns, alcids
Pelagic Cormorant, Glaucous Gull, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Pigeon Guillemot, Parakeet Auklet, Crested Auklet, Least Auklet, Horned Puffin, Tufted Puffin
Reproduction, status, abundance, food, population dynamics, pollution, disturbance

51. BIDERMAN, J.O., W.H. DRURY, F.B. FRENCH, JR., and S. HINCKLEY. 1978. Ecological studies in the northern Bering Sea: Birds of coastal habitats on the south shore of Seward Peninsula, Alaska, pp. 510-613. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents information on the abundance, reproductive ecology, and foods of seabirds at several sites in Norton Sound in 1977. Concentrations of waterfowl in coastal habitats are mapped and discussed. Reproductive success of Whistling Swans is summarized. Census techniques, measurements of reproductive success, suggestions for future research, and possible effects of oil development are discussed. CMH

Bering Sea - Norton Sound
Seabirds
Abundance, reproduction, food, techniques, research, pollution, disturbance

52. BISHOP, L.B. 1927. The plumages of certain gulls. Condor 29:201-202.

The juvenile plumages of certain Arctic gulls are discussed. Reference is made to specimens of Larus hyperboreus from St. Michael, Alaska. REG

Bering Sea - Yukon Delta (St. Michael)
Gulls and terns
Glaucous Gull
Plumage, specimen record

53. BISHOP, L.B. 1927. The status of the Point Barrow Gull. Condor 29:204-205

The taxonomy of the Glaucous Gull is discussed, and the Point Barrow population is recognized as a distinct race, Larus hyperboreus barrovianus. Measurements are presented. NMH

Alaska
Gulls and terns
Glaucous Gull, Iceland Gull
Taxonomy, anatomy

54. BOEKELHEIDE, R.J., and G.J. DIVOKY. 1978. The role of sea-ice for Arctic Terns breeding on an Arctic Alaska barrier island. Pac. Seabird Group Bull. 5(1):52. (Abstract)

This paper reports on aspects of phenology, nesting success, and feeding ecology of Arctic Terns on Cooper Island. The melt and movement of ice and the food associated with it are discussed as factors influencing breeding phenology and migration. MRP

Arctic - Beaufort (Cooper Is.)
Gulls and terns
Arctic Tern
Breeding biology, food

55. BOEKELHEIDE, R., and G. DIVOKY. 1979. Post-breeding migration of Arctic Terns in northwestern Alaska. Pac. Seabird Group Bull. 6(2):42. (Abstract)

This paper reports on the fall migration of Arctic Terns past Cooper Island in 1976. The timing and intensity of migration are discussed in relation to the availability of patchily concentrated food items and sea-ice conditions in inshore waters. MRP

Arctic - Beaufort (Cooper Is.)
Gulls and terns
Arctic Tern
Migration, food

56. BOERSMA, D. 1977. Breeding biology of Fork-tailed Petrels in the Barren Islands, Alaska. Pac. Seabird Group Bull. 4(1):16. (Abstract)

The breeding biology of Fork-tailed Storm-Petrels was studied during 1976 on the Barren Islands. The influence of storms on nesting success is discussed. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Storm-petrels
Fork-tailed Storm-Petrel
Breeding biology

57. BOERSMA, P.D. 1979. Incubation and burrow temperatures of Fork-tailed Storm-Petrels. Pac. Seabird Group Bull. 6(2):26. (Abstract)

This paper reports on temperatures of eggs and burrows of Fork-tailed Storm-Petrels. The possible effects of extremely low temperatures and of egg neglect on the length of the incubation period are discussed. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Storm-petrels
Fork-tailed Storm-Petrel
Physiology, breeding biology

58. BOERSMA, D., and N.T. WHEELWRIGHT. 1978. Egg-neglect in the Fork-tailed Storm-Petrel (Oceanodroma furcata). Pac. Seabird Group Bull. 5(1):46. (Abstract)

This paper describes the incidence of egg and chick neglect in the Fork-tailed Storm-Petrel, and discusses the adaptive significance of the ability of embryos and chicks to survive temporary abandonment. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Storm-petrels
Fork-tailed Storm-Petrel
Physiology, breeding biology

59. BOERSMA, P.D., and N.T. WHEELWRIGHT. 1979. Egg neglect in the Procellariiformes: Reproductive adaptations in the Fork-tailed Storm-Petrel. Condor 81:157-165.

This paper reports the incidence of egg neglect in the Fork-tailed Storm-Petrel, and discusses the adaptive significance and costs of egg neglect in Procellariiform birds. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Storm-petrels
Fork-tailed Storm-Petrel
Physiology, breeding biology

60. BOERSMA, P.D., N.T. WHEELWRIGHT, M.K. NERINI, and E.S. WHEELWRIGHT. 1980. The breeding biology of the Fork-tailed Storm-Petrel (Oceanodroma furcata). Auk 97:268-282.

This paper presents information on the breeding biology of Fork-tailed Storm-Petrels, and discusses their reproductive strategy. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Storm-petrels
Fork-tailed Storm-Petrel
Breeding biology, growth

61. BOGGS, R.M., and E.M. BOGGS. 1964. Sight record of Short-tailed Albatross. Murrelet 45:48.

Reported are two sightings of Short-tailed Albatross near Attu Island. REG

Aleutians - (Attu Is.)
Albatrosses
Short-tailed Albatross
Distribution

62. BOURNE, W.R.P. 1970. Observations of seabirds. Sea Swallow 20:47-54.

This compilation of seabird observations by bird watchers of the Royal Navy includes several sightings in Alaska waters. NMH

Aleutians
North Pacific
Fulmars and shearwaters, gulls and terns
Short-tailed Shearwater, Ivory Gull
Distribution

63. BRANDT, J.F. 1837. Observations sur plusiers espéces nouvelles du genre Carbo ou Phalacrocorax que se trouvent dans le Museum de l'Academie des Sciences de St. Petersbourg. Bull. Sci. Acad. Imp. Sci. St. Petersb., III, no. 4, Nov. 16, col. 53-57.

"White-crested Cormorant described. Type locality: Kodiak Island." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Cormorants
Double-crested Cormorant
Specimen record, taxonomy

64. BRAUN, B.M. 1978. Thermoregulation in Black-legged Kittiwake young. Pac. Seabird Group Bull. 5(2):88. (Abstract)

The development of the thermoregulatory capabilities of one kittiwake chick is reported. MRP

Bering Sea - Pribilof Is.
Gulls and terns
Black-legged Kittiwake
Physiology

65. BRECKENRIDGE, W.J. 1966. Dovekie on Little Diomede Island, Alaska. Auk 83:680.

The author reports the collection of two Dovekies on Little Diomede Island in 1965 and postulates the existence of a small breeding population there. CMH

Bering Sea - Little Diomede Is.
Alcids
Dovekie
Distribution, status

66. BROOKS, J.W., J.C. BARTONEK, D.R. KLEIN, D.L. SPENCER, and A.S. THAYER. 1971. Environmental Influences of Oil and Gas Development in the Arctic Slope and Beaufort Sea. U.S. Fish and Wildl. Serv. Resour. Publ. 96. 24 pp.

This paper describes in general the physical and demographic characteristics, fish and wildlife resources, and anticipated developments of the region, and outlines conflicts which are likely to arise. Recommendations are presented to mitigate environmental disturbance. CMH

Arctic
Seabirds
Management, disturbance, pollution, research

67. BROWN, R.G.B., N.G. BLURTON JONES, and D.J.T. HUSSELL. 1967. The breeding behaviour of Sabine's Gull, Xema sabini. Behaviour 28:110-140.

This paper describes in detail the breeding behavior of the Sabine's Gull, relates it to the species' ecology, and compares it with that of other gulls to clarify taxonomic affinities. CMH

Bering Sea - Yukon Delta (Hooper Bay)
Gulls and terns
Sabine's Gull
Behavior, plumage, anatomy, habitat

68. BUCKLEY, F.G., and P.A. BUCKLEY. 1979. Do Aleutian Terns exhibit extraordinary anti-predator adaptions? Proc. Conf. Colonial Waterbird Group 3:99-107.

This paper describes anti-predator strategies of Aleutian Terns in monospecific and mixed species colonies. MRP

Bering Sea - Norton Sound (Safety Lagoon)
Gulf of Alaska - Copper River (Copper R. Delta)
Gulls and terns
Arctic Tern, Aleutian Tern
Behavior, breeding biology, predation

69. BURRELL, G.C., and L.L. LESCHNER. 1977. A comparison of three species of puffins on Chowiet Island, Alaska. Pac. Seabird Group Bull. 4(1):19. (Abstract)

This paper describes differences in nesting habitat, nesting chronology and success, and growth rates of chicks. Relationships among the feeding ecology, growth rates, and nesting success are discussed. MRP

Gulf of Alaska - Kodiak (Semidi Is.)
Alcids
Rhinoceros Auklet, Horned Puffin, Tufted Puffin
Breeding biology, growth, food

70. BYRD, G.V. 1978. Red-legged Kittiwake colonies in the Aleutian Islands, Alaska. Condor 80:250.

This note describes new breeding colonies of Red-legged Kittiwakes on Buldir Island and Bogoslof Island. MRP

Aleutians - (Buldir Is., Bogoslof Is.)
Gulls and terns
Black-legged Kittiwake, Red-legged Kittiwake
Abundance, distribution

71. BYRD, G.V., and G.J. DIVOKY. 1976. The birds of Bogoslof Island: A recently active volcano. Pac. Seabird Group Bull. 3(1):33-34. (Abstract)

This paper reviews historical information and presents recent data on the colonization of the island by seabirds. MRP

Aleutians - (Bogoslof Is.)
Storm-petrels, gulls and terns, alcids
Distribution, status

72. BYRD, G.V., and T.G. TOBISH. 1978. Wind-caused mortality in a kittiwake colony at Buldir Island, Alaska. Murrelet 59:37.

This note documents mortality of chicks and adults caused by an unusually severe summer storm. CMH

Aleutians - (Buldir Is.)
Gulls and terns
Black-legged Kittiwake, Red-legged Kittiwake
Mortality

73. CANTWELL, G.G. 1898. A June day on Egg Island. Outing 5:241-244.

This semi-popular article is a narrative of a short expedition to seabird colonies on several islands in southeastern Alaska. The author includes descriptions of the birds, their burrows, and his subsistence use of their eggs. MRP

Gulf of Alaska - Southeastern
Storm-petrels, gulls and terns, alcids
Public interest

74. CANTWELL, G.G. 1898. Notes on the egg of the Marbled Murrelet. Auk 15:49.

An egg procured from a specimen of the Marbled Murrelet is described. NMH

Gulf of Alaska - Southeastern (Long Is.)
Alcids
Marbled Murrelet
Distribution, specimen record

75. CANTWELL, G.G. 1898. On isolated Alaskan islands. Osprey 2:63-65.

This provides a "description of species noted on a bird rookery 200 miles west of Fort Wrangell." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Gulf of Alaska - Southeastern (Wrangell)
Seabirds
Distribution

76. CHICHESTER, N.D. 1908. Report on condition of affairs on St. George Island. August 14, 1905 to June 1, 1906, pp. 47-58. In W. L. Lembkey et al., Reports Relating to Alaska Seal Fisheries, Senate Doc. 376, 60th Congr., 1st Sess.

This report "records in discussion of food of foxes the occurrence of vast numbers of 'Sea Quail' (Simorhynchus cristatellus)." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Bering Sea - Pribilof Is. (St. George Is.)
Alcids
Crested Auklet
Abundance, predation

77. CLINE, D.R., C. WENTWORTH, and T.W. BARRY. 1979. Social and economic values of marine birds. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:173-182.

This paper reviews the commercial, subsistence, recreational, scientific, and educational values of marine birds. The need for managers to consider all of the uses of marine birds is stressed. MRP

Alaska
Seabirds
Management, subsistence

78. COOKE, M.T. 1943. Returns from banded birds: Some miscellaneous recoveries of interest. Bird-Banding 14:67-74.

Mention is made of a Black-footed Albatross banded at Midway and recovered near Cape Omaney, Alaska. CMH

Gulf of Alaska - Southeastern (Cape Omaney)
Albatrosses
Black-footed Albatross
Distribution, migration

79. COOKE, W.W. 1915. Distribution and Migration of North American Gulls and their Allies. U.S. Dept. Agric. Bull. 292. 70 pp.

This work "contains a number of pertinent references to Alaskan matters." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Alaska
Gulls and terns
Distribution, migration

80. COTTAM, C., and P. KNAPPEN. 1939. Food of some uncommon North American birds. Auk 56:138-169.

This paper provides information on the foods of 47 species of birds, including six species collected in Alaska. CMH

Alaska
Albatrosses, fulmars and shearwaters, alcids
Black-footed Albatross, Short-tailed Shearwater, Whiskered Auklet
Food

81. COUES, E. 1874. Birds of the Northwest. U.S. Geological Survey of the Territories. Misc. Publ. 3. 791 pp.

This work "contains (pp. 696-698) a discussion on the status of the Aleutian Tern." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Gulls and terns
Aleutian Tern
Status

82. CRAIGHEAD, L., and J.J. HICKEY. 1977. A census of Pribilof seabirds: Some aspects of daily ledge attendance. Pac. Seabird Group Bull. 4(1):24. (Abstract)

This describes the techniques used to estimate the numbers of seabirds nesting on ledges and in crevices of cliffs on the Pribilof Islands. MRP

Bering Sea - Pribilof Is.
Seabirds
Techniques

83. CROSSIN, R.S. 1974. The storm-petrels (Hydrobatidae). Smithson. Contrib. Zool. 158:154-205.

This paper presents information on the pelagic distribution, breeding biology, molt, and taxonomy of storm-petrels. MRP

Aleutians
North Pacific
Storm-petrels
Fork-tailed Storm-Petrel, Leach's Storm-Petrel
Distribution, breeding biology, plumage, taxonomy

84. DAWSON, W.L. 1913. The Tufted Puffin. Bird-Lore 15:268-271.

Not reviewed.

Alcids
Tufted Puffin

85. DAY, R.H. 1980. The occurrence and characteristics of plastic pollution in Alaska's marine birds. M.S. thesis. Univ. Alaska, Fairbanks. 111 pp.

This reports on the occurrence and variation of plastic particles found in stomachs of 1,968 individuals comprising 37 species of marine birds. The incidence of plastic is examined in relation to the feeding habits of each species, and trends noted from 1969 to 1977 are discussed. MRP

Alaska
Seabirds
Pollution, food

86. DEAN, F.C., P. VALKENBURG, and A.J. MAGOUN. 1976. Inland migration of jaegers in northeastern Alaska. Condor 78:271-273.

This note reports a major spring movement of jaegers north through the Brooks Range in May 1972, and discusses the inconsistency in migratory patterns of this group. MRP

Arctic - Beaufort (Canning R.)
Jaegers
Pomarine Jaeger, Parasitic Jaeger, Long-tailed Jaeger
Migration

87. DEGANGE, A.R. 1978. Observations on the Mortality of Seabirds in Japanese Salmon Gillnets Made from the Oshoro Maru and Hokusei Maru, Summer 1978. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 38 pp.

This report provides information on the incidental catch of seabirds in drift nets set to catch salmon in the Bering Sea and North Pacific Ocean. Estimates of mortality are presented and ways to reduce mortality are discussed. MRP

North Pacific
Bering Sea
Fulmars and shearwaters, storm-petrels, alcids
Northern Fulmar, Sooty Shearwater, Short-tailed Shearwater, Fork-tailed Storm-Petrel, Thick-billed Murre, Ancient Murrelet, Horned Puffin, Tufted Puffin
Fishing, mortality, research

88. DEGANGE, A. 1978. Seabird mortality in high seas gillnets. Pac. Sabird Group Bull. 5(2):84. (Abstract)

This reports on gillnet mortality of seabirds on the high seas. MRP

North Pacific
Bering Sea
Fulmars and shearwaters, storm-petrels, alcids
Northern Fulmar, Sooty Shearwater, Short-tailed Shearwater, Fork-tailed Storm-Petrel, Thick-billed Murre, Ancient Murrelet, Horned Puffin, Tufted Puffin
Mortality, management, fishing

89. DEGANGE, A.R. 1978. An update on the incidental mortality of seabirds in Japanese gillnets. Pac. Seabird Group Bull. 5(2):34-35.

This update presents further information on gillnet mortality of seabirds in the Bering Sea. Possible changes in mortality in the future due to a reduction in fishing effort are discussed. MRP

Bering Sea
Fulmars and shearwaters, storm-petrels, alcids
Northern Fulmar, Sooty Shearwater, Short-tailed Shearwater, Fork-tailed Storm-Petrel, Thick-billed Murre, Ancient Murrelet, Horned Puffin, Tufted Puffin
Mortality, fishing, management

90. DEGANGE, A.R., and J.W. NELSON. 1978. Additional Studies of Seabirds on the Forrester Island National Wildlife Refuge, 31 May - 17 June, 1977. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 29 pp.

This is a report of a short-term study of seabirds on the Forrester Island National Wildlife Refuge in 1977. Emphasis was on establishing permanent study plots, and determining breeding densities for comparison in other years. MRP

Gulf of Alaska - Southeastern (Forrester Island NWR)
Fulmars and shearwaters, storm-petrels, alcids
Northern Fulmar, Short-tailed Shearwater, Fork-tailed Storm-Petrel, Leach's Storm-Petrel, Common Murre, Cassin's Auklet, Rhinoceros Auklet
Abundance, habitat

91. DEGANGE, A.R., E.E. POSSARDT, and D.A. FRAZER. 1977. The Breeding Biology of Seabirds on the Forrester Island National Wildlife Refuge 15 May to 1 September 1976. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 62 pp.

This report presents information on the abundance, distribution, and reproductive success of seabirds nesting on Forrester and Petrel Islands. An annotated list of 98 species of birds is included. MRP

Gulf of Alaska - Southeastern (Forrester Is. NWR)
Fulmars and shearwaters, storm-petrels, cormorants, gulls and terns, alcids
Annotated list, abundance, habitat, breeding biology, predation, food, growth

92. DEMENT'EV, G.P., and N.A. GLADKOV (eds.). 1951. Birds of the Soviet Union, Vol. 1. [Transl. from Russian.] Israel Prog. Sci. Transl., Jerusalem. 704 pp.

This volume contains natural history accounts of all species of Phalacrocoracidae occurring in the Soviet Union. Some information on species occurring in Alaska is included. MRP

Alaska
Cormorants
Abundance, distribution, behavior, breeding biology, food, habitat, migration, status, taxonomy, plumage

93. DEMENT'EV, G.P., and N.A. GLADKOV (eds.). 1951. Birds of the Soviet Union, Vol. 2. [Transl. from Russian.] Israel Prog. Sci. Transl., Jerusalem. 553 pp.

This volume contains natural history accounts of all species of cranes, alcids, loons, grebes, tubenoses, and herons occurring in the Soviet Union. Some information on species also occurring in Alaska is included. MRP

Alaska
Albatrosses, fulmars and shearwaters, storm-petrels, alcids
Abundance, distribution, behavior, breeding biology, food, habitat, migration, status, taxonomy, plumage

94. DENSLEY, M. 1977. The Ross' Gull (Rhodostethia rosea) in Arctic Alaska. Polar Record 18:603-605.

The author presents a summary of historical records of this species and discusses his observations of the species near Barrow in late September 1975. REG

Arctic - Chukchi (Barrow)
Bering Sea
Gulls and terns
Ross' Gull
Status

95. DENSLEY, M. 1979. Ross' Gulls in Alaska. Br. Birds 72:23-28.

This paper provides a description of the plumage of adult and immature Ross' Gulls at Barrow in autumn 1975, with notes on their flight, feeding behavior, and molt. Feeding associations with Red Phalaropes and Sabine's Gulls are mentioned. CMH

Arctic - Chukchi (Barrow)
Gulls and terns
Ross' Gull, Sabine's Gull
Plumage, behavior, food

96. DICK, M. 1975. Competition between the Pelagic Cormorant and Black-legged Kittiwake and its possible effects. Pac. Seabird Group Bull. 2(1):33. (Abstract)

This paper compares the reproductive success of cormorants nesting alone with the success of those nesting in kittiwake colonies. Factors possibly responsible for discrepancies are discussed. MRP

Bering Sea - Bristol Bay (Cape Peirce)
Aleutian Islands - (Buldir Is.)
Cormorants, gulls and terns
Pelagic Cormorant, Red-faced Cormorant, Black-legged Kittiwake
Habitat, reproduction

97. DICK, M. 1976. Notes on the Breeding and Other Seabirds in Chiniak and Southern Marmot Bays, Kodiak Island, Alaska, 1975. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 17 pp.

This report identifies the locations of colonies and reports the number of seabirds breeding in the area. Notes on cormorants, shearwaters, eiders, oystercatchers, murres, puffins, guillemots, murrelets, auklets, kittiwakes, gulls, and terns are included. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Fulmars and shearwaters, cormorants, gulls and terns, alcids
Abundance, distribution, breeding biology, annotated list

98. DICK, M. 1979. Notes on the winter seabirds of Chiniak Bay, Kodiak Island, Alaska, pp. 492-516. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents an annotated list of the 42 species of marine birds observed in Chiniak Bay during the winter of 1976-1977. Information on food habits is presented for a few species. Methods for ageing Marbled Murrelets in winter are suggested. CMH

Gulf of Alaska - Kodiak (Chiniak Bay)
Seabirds
Annotated list, abundance, food, techniques, plumage

99. DICK, M.H., and W. DONALDSON. 1978. Fishing vessel endangered by Crested Auklet landings. Condor 80:235-236.

The authors describe the landing of at least 6,000 Crested Auklets aboard a fishing vessel between Raspberry Island and Kodiak Island on the evening of January 16, 1977. Measurements of birds are presented. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Alcids
Crested Auklet
Mortality, behavior, anatomy

100. DICK, M., I.M. WARNER, and R. MACINTOSH. 1976. Small Boat Census of Seabirds: Marmot and Chiniak Bays, Kodiak Island, Alaska, 28 June to 10 August 1975. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 11 pp.

The authors present data from small boat censuses, and discuss the advantages and disadvantages of censusing by this method. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Fulmars and shearwaters, cormorants, jaegers, gulls and terns, alcids
Abundance, techniques

101. DIVOKY, G.J. 1972. The pelagic birds and mammals of the Chukchi Sea in fall. M.S. thesis. Michigan State Univ., East Lansing. 97 pp.

This thesis describes the distribution of birds and mammals observed from a vessel in the eastern Chukchi Sea between September 22 and October 17, 1970. Species accounts are presented; the relation of the ice edge to the distribution of birds and their foods is discussed. MRP

Arctic - Chukchi
Seabirds
Distribution, abundance, food, migration

102. DIVOKY, G.J. 1975. The association of seabirds with the Arctic pack ice off Alaska. Pac. Seabird Group Bull. 2(1):36. (Abstract)

This paper reports observations of seabirds near the pack ice edge in the Beaufort, Chukchi, and Bering Seas. Concentrations of seabirds were correlated with plankton blooms in and under the ice. MRP

Arctic - Beaufort, Chukchi
Bering Sea
Gulls and terns, alcids
Glaucous Gull, Glaucous-winged Gull, Slaty-backed Gull, Ivory Gull, Black-legged Kittiwake, Ross' Gull, Common Murre, Thick-billed Murre, Black Guillemot
Distribution, food

103. DIVOKY, G. 1976. The distribution, abundance and feeding ecology of birds associated with the Bering and Beaufort Sea pack ice, pp. 53-106. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This initial report includes a preliminary delineation of coastal bird habitat between Cape Lisburne and Demarcation Point, based on physiographic characteristics. Qualitative observations on the densities of seabirds in the Chukchi Sea are presented. The breeding success of Arctic Terns and Black Guillemots on Cooper Island is discussed in relation to food supply. Appended is a paper discussing the pelagic feeding habits of Ivory and Ross' Gulls. CMH

Arctic - Chukchi, Beaufort
Seabirds
Ivory Gull, Ross' Gull, Arctic Tern, Black Guillemot
Habitat, reproduction, food

104. DIVOKY, G.J. 1976. The pelagic feeding habits of Ivory and Ross' Gull. Condor 78:85-90.

Data on the diets of Ross' and Ivory Gulls are presented from analysis of stomach contents. The importance of under-ice fauna as food is discussed. NMH

Arctic - Chukchi
Gulls and terns
Ivory Gull, Ross' Gull
Food, habitat

105. DIVOKY, G.J. 1977. The distribution, abundance and feeding ecology of birds associated with pack ice, pp. 525-573. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents preliminary results of a study of the distribution, abundance, and feeding ecology of birds associated with pack ice in the Bering, Chukchi, and Beaufort Seas. Information on distribution and abundance, obtained from shipboard cruises, is discussed. Potential impacts from oil spills are assessed. CMH

Arctic - Chukchi, Beaufort
Bering Sea
Fulmars and shearwaters, storm-petrels, jaegers, gulls and terns, alcids
Abundance, distribution, food, pollution

106. DIVOKY, G.J. 1978. The distribution, abundance, and feeding ecology of birds associated with pack ice, pp. 167-509. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report maps the distribution and abundance of each species of bird observed during 11 cruises in 1977 in the Bering, Chukchi, and Beaufort Seas. Stomach contents of Black-legged Kittiwakes and Common and Thick-billed Murres are tabulated. An appended report summarizes information on seasonal habitat use, reproductive phenology and success, and foods of birds on Cooper Island from 1975 to 1977. Effects of human disturbance are also discussed. CMH

Arctic - Chukchi, Beaufort
Bering Sea
Seabirds
Distribution, abundance, food, habitat, disturbance

107. DIVOKY, G.J. 1979. Sea ice as a factor in seabird distribution and ecology in the Beaufort, Chukchi, and Bering Seas. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:9-17.

This paper discusses the relationship of sea ice to seabirds. The amount of surface area available for feeding and roosting, the reduction of prey abundance due to ice scour, the decrease in productivity of water covered by ice, and the spring plankton bloom are addressed. MRP

Arctic - Beaufort, Chukchi
Bering Sea
Fulmars and shearwaters, storm-petrels, jaegers, gulls and terns, alcids
Distribution, habitat, food

108. DIVOKY, G.J., and R.J. BOEKELHEIDE. 1978. The breeding biology and population dynamics of the Black Guillemot in northern Alaska. Pac. Seabird Group Bull. 5(2):80. (Abstract)

This paper examines factors influencing the population dynamics of Black Guillemots on Cooper Island. MRP

Arctic - Beaufort (Cooper Is.)
Alcids
Black Guillemot
Breeding biology, population dynamics

109. DIVOKY, G.J., and A.E. GOOD. 1979. The distribution, abundance and feeding ecology of birds associated with pack ice, pp. 330-599. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 1. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents data from two studies. First, pelagic distribution and abundance are mapped for each species observed during surveys of the Beaufort, Chukchi, and Bering Seas. Densities are analyzed in relation to distance from land. In the second study, ground surveys were conducted at 12 coastal sites to determine seasonal use of habitats by birds. Tables indicate relative abundance in each habitat for all species recorded. Results of aerial surveys provide linear densities of birds along the coast. Age ratios of Glaucous Gulls are discussed. CMH

Arctic
Bering Sea
Seabirds
Annotated list, migration, techniques, abundance, age and sex composition

110. DIVOKY, G.J., K.L. OAKLEY, and H.R. HUBER. 1979. Pomarine Jaeger preys on adult Black-legged Kittiwake. Wilson Bull. 91:329.

This note presents observations of a Pomarine Jaeger killing and eating an adult Black-legged Kittiwake in the Bering Sea. MRP

Bering Sea
Jaegers, gulls and terns
Pomarine Jaeger, Black-legged Kittiwake
Food, predation

111. DIVOKY, G.J., G.W. WATSON, and J.C. BARTONEK. 1974. Breeding of the Black Guillemot in northern Alaska. Condor 76:339-343.

This paper describes the nesting distribution, nest sites, nesting chronology, and production of Black Guillemots. Factors influencing their population dynamics are discussed. MRP

Arctic
Alcids
Black Guillemot
Habitat, population dynamics, reproduction

112. DRENT, R.H. 1961. On the supposed nesting of the Rhinoceros Auklet near Metlakahtla, Alaska. Auk 78:257-258.

A correction is made after an analysis of the literature; the Rhinoceros Auklet has not been observed nesting near Metlakahtla, Alaska, but instead near Metlakatla, British Columbia. NMH

Gulf of Alaska - Southeastern (Annette Is.)
Alcids
Rhinoceros Auklet
Distribution

113. DRURY, W.H. 1976. Seabirds of the Norton Sound area of Alaska. Pac. Seabird Group Bull. 3(1):23. (Abstract)

The distribution of breeding seabirds in Norton Sound and the northern Bering Sea is discussed. The physical characteristics of the breeding sites and the two water masses are examined to explain differences in bird distribution. A possible technique for measuring breeding success of kittiwakes is presented. MRP

Bering Sea - Norton Sound
Gulls and terns, alcids
Black-legged Kittiwake, Common Murre, Thick-billed Murre
Distribution, techniques, habitat

114. DRURY, W.H. 1976. Seabirds on the south shore of Seward Peninsula, Alaska, pp. 477-554. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports from Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents the initial results of a study of the breeding and feeding ecology of the seabirds of the southern Seward Peninsula. Included are results of a census of colonies along the coast. Annotated accounts of 13 species present varying amounts of information on their distribution, reproductive ecology, and foods. CMH

Bering Sea - Norton Sound (Seward Peninsula)
Cormorants, gulls and terns, alcids
Breeding biology, food, distribution, abundance, pollution

115. DRURY, W.H. 1978. Abundant birds of Beringia. Nat. Hist. 87:46-53.

The geography, topography, climate, high productivity, and avifauna of the Bering Sea are discussed descriptively. NMH

Bering Sea
Seabirds
Public interest

116. DRURY, W.H. 1978. Kittiwake workshop summary. Pac. Seabird Group Bull. 5(1):22-28.

This paper summarizes results of a workshop held at the Pacific Seabird Group Annual Meeting, January 19-21, 1978. Nesting chronology, clutch size, reproductive success, and food habits are compared for different regions of Alaska. MRP

Alaska
Gulls and terns
Black-legged Kittiwake
Breeding biology, food, population dynamics

117. DRURY, W.H. 1978. Studies of the breeding biology of Black-legged Kittiwakes made between Cape Lisburne and Saint Lawrence Island. Pac. Seabird Group Bull. 5(1):36. (Abstract)

This paper reports on the phenology, reproductive success, food, and postulated causes of reproductive failure of kittiwakes in the northeastern Bering Sea. MRP

Arctic - Kotzebue Sound (Cape Lisburne, Cape Thompson)
Bering Sea - Norton Sound, St. Lawrence Is., Little Diomede Is.
Gulls and terns
Black-legged Kittiwake
Breeding biology, food

118. DRURY, W.H. 1979. Population dynamics of northern marine birds. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:123-139.

This paper discusses human activities and natural processes that have caused changes in numbers and the distribution of seabirds, and presents a short discussion of theoretical models. Several goals for improving our understanding of the population dynamics and biology of marine birds are identified. MRP

Alaska
Seabirds
Population dynamics, research, management

119. DRURY, W.H., and B.B. STEELE. 1977. Studies of populations, community structure and ecology of marine birds at King Island, Bering Strait Region, Alaska, pp. 75-149. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

Population estimates are presented for 11 species of seabirds nesting on King Island in 1976. Information on phenology, reproductive success, and food habits is provided for some. Distribution of waterfowl and seabirds at sea is discussed briefly. CMH

Bering Sea - Norton Sound (King Is.)
Cormorants, gulls and terns, alcids
Distribution, migration, habitat, breeding biology

120. DUNN, E.H. 1979. Time-energy use and life history strategies of northern seabirds. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:141-166.

This paper comprehensively reviews information on the life history strategies and annual cycles of northern seabirds, particularly to determine the periods when they are most vulnerable to environmental stress. MRP

Alaska
Seabirds
Physiology, research

121. DWIGHT, J., JR. 1906. Status and plumages of white-winged gulls of the genus Larus. Auk 23:26-43.

The author argues for species recognition of Kumlien's Gull and Nelson's Gull, both now considered conspecific with Glaucous Gull. He also discusses the Glaucous-winged Gull for comparison. REG

Alaska
Bering Sea - Yukon Delta (St. Michael)
Gulls and terns
Glaucous Gull, Glaucous-winged Gull
Plumage, specimen record, taxonomy

122. DWIGHT, J. 1919. Reasons for discarding a proposed race of the Glaucous Gull (Larus hyperboreus). Auk 36:242-248.

On the basis of meristics and plumage characteristics, the author argues for discarding the proposed barrovianus as a race of the Glaucous Gull. CMH

Arctic
Gulls and terns
Glaucous Gull
Taxonomy, plumage, anatomy

126. EAST, B. 1948. Islands of mist. Fauna 10(3):69-73.

This article describes the treasured resources of the Pribilof Islands. Of particular interest is a description of the spectacular seabird colony then extant on Walrus Island. CMH

Bering Sea - Pribilof Is.
Seabirds
Public interest, status, subsistence

127. EASTERDAY, B.C., S.J. HYLAND, and J.A. ALEXANDER. 1976. Influenza virus infections in Alaskan seabirds. Pac. Seabird Group Bull. 3(1):24. (Abstract)

Type A influenza viruses were recovered from 4 of 17 species of birds examined from St. Paul Island and Pt. Barrow. MRP

Arctic - Chukchi (Barrow)
Bering Sea - Pribilof Is. (St. Paul Is.)
Seabirds
Disease and parasites

128. EDGAR, R.L. 1968. Catching colonial seabirds for banding. Bird-Banding 39:41-43.

This note describes the construction and use of a noose device for catching individual seabirds at colonies. REG

Alaska
Seabirds
Techniques

129. EISENHAUER, J.H., and J. PANIYAK. 1977. Parasitic Jaegers prey on adult ptarmigan. Auk 94:389-390.

This note describes two Parasitic Jaegers striking and killing an adult male Willow Ptarmigan. MRP

Bering Sea - Yukon Delta (Kashunuk R.)
Jaegers
Parasitic Jaeger
Food, predation

123. DWIGHT, J., JR. 1925. The gulls (Laridae) of the world; their plumages, moults, variations, relationships and distribution. Bull. Am. Mus. Nat. Hist. 52:63-401.

This is a classic work on gulls and includes much information pertinent to Alaska. Under a section on synonomy the author discusses one Alaska form, Larus nelsoni, which he considers to be a hybrid form. REG

Alaska
Gulls and terns
Taxonomy, plumage

124. DWYER, T.J., P. ISLEIB, D.A. DAVENPORT, and J.L. HADDOCK. Undated, ca. 1975. Marine Bird Populations in Prince William Sound, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 21 pp.

Data are presented on the species composition and abundance of marine birds in Prince William Sound, Alaska. Shoreline and open water habitats were systematically censused from a fishing boat during the March-April and July-August periods of both 1972 and 1973. Densities and population estimates are provided for the major species in the sound. Accuracy of the survey and potential impacts to avian populations from oil development are discussed. CMH

Gulf of Alaska - Prince William Sound
Seabirds
Abundance, techniques, pollution

125. EAST, B. 1943. Seabird cities of the Aleutians. Nat. Hist. 51:64-71.

The nesting colonies of alcids and kittiwakes in the Aleutian Islands are described in poetic prose. The subsistence use of seabirds by Aleuts prior to World War II is discussed. NMH

Aleutians
Cormorants, gulls and terns, alcids
Red-faced Cormorant, Glaucous-winged Gull, Black-legged Kittiwake, Red-legged Kittiwake, Common Murre, Parakeet Auklet, Crested Auklet, Least Auklet, Tufted Puffin
Public interest, subsistence

130. ELDRIDGE, W.D., and K.J. KULETZ. 1979. Chick feeding and adult foraging patterns of Pigeon Guillemots (Cepphus columba) in Prince William Sound, Alaska. Pac. Seabird Group Bull. 6(2):26. (Abstract)

This paper reports on the foods brought to chicks and the foraging patterns of adult Pigeon Guillemots at Naked Island in 1978 and 1979. MRP

Gulf of Alaska - Prince William Sound (Naked Is.)
Alcids
Pigeon Guillemot
Food

131. ELEY, T.J., JR. 1974. A sight record for Leach's Petrel north of the Aleutian Islands, Alaska. Murrelet 55:44-45.

Two Leach's Storm-Petrels were seen on July 20, 1974, southeast of Hagemeister Island, approximately 400 km north of previous observations in Alaska. REG

Bering Sea - Bristol Bay (Hagemeister Is.)
Storm-petrels
Leach's Storm-Petrel
Distribution

132. EMERSON, W.O. 1906. Oceanodroma leucorhoa and its relatives on the Pacific Coast. Condor 7:53-55.

After examining a small series of skins, including some from Alaska waters, the author proposes two new species of Pacific coast Oceanodroma. Both are currently considered forms of O. leucorhoa. REG

Aleutians
Gulf of Alaska
North Pacific
Storm-petrels
Leach's Storm-Petrel
Taxonomy, distribution, specimen record

133. FISHER, H.I., and J.R. FISHER. 1972. The oceanic distribution of the Laysan Albatross, Diomedea immutabilis. Wilson Bull. 84:7-27.

Using band recoveries and specimen and sight records, the authors describe the distribution of this species. REG

Gulf of Alaska
Aleutians
North Pacific
Albatrosses
Laysan Albatross
Distribution

134. FISHER, J. 1952. The Fulmar. N.M.N. Collins, London. 496 pp.

In Chapter 2 of this comprehensive book, the author summarizes all information available on the Pacific Northern Fulmar. Included is information on the location of all known breeding colonies, reproductive chronology, pelagic distribution, and the cline in color phases. CMH

Alaska
Fulmars and shearwaters
Northern Fulmar
Distribution, abundance, reproduction, plumage

135. FLOCK, C. 1932. Note on the Arctic Tern in Bristol Bay region, Alaska. Murrelet 13:26.

This short note describes predation by Arctic Terns on young salmon. It mentions shooting of adult terns and destruction of their eggs by fishermen, and briefly discusses abundance and habitat use. CMH

Bering Sea - Bristol Bay
Gulls and tern
Arctic Tern
Food, habitat, mortality

136. FLOCK, W.L. 1973. Radar observations of bird movements along the Arctic Coast of Alaska. Wilson Bull. 85:259-275.

Movements of birds along the Arctic Coast were studied mainly through the use of six DEW radars. King and Common Eiders are the major species addressed, but information on other water-related birds is included. CMH

Arctic - Beaufort (Lonely, Oliktok, Barter Is.), Chukchi (Pt. Lay, Wainwright, Barrow)
Jaegers, gulls and terns
Pomarine Jaeger, Parasitic Jaeger, Glaucous Gull
Migration

137. FLOCK, W.L. 1975. Monitoring overwater bird movements by radar. Pac. Seabird Group Bull. 2(1):40. (Abstract)

The author proposes further monitoring of bird migration along coastal Alaska. Factors limiting the use of radar for such studies are briefly reviewed. MRP

Alaska
Seabirds
Techniques, research

138. FORD, E.R. 1936. Kittlitz's Murrelet breeding at Wales, Alaska. Auk 53:214-215

This note describes the collection of an incubating female and of an egg from a separate incubating bird near Wales in 1934 and 1935, respectively. REG

Bering Sea - Norton Sound (Wales)
Alcids
Kittlitz's Murrelet
Distribution, specimen record

139. FORSELL, D.J., and P.J. GOULD. 1980. Distribution and Abundance of Seabirds Wintering in the Kodiak Area of Alaska. Unpublished final report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 83 pp.

Aerial and shipboard surveys were conducted over coastal and offshore waters of the Kodiak Island archipelago. Annotated accounts are presented for the 58 species of birds observed during the study, which spanned from November 1979 through March 1980. Patterns of distribution are discussed. Data for each species are presented in detailed tables and maps. CMH

Gulf of Alaska - Kodiak
Seabirds
Annotated list, distribution, abundance, habitat

140. FRAME, G.W. 1973. Occurrence of birds in the Beaufort Sea, summer 1969. Auk 90:552-563.

This report describes the numbers and distribution of the ten species of birds sighted along a 1,340 statute mile cruise track from August 3 to 15, 1969. Their distribution and abundance are mapped and correlated with water depth, distance from land, and ice cover. REG

Arctic - Beaufort
Jaegers, gulls and terns, alcids
Abundance, distribution, habitat

141. FRIEDMANN, H. 1932. Additions to the avifauna of St. Lawrence Island, Bering Sea. Condor 34:257.

Reported are two specimens of Dotterel and one of a Whiskered Auklet in spring 1931. They constitute the first specimens of these species from St. Lawrence Island. REG

Bering Sea - St. Lawrence Is.
Alcids
Whiskered Auklet
Specimen record, distribution

142. FRIEDMANN, H. 1933. The Chinese Cormorant on Kodiak Island, Alaska. Condor 35:30-31.

A humerus of this species (= Great Cormorant, Phalacrocorax carbo) was identified from an "Eskomo midden" on Kodiak. The author also mentions a sight record, probably of this species, from the Commander Islands. REG

Gulf of Alaska - Kodiak (Kodiak Is.)
Cormorants
Great Cormorant
Specimen record, distribution, archaeology

143. FRIEDMANN, H. 1933. Notes on some birds of Goodnews Bay, Alaska. Condor 35:239-240.

This note provides information on specimens collected at Goodnews Bay by D. B. Bull in 1933. MRP

Bering Sea - Yukon Delta (Goodnews Bay)
Gulls and terns
Aleutian Tern
Annotated list, distribution, specimen record

144. FRIEDMANN, H. 1934. The Mongolian Plover and other birds at Goodnews Bay, Alaska. Condor 36:89.

This note records the collection of a Mongolian Plover, Surfbird, and Kittlitz's Murrelet at Goodnews Bay in 1933. REG

Bering Sea - Yukon Delta (Goodnews Bay)
Alcids
Kittlitz's Murrelet
Distribution, specimen record

145. GABRIELSON, I.N. 1943. Additional bird records from Alaska. Auk 60:604.

The author mentions single specimens of Glaucous, Slaty-backed, and Herring Gull collected from the Aleutians by F. L. Beals between 1940 and 1942. REG

Aleutians - (Atka Is., Sanak Is., Unalaska Is.)
Gulls and terns
Glaucous Gull, Slaty-backed Gull, Herring Gull
Specimen record, distribution

146. GEIST, O.W. 1939. Sea birds found far inland in Alaska. Condor 41:68-70.

The author reports the occurrence of a Crested Auklet and of a Fork-tailed Storm-Petrel far inland, and the weather conditions associated with each incident. He also provides observations on behavior of several species of water birds during a storm at St. Lawrence Island, and briefly discusses possible ties between such behavior and anomalous sightings. CMH

Bering Sea - St. Lawrence Is.
Gulf of Alaska - Cook Inlet (Curry Station)
Interior - Koyukuk (Nulato)
Fork-tailed Storm-Petrel, Crested Auklet
Distribution, behavior

147. GILL, R., JR. 1977. Unusual foraging by a Fork-tailed Storm-Petrel. Auk 94:385-386.

This note reports a Fork-tailed Storm-Petrel feeding on the remains of a gray whale beached at Nelson Lagoon. MRP

Bering Sea - Bristol Bay (Nelson Lagoon)
Storm-petrels
Fork-tailed Storm-Petrel
Food

148. GILL, R., JR. 1978. Unusual nesting habitat of Tufted Puffin. Pac. Seabird Group Bull. 5(1):40. (Abstract)

This paper describes nesting chronology, habitat, and success of Tufted Puffins breeding on small sand islands subject to tidal inundation. MRP

Bering Sea - Bristol Bay (Nelson Lagoon)
Alcids
Tufted Puffin
Reproduction, habitat

149. GILL, R., JR., and M. DICK. 1977. A look at the current breeding distribution and abundance of the Aleutian Tern in North America. Pac. Seabird Group Bull. 4(1):22-23. (Abstract)

This paper summarizes the most recent data on the breeding distribution and abundance of Aleutian Terns in North America. MRP

Alaska
Gulls and terns
Aleutian Tern
Distribution, abundance

150. GILL, R., JR., C. HANDEL, and M. PETERSEN. 1979. Migration of birds in Alaska marine habitats, pp. 245-288. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes published and unpublished information on spring and fall migration routes and staging areas. The species addressed are those thought to be highly vulnerable to oil contamination in Alaska marine waters. REG

Alaska
Fulmars and shearwaters, cormorants, gulls and terns, alcids
Sooty Shearwater, Short-tailed Shearwater, Pelagic Cormorant, Red-faced Cormorant, Black-legged Kittiwake, Common Murre, Tufted Puffin
Migration, habitat, pollution

151. GILL, R., M. PETERSEN, C. HANDEL, J. NELSON, A. DEGANGE, A. FUKUYAMA, and G. SANGER. 1978. Avifaunal assessment of Nelson Lagoon, Port Moller, and Herendeen Bay, Alaska - 1977, pp. 69-131. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The distribution and abundance of waterfowl and shorebirds along the northcentral Alaska Peninsula are reported, with maps showing critical feeding and roosting areas. Information on the reproductive success of Common Eiders and Glaucous-winged Gulls is also included. Appended are three papers presented to the Pacific Seabird group in 1977, including: "Unusual nest site selection by Tufted Puffins." CMH

Bering Sea - Bristol Bay (Nelson Lagoon, Herendeen Bay)
Gulls and terns, alcids
Glaucous-winged Gull, Tufted Puffin
Reproduction, abundance, habitat, growth

152. GILL, R., JR., and G.A. SANGER. 1979. Tufted Puffins nesting in estuarine habitat. Auk 96:792-794.

This note describes the nesting chronology, habitat, and success of Tufted Puffins breeding on small sand islands subject to tidal inundation. MRP

Bering Sea - Bristol Bay (Nelson Lagoon)
Alcids
Tufted Puffin
Habitat, reproduction

153. GOULD, J. 1843. (On nine new birds collected during the voyage of H.M.S. Sulphur). Proc. Zool. Soc. London 11:103-108.

This paper includes a description of Larus brachyrhynchus (= L. canus brachyrhynchus, Mew Gull) from Alaska. (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Gulls and terns
Mew Gull
Specimen record

154. GOULD, P.J. 1977. Seabirds - Alaska to Hawaii. Pac. Seabird Group Bull. 4(1):21. (Abstract)

This report summarizes seabird observations along 158°W longitude from the Alaska Peninsula to Oahu between October 23 and November 7, 1976. Three general distribution patterns are recognized and discussed. MRP

Gulf of Alaska
North Pacific
Seabirds
Distribution

155. GOULD, P.J. 1977. Shipboard surveys of marine birds, pp. 193-284. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This reports a preliminary analysis of observations of birds during 43 shipboard cruises in Alaska waters in 1976 and 1977. Relative abundance is summarized for each species by region and month. Distribution and abundance are mapped by month for all species combined. Seasonal mean densities are compared for offshore regions. CMH

Alaska
Seabirds
Distribution, abundance

156. GRINNELL, J. 1897. Notes on Marbled Murrelet. Osprey 1:115-117.

This entertaining note presents observations of the behavior, plumage, and anatomy of Marbled Murrelets. Use of wings for swimming underwater is described. MRP

Gulf of Alaska - Southeastern (Sitka Bay)
Alcids
Marbled Murrelet
Behavior, plumage, anatomy

157. GRINNELL, J. 1897. Petrels of Sitka, Alaska. Nidologist 4:76-78.

In this note, the author describes the storm-petrel colony on St. Lazaria Island during the breeding season. Dimensions of eggs and a description of the nocturnal behavior of adults are also presented. MRP

Gulf of Alaska - Southeastern (St. Lazaria Is.)
Storm-petrels
Fork-tailed Storm-Petrel, Leach's Storm-Petrel
Specimen record, behavior

158. GRINNELL, J.G., and F.H. TEST. 1939. Geographic variation in the Fork-tailed Petrel. Condor 41:170-172.

Following examination of a series of skins of Oceanodroma furcata from the northern and southern limits of its range, the authors propose that two forms be recognized: O. f. furcata from the Bering Sea, and O. f. plumbea occurring from the Alexander Archipelago in southeastern Alaska, south to Humboldt County, California. REG

Aleutians
Bering Sea
Gulf of Alaska
Storm-petrels
Fork-tailed Storm-Petrel
Taxonomy, distribution

159. GUDKOV, V.M. 1962. Relationship between the distribution of zooplankton, sea birds and baleen whales. Trudy Inst. Okeanol. 58:298-313. [Transl. from Russian, U.S. Dept. Navy, Naval Oceanogr. Office, Washington, D.C., 1974.]

Not reviewed.

Alaska
Seabirds
Distribution

160. GUZMAN, J. 1979. Molt in Sooty Shearwater (Puffinus griseus) and Short-tailed Shearwater (P. tenuirostris) in the North Pacific Ocean and Bering Sea. Pac. Seabird Group Bull. 6(2):28. (Abstract)

This paper describes molt in shearwaters during the summers of 1975 to 1977, and discusses the adaptive significance of the timing of molt. MRP

Bering Sea
North Pacific
Fulmars and shearwaters
Sooty Shearwater, Short-tailed Shearwater
Plumage

161. GUZMAN, J., and M.T. MYERS. 1977. Distribution of Puffinus griseus and P. tenuirostris in the Gulf of Alaska and Bering Sea. Pac. Seabird Group Bull. 4(1):22. (Abstract)

The distribution of Sooty and Short-tailed Shearwaters in the Gulf of Alaska and Bristol Bay during summers 1975 and 1976 is described and discussed in relation to zones of productivity. MRP

Bering Sea - Bristol Bay
Gulf of Alaska
Fulmars and shearwaters
Sooty Shearwater, Short-tailed Shearwater
Abundance, distribution

162. HANDEL, C.M. 1979. Preliminary Assessment of Impacts to Bird Resources from the Grounding of the F/V Ryuyo Maru No. 2 on St. Paul Island, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 17 pp.

This report presents observations of oil contamination in Salt Lagoon on St. Paul Island after the grounding of the F/V Ryuyo Maru No. 2 on November 8, 1979. The impact on the birds and other marine life is discussed. MRP

Bering Sea - Pribilof Is. (St. Paul Is.)
Gulls and terns, alcids
Glaucous-winged Gull, Common Murre, Thick-billed Murre, Crested Auklet
Pollution, checklist

163. HANNA, W.C. 1961. Second specimen of the Dovekie from Alaska. Condor 63:338.

This note reports on the collection of a Dovekie on Little Diomede Island in 1948. CMH

Bering - Little Diomede Is.
Alcids
Dovekie
Distribution, specimen record

164. HARRISON, C.S. 1977. Aerial surveys of marine birds, pp. 285-593. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report analyzes results of aerial surveys over Alaska offshore waters between January and October 1976. Summaries of census data are presented by species, by month, and by oceanographic region in 34 tables. Monthly distribution and abundance data are mapped by species for the Beaufort, Chukchi, and Bering Seas in 171 figures. For the Gulf of Alaska, data are mapped by month for all species combined. Observations are briefly discussed. CMH

Alaska
Seabirds
Distribution, abundance

165. HARRISON, C.S. 1978. The association of marine birds and feeding gray whales. Pac. Seabird Group Bull. 5(2):71. (Abstract)

This paper discusses observations of marine birds associating with feeding gray whales, which were bringing benthic food items to the surface. The importance of this food source to birds is discussed. MRP

Arctic - Chukchi
Bering Sea
Fulmars and shearwaters, gulls and terns, alcids
Food, behavior

166. HARRISON, C.S. 1979. The association of marine birds and feeding gray whales. Condor 81:93-95.

The author describes a community of at least nine species of marine birds suspected of being partially supported by an association with feeding gray whales in the Bering and Chukchi Seas. REG

Arctic - Chukchi
Bering Sea
Fulmars and shearwaters, gulls and terns, alcids
Food, behavior

167. HATCH, S. 1977. Breeding biology of fulmars at Semidi Islands, Alaska, pp. 110-154. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents results of the first year of a study on the population dynamics and breeding biology of the Northern Fulmar on the Semidi Islands. CMH

Gulf of Alaska - Kodiak (Semidi Is.)
Fulmars and shearwaters
Northern Fulmar
Breeding biology, abundance, habitat, growth

168. HATCH, S.A. 1978. Breeding and population ecology of fulmars at Semidi Islands, Alaska, with observations on the reproduction of sympatric seabird species, pp. 132-207. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes results of the second year of a study on the reproductive ecology and population dynamics of the Northern Fulmar. Abundance, phenology, and reproductive success are discussed for 12 other species of seabirds. Information on colony attendance and chick growth is presented for some. CMH

Gulf of Alaska - Kodiak (Semidi Is.)
Fulmars and shearwaters, cormorants, jaegers, gulls and terns, alcids
Reproduction, breeding biology, population dynamics, growth, abundance, plumage

169. HATCH, S.A. 1979. Breeding and population ecology of Northern Fulmars (Fulmarus glacialis) at Semidi Islands, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 125 pp.

This comprehensive thesis presents information on the breeding biology, ecology, and population dynamics of Northern Fulmars. MRP

Gulf of Alaska - Kodiak (Semidi Is.)
Fulmars and shearwaters
Northern Fulmar
Breeding biology, population dynamics, plumage, growth

170. HATCH, S. 1979. Breeding phenology and productivity in a recently expanded population of Black-legged Kittiwakes. Pac. Seabird Group Bull. 6(2):27 (Abstract)

This paper discusses the breeding chronology and productivity of an expanding colony of Black-legged Kittiwakes. Marked differences between subgroups in the population were observed, and possible explanations are discussed. MRP

Gulf of Alaska - Northern Gulf (Middleton Is.)
Gulls and terns
Black-legged Kittiwake
Reproduction, population dynamics

171. HATCH, S.A., D.R. NYSEWANDER, A.R. DEGANGE, M.R. PETERSEN, P.A. BAIRD, K.D. WOHL, and C.J. LENSINK. 1978. Population dynamics and trophic relationships of marine birds in the Gulf of Alaska and southern Bering Sea, pp. 1-68. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents a brief synopsis of the results of studies conducted during summer 1977 at one site in the Bering Sea and at seven sites in the Gulf of Alaska. Information on breeding distribution, abundance, habitat, phenology, success, and feeding ecology is summarized for 16 species of marine birds. CMH

Gulf of Alaska
Bering Sea
Seabirds
Distribution, abundance, reproduction, food, habitat

172. HATCH, S.A., T.W. PEARSON, and P.J. GOULD. 1979. Reproductive ecology of seabirds at Middleton Island, Alaska, pp. 233-308. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Aspects of reproductive ecology and food habits are discussed for seven species. Recent changes in populations of several species are discussed in relation to habitat use, breeding phenology, and reproductive performance. Breeding phenology and food habits at Middleton Island are compared with those at other colonies in the Gulf of Alaska. CMH

Gulf of Alaska - Northern Gulf (Middleton Is.)
Cormorants, gulls and terns, alcids
Pelagic Cormorant, Glaucous-winged Gull, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Rhinoceros Auklet, Tufted Puffin
Reproduction, abundance, habitat, status, population dynamics, food, growth

173. HEATH, H. 1913. Rare bird thought extinct found by Stanfordite. Oologist 30:264.

The author records the discovery of a colony of Rhinoceros Auklets in southeastern Alaska. (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Gulf of Alaska - Southeastern
Alcids
Rhinoceros Auklet
Distribution

174. HENSHAW, H.W. 1884. On a new gull from Alaska. Auk 1:250-252.

The author describes the type specimen of Larus nelsoni, now considered a hypothetical species (A.O.U. Checklist, 1935). CMH

Bering Sea - Norton Sound (St. Michael)
Gulls and terns
Taxonomy, plumage, specimen record

175. HERSEY, F.S. 1916. Concerning the occurrence of the Western and other gulls in southeastern Alaska. Auk 33:432.

The author provides details of the occurrence of five species of gulls following a ship in southeastern Alaska. CMH

Gulf of Alaska - Southeastern
Gulls and terns
Glaucous-winged Gull, Western Gull, Herring Gull, California Gull, Ring-billed Gull
Distribution

176. HERSEY, F.S. 1920. The probable breeding of the Aleutian Tern in southeastern Alaska - A query. Condor 22:203-204.

The author questions the identification of terns (S. aleutica) reported nesting in southeastern Alaska. Several distinguishing characteristics are presented for comparing S. aleutica and S. paradisaea. REG

Gulf of Alaska - Copper River (Yakutat)
Gulls and terns
Arctic Tern, Aleutian Tern
Distribution, behavior, plumage

177. HIBBEN, F.C., MRS. 1942. Pacific Eider nesting at Glacier Bay, Alaska. Condor 44:182.

This note provides the first breeding record of the Pacific Common Eider in Glacier Bay. Several seabirds were also observed nesting there, including Horned and Tufted Puffins, Glaucous-winged Gulls, and Pigeon Guillemots. CMH

Gulf of Alaska - Southeastern (Glacier Bay)
Gulls and terns, alcids
Glaucous-winged Gull, Pigeon Guillemot, Horned Puffin, Tufted Puffin
Distribution

178. HICKEY, J.J. 1976. A Census of seabirds on the Pribilof Islands, pp. 55-104. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents and discusses ledge attendance counts and flight counts of seabirds nesting on St. George Island in 1975. Census techniques are discussed in detail. CMH

Bering Sea - Pribilof Is. (St. George Is.)
Fulmars and shearwaters, cormorants, gulls and terns, alcids
Northern Fulmar, Red-faced Cormorant, Black-legged Kittiwake, Red-legged Kittiwake, Common Murre, Thick-billed Murre, Parakeet Auklet, Crested Auklet, Least Auklet, Horned Puffin, Tufted Puffin
Abundance, techniques

179. HICKEY, J.J., and F.L. CRAIGHEAD. 1977. A census of seabirds on the Pribilof Islands, pp. 96-195. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report provides population estimates for 11 species of seabirds nesting on the Pribilof Islands. Attendance patterns and other factors affecting census techniques are discussed. The estimates are based on a two-year effort. CMH

Bering Sea - Pribilof Is.
Fulmars and shearwaters, cormorants, gulls and terns, alcids
Northern Fulmar, Red-faced Cormorant, Black-legged Kittiwake, Red-legged Kittiwake, Common Murre, Thick-billed Murre, Parakeet Auklet, Crested Auklet, Least Auklet, Horned Puffin, Tufted Puffin
Abundance, habitat, techniques

180. HOBERG, E.P. 1977. Studies of seabird parasites from Ugaiushak Island, Alaska, pp. 278-293. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents a preliminary analysis of the occurrence of helminth parasites in nine species of seabirds collected primarily near Ugaiushak Island. CMH

Gulf of Alaska - Kodiak (Ugaiushak Is.)
Fulmars shearwaters, gulls and terns, alcids
Northern Fulmar, Glaucous-winged Gull, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Pigeon Guillemot, Rhinoceros Auklet, Horned Puffin, Tufted Puffin
Disease and parasites

181. HOBERG, E.P. 1979. Helminth parasites of marine birds (Charadriiformes: Alcidae and Laridae) occurring in the North Pacific Ocean and Gulf of Alaska. M.S. thesis. Univ. Saskatchewan, Saskatoon. 121 pp.

This thesis describes the helminth parasites from 436 birds collected from four locations in Alaska. MRP

Gulf of Alaska
North Pacific
Gulls and terns, alcids
Disease and parasites

182. HOEMAN, J.V. 1965. Marbled Murrelet breeding record from Kodiak. Bull. Alaska Ornithol. Soc. 5:9. (Mimeo)

This note reports the flushing of a Marbled Murrelet from its nest on an alpine ridge (Pyramid Peak) of Kodiak Island in 1962 and the subsequent collection of the egg. The nest and egg are described. Weight and measurements of the egg are provided. CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Alcids
Marbled Murrelet
Distribution, specimen record, habitat

183. HOGAN, M.E., and W.A. COLGATE. 1980. Birds of Coastal Habitats in Port Valdez and Valdez Arm, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 58 pp.

This report presents data on the use of coastal and marine habitats by birds in Port Valdez and Valdez Arm in summer and winter. Results of censuses conducted over various habitats are discussed. Information on reproductive phenology and success is presented for Glaucous-winged Gulls, Black-legged Kittiwakes, and Arctic Terns. Observations of waterfowl broods are provided and discussed. Recommendations are made for protecting critical habitats in the area from possible impacts of oil development. CMH

Gulf of Alaska - Prince William Sound (Port Valdez, Valdez Arm)
Gulls and terns
Glaucous-winged Gull, Black-legged Kittiwake, Arctic Tern
Reproduction, habitat, abundance, pollution, checklist

184. HOLMES, R.T. 1968. A Dovekie on the Pribilof Islands, Alaska. Condor 70:86.

This note records the observation of a single Dovekie on St. George Island in July 1958. CMH

Bering Sea - Pribilof Is. (St. George Is.)
Alcids
Dovekie
Distribution

185. HOLTAN, L.H. 1980. Nesting Habitat and Ecology of Aleutian Terns on the Copper River Delta, Alaska. Unpublished final report. U.S. Forest Service, Pac. Northwest Forest and Range Expt. Station, Portland, Oregon. 85 pp.

Not reviewed.

Gulf of Alaska - Copper River (Copper R. Delta)
Gulls and terns
Aleutian Tern
Breeding biology

186. HOUT, J.L., and C.J. LENSINK. 1968. Survey of Waterfowl Populations and Habitat on Nelson Island, Alaska. Unpublished progress report. Bureau of Sport Fisheries and Wildlife, Bethel, Alaska. 24 pp.

This report summarizes results of aerial surveys, provides a description of habitat, and gives information on the production of waterfowl. Included are observations of other nesting species. MRP

Bering Sea - Yukon Delta (Nelson Is.)
Jaegers, gulls and terns
Long-tailed Jaeger, Glaucous Gull, Herring Gull, Sabine's Gull, Arctic Tern
Habitat, abundance, distribution, reproduction

187. HUBBARD, J., and W. FLOCK. 1979. Spring migration at Cape Prince of Wales, Alaska. Pac. Seabird Group Bull. 6(2):41. (Abstract)

This paper reports on visual and radar observations of spring migration near Wales during May and early June 1978. Murres, Black-legged Kittiwakes, Black Brant, Common Eiders, and Oldsquaw were the primary species observed. Factors affecting the timing of migration are discussed. MRP

Bering Sea - Norton Sound (Cape Prince of Wales)
Gulls and terns, alcids
Migration

188. HUEY, L.M. 1931. Three note-worthy bird records from Barrow, Alaska. Condor 33:36-37.

A Kittlitz's Murrelet is among the specimens of birds referred to in this note. REG

Arctic - Chukchi (Barrow)
Alcids
Kittlitz's Murrelet
Specimen record, distribution

189. HUNT, G.L., JR. 1976. The reproductive ecology, foods, and foraging areas of seabirds nesting on St. Paul Island, Pribilof Islands, pp. 155-270. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents preliminary results of a study of 11 species of seabirds nesting on the Pribilof Islands. Included is information on reproductive ecology, foods, distribution of foraging seabirds around the islands, and a preliminary survey of Otter and Walrus Islands. Potential impacts from oil contamination are discussed. CMH

Bering Sea - Pribilof Is.
Fulmars and shearwaters, cormorants, gulls and terns, alcids
Northern Fulmar, Red-faced Cormorant, Black-legged Kittiwake, Red-legged Kittiwake, Common Murre, Thick-billed Murre, Parakeet Auklet, Crested Auklet, Least Auklet, Horned Puffin, Tufted Puffin
Reproduction, growth, food, status, pollution, distribution, abundance

190. HUNT, G.L., JR. 1977. Reproductive ecology, foods, and foraging areas of seabirds nesting on the Pribilof Islands, pp. 196-382. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes results of the second year of study on the reproductive and feeding ecology of seabirds nesting on the Pribilof Islands. Effects of helicopter disturbance and potential impacts from oil development are also discussed. CMH

Bering Sea - Pribilof Is.
Fulmars and shearwaters, cormorants, gulls and terns, alcids
Northern Fulmar, Red-faced Cormorant, Black-legged Kittiwake, Red-legged Kittiwake, Common Murre, Thick-billed Murre, Parakeet Auklet, Crested Auklet, Least Auklet, Horned Puffin, Tufted Puffin
Reproduction, food, disturbance, abundance, growth, pollution

191. HUNT, G.L. 1978. The future of the Pribilof Island seabird colonies. Pac. Seabird Group Bull. 5(2):36-38.

This article expresses concern for the future of the seabird colonies of the Pribilof Islands, and identifies a need for awareness of human impacts. MRP

Bering Sea - Pribilof Is.
Seabirds
Management, subsistence

192. HUNT, G., Z. EPPLEY, and W. DRURY. 1979. Breeding distribution and reproductive biology of marine birds of the eastern Bering Sea. Pac. Seabird Group Bull. 6(2):40. (Abstract)

This paper summarizes the data available on the distribution and breeding biology of seabirds in the region, and draws broad conclusions about the distribution of breeding species, colony size, and stability of productivity in these colonies. MRP

Bering Sea
Seabirds
Distribution, reproduction

193. HUNT, G.L., JR., and M.W. HUNT. 1977. Aspects of the reproductive biology of Red-legged Kittiwakes (Rissa brevirostris and R. tridactyla) [sic] on the Pribilof Islands. Pac. Seabird Group Bull. 4(1):24. (Abstract)

This paper reports on a two-year study of kittiwakes on the Pribilof Islands. Nesting chronology, hatching success, and fledging success are compared for the two species. Causes of chick mortality are discussed. MRP

Bering Sea - Pribilof Is.
Gulls and terns
Black-legged Kittiwake, Red-legged Kittiwake
Habitat, reproduction, mortality

194. HUNT, G., JR., B. MAYER, W. RODSTROM, and R. SQUIBB. 1978. Reproductive ecology, foods, and foraging areas of seabirds nesting on the Pribilof Islands, pp. 570-775. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 1. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes detailed information on the reproductive and feeding ecology of 11 species of seabirds studied from 1975 to 1977. Shearwaters, storm-petrels, Glaucous-winged Gulls, and Red Phalaropes are also mentioned. Potential impacts from oil development are discussed. CMH

Bering Sea - Pribilof Is.
Seabirds
Reproduction, food, growth, disturbance, pollution, distribution, abundance

195. HUNT, G.L., R. SQUIBB, and M.R. PETERSEN. 1978. Reproductive ecology of Black-legged Kittiwakes, southeastern Bering Sea 1975-1977. Pac. Seabird Group Bull. 5(1):36-37. (Abstract)

This paper reports on geographic and annual differences in nesting chronology, hatching success, and productivity. MRP

Bering Sea - Bristol Bay (Cape Peirce), Pribilof Is. (St. George Is., St. Paul Is.)
Gulls and terns
Black-legged Kittiwake
Reproduction

196. HUNT, G.L., and M.C. THOMPSON. 1977. Black-legged Kittiwakes nesting on snowbank. Wilson Bull. 89:616-618.

This note describes nest building by Black-legged Kittiwakes on a snowbank on St. Paul Island. MRP

Bering Sea - Pribilof Is. (St. Paul Is.)
Gulls and terns
Black-legged Kittiwake
Habitat

197. IRVING, L. 1955. Nocturnal decline in the temperature of birds in cold weather. Condor 57:362-365.

The body temperatures of seven species of birds captured in Alaska and held in captivity at Anchorage were examined at various times of day. REG

Alaska
Gulls and terns
Glaucous Gull, Glaucous-winged Gull
Physiology

198. IRVING, L., C.P. MCROY, and J.J. BURNS. 1970. Birds observed during a cruise in the ice-covered Bering Sea in March 1968. Condor 72:110-112.

Included are annotated accounts of 12 species plus brief comments on their distribution and foraging in relation to the ice margin. REG

Bering Sea
Albatrosses, fulmars and shearwaters, gulls and terns, alcids
Annotated list, distribution, habitat

199. ISLEIB, M.E., and T. EBERHARDT. 1975. Marine Bird Shipboard Survey in the Gulf of Alaska and along Ocean Route from Seattle, 27 January to 4 March 1978. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 24 pp.

The authors discuss census techniques and results from a cruise in the northeastern Gulf of Alaska. Primary groups of species observed include loons, gulls, alcids, fulmars, storm-petrels, cormorants, and scoters. MRP

Gulf of Alaska
Fulmars and shearwaters, storm-petrels, cormorants, gulls and terns, alcids
Annotated list, abundance, distribution

200. JAQUES, F.L. 1930. Water birds observed on the Arctic Ocean and the Bering Sea, in 1928. Auk 47:353-366.

This paper presents an annotated list of 76 species of birds observed during the Stoll-McCracken Expedition of the American Museum of Natural History to the Arctic Ocean. Observations were collected between May 4 and October 9, 1928. MRP

Gulf of Alaska
North Pacific
Arctic - Chukchi
Aleutians
Bering Sea - Bristol Bay, Norton Sound
Seabirds
Annotated list, distribution

201. JOHNSON, S.R. 1974. First specimen of a robin (Turdus migratorius) and three important sight records from St. Lawrence Island, Bering Sea, Alaska. Condor 76:108.

Sight records of the Whiskered Auklet, Lesser Yellowlegs, Upland Sandpiper, and American Robin on St. Lawrence Island are noted. NMH

Bering Sea - St. Lawrence Is.
Alcids
Whiskered Auklet
Annotated list, distribution

202. JOHNSON, S.R. 1978. Beaufort Sea barrier island - lagoon ecological process studies. Section 2. Avian ecology in Simpson Lagoon, 1977, pp. 467-586. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 7. NOAA, Environ. Res. Lab., Boulder, Colo.

This report addresses the migration, breeding, feeding, staging, and molting of birds at Simpson Lagoon in summer 1977. Tables summarize information on spring and fall migration for the 60 species of birds observed. Nesting densities and reproductive success are summarized for the 13 species breeding in the area. More detailed information on molt, staging, and feeding is presented for Oldsquaws, gulls, terns, and phalaropes. Possible effects of disturbance are briefly discussed. CMH

Arctic - Beaufort (Simpson Lagoon)
Gulls and terns
Glaucous Gull
Habitat, food, abundance, migration, disturbance

203. JOHNSON, S.R. 1979. Beaufort Sea barrier island - lagoon ecological process studies. Part 1. Avian ecology in Simpson Lagoon, Beaufort Sea, Alaska, pp. 238-362. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 6. NOAA, Environ. Res. Lab., Boulder, Colo.

This report compares information gathered in 1977 and 1978 to assess the importance to birds of barrier island/lagoon systems. Timing of migration is summarized for 63 species, and nesting densities are presented. The majority of the report addresses habitat use by molting Oldsquaws, and premigratory staging of shorebirds, gulls, and terns. Results of feeding studies are presented for Oldsquaws, phalaropes, and Glaucous Gulls. CMH

Arctic - Beaufort (Simpson Lagoon)
Seabirds, gulls and terns
Glaucous Gull
Food, habitat, abundance, migration

204. JOHNSON, S.R., and G.C. WEST. 1975. Growth and development of heart regulation in nestlings, and metabolism of adult Common and Thick-billed Murres. Ornis Scand. 6:109-115.

This paper describes the growth and development of thermal regulation of Common and Thick-billed Murre chicks on St. Lawrence Island. The adaptations of adults and chicks to low ambient temperatures are discussed. MRP

Bering Sea - St. Lawrence Is.
Alcids
Common Murre, Thick-billed Murre
Physiology

205. JOHNSTON, D.W. 1961. Timing of annual molt in the Glaucous Gulls of northern Alaska. Condor 63:474-477.

The author discusses the timing of nesting and molt in relation to each other and to the compressed summer period in the Arctic. REG

Arctic - Kotzebue Sound (Cape Thompson)
Gulls and terns
Glaucous gull
Plumage

206. JOHNSTON, D.W. 1964. Ecologic aspects of lipid deposition in some postbreeding Arctic birds. Ecology 45:848-852.

This paper discusses possible correlations among lipid levels, timing of migration, and migratory routes of five species of postbreeding Arctic birds, including the American Golden Plover, Western Sandpiper, and Arctic Tern. CMH

Arctic - Kotzebue Sound (Cape Thompson)
Gulls and terns
Arctic Tern
Migration, physiology

207. JONES, R.D., JR. 1963. Buldir Island, site of a remnant breeding population of Aleutian Canada Geese. Wildfowl 14:80-84.

This paper reports recent observations of a remnant breeding population of Aleutian Canada Geese on Buldir Island. The island's topography, climate, habitat, and avian and mammalian populations are described. Increased hunting pressure and the introduction of blue foxes to the breeding grounds are assessed as reasons for the decline of the race. CMH

Aleutians - (Buldir Is.)
Storm-petrels, jaegers, gulls and terns, alcids
Parasitic Jaeger, Glaucous-winged Gull, Black-legged Kittiwake, Thick-billed Murre, Least Auklet
Habitat, distribution

208. JONES, R.D., JR., and G.V. BYRD. 1979. Interrelations between seabirds and introduced animals. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:221-226.

This paper reviews the information available on the effects of introduced animals on insular seabird populations. The need for research on the ecological consequences of animal introductions to islands is stressed. MRP

Alaska
Seabirds
Predation, research

209. JONES, R.D., JR., and M.R. PETERSEN. 1979. The pelagic birds of Tuxedni Wilderness, Alaska, pp. 187-232. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Aspects of reproductive ecology are discussed for four species, particularly Black-legged Kittiwakes and Horned Puffins. Food, predation, disturbance and ectoparasites are assessed as factors influencing production. An annotated list summarizes observations of the 119 species recorded on the islands in 1970, 1971, and 1978. CMH

Gulf of Alaska - Cook Inlet (Tuxedni Wilderness)
Gulls and terns, alcids
Glaucous-winged Gull, Black-legged Kittiwake, Common Murre, Horned Puffin
Abundance, reproduction, food, growth, predation, disease and parasites, annotated list

210. JONES, R.D., M.R. PETERSEN, C. SLATER, and J. BURKE-OGAN. 1980. The Pelagic Birds of Chisik and Duck Islands. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 33 pp.

During a two-year study of seabirds in the Tuxedni Wilderness, nesting distribution, abundance, and productivity were determined for several species. A simulation model was used to test the effects of known reproductive failures on the kittiwake population. REG

Gulf of Alaska - Cook Inlet (Chisik Is., Duck Is.)
Gulls and terns, alcids
Glaucous-winged Gull, Black-legged Kittiwake, Common Murre, Horned Puffin
Abundance, reproduction, food, growth, habitat, predation, disease and parasites, population dynamics

211. KENYON, K.W. 1949. Distribution of the Pacific Kittiwake in November and December of 1948. Condor 51:188.

The author notes areas of concentrations of Black-legged Kittiwakes encountered during a winter cruise in the North Pacific and Bering Sea. Age segregation in distribution is noted, and a fall migration route is suggested. CMH

Gulf of Alaska
North Pacific
Bering Sea
Gulls and terns
Black-legged Kittiwake
Distribution, abundance, migration

212. KENYON, K.W. 1949. Fur seals and murre chicks. Condor 51:273-274.

The subject of fur seals eating birds is discussed and an instance of murre chicks swimming, unharmed, among a mass of seals is described. REG

Bering Sea - Pribilof Is. (St. Paul Is.)
Alcids
Common Murre
Behavior, predation

213. KENYON, K.W. 1950. Distribution of albatrosses in the North Pacific and adjacent waters. Condor 52:97-103.

The author summarizes observations on the distribution and abundance of albatrosses encountered during shipboard cruises between 1947 and 1949. Some notes on behavior are presented. CMH

Gulf of Alaska
Aleutians
North Pacific
Bering Sea
Albatrosses
Short-tailed Albatross, Black-footed Albatross, Laysan Albatross
Distribution, behavior, abundance

214. KENYON, K.W., and R.E. PHILLIPS. 1965. Birds from the Pribilof Islands and vicinity. Auk 82:624-635.

This paper annotates observations of 34 species recorded between 1947 and 1954. Included are one new record for North America, 9 first records for the Pribilofs, and records of 12 other species rarely seen on the islands. More detailed information is presented on the status of populations of Glaucous-winged Gulls, Red-legged and Black-legged Kittiwakes, and Common Murres. Nesting chronology, abundance, and behavior are compared for the two kittiwakes. A few notes from the Aleutians are included. CMH

Bering Sea - Pribilof Is.
Aleutians
Fulmars and shearwaters, storm-petrels, gulls and terns, alcids
Annotated list, status, reproduction, behavior

215. KING, J.G. 1973. The neglect of sea bird conservation. Alaska Conserv. Rev. 14(4):12-13.

The author discusses the unique seabird fauna of the North Pacific, and its vulnerability to oil contamination. He then describes the Pacific Seabird Group, recently formed to help coordinate a professional research effort. NMH

Alaska
Seabirds
Research, pollution, public interest

216. KING, J.G., and C.J. LENSINK. 1971. An Evaluation of Alaska Habitat for Migratory Birds. Unpublished report. U.S. Dept. Int., Bur. Sport Fish. Wildl., Washington, D.C. 72 pp.

This paper evaluates the importance of habitats in Alaska to migratory birds, and identifies areas of the state where birds may be threatened by pollution and development. NMH

Alaska
Seabirds
Distribution, abundance, habitat, migration, pollution

217. KING, J.G., G.E. MARSHALL, J.H. BRANSON, F.H. FAY, and W. ALLEN. 1974. Alaskan Pelagic Bird Observations and a Data Bank Proposal. Unpublished report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 16 pp.

Simple instructions and standard format are presented for taking observations at sea. A data bank is proposed. MRP

Alaska
Seabirds
Techniques

218. KING, J.G., G. MARSHALL, J.H. BRANSON, F.H. FAY, and W. ALLEN. 1975. Alaska pelagic bird observations and a data bank proposal. Pac. Seabird Group Bull. 2(1):37-38. (Abstract)

Simple instructions and standard format were developed for taking observations at sea. A data bank is proposed. MRP

Alaska
Seabirds
Techniques

219. KING, J.G., and G.A. SANGER. 1979. Oil vulnerability index for marine oriented birds. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:277-239.

This paper presents a method to indicate the relative vulnerability of a marine bird species to oil pollution and related impacts of oil development. Each of 176 species of birds using marine habitats in Washington, Alaska, and British Columbia is ranked on the basis of 20 factors that affect its survival. The needs for such a system as a management tool are discussed. MRP

Alaska
Seabirds
Management, pollution

220. KING, W.B., R.G.B. BROWN, and G.A. SANGER. 1979. Mortality to marine birds through commercial fishing. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:195-199.

This paper reviews the information available on seabird mortality incidental to longline and gillnet fishing, and discusses possible implications to the well-being of seabird populations. Possible impacts from the developing Atlantic capelin fishery are also discussed. MRP

Alaska
Seabirds
Fishing, mortality

221. KOZLOVA, E.V. 1957. Fauna of U.S.S.R., Birds, Vol. 2(3), Charadriiformes: Suborder Alcae. [Transl. from Russian.] Israel Progr. Sci. Transl., Jerusalem. 140 pp.

This volume examines in detail the plumage, functional morphology, and radiation of the alcids, based mainly on studies of specimens at the Zoological Institute of the Academy of Sciences of the USSR. However, information on distribution, ecology, and behavior, much of which was gathered in Alaska, is also synthesized. CMH

Alaska
Alcids
Plumage, taxonomy, anatomy, distribution, migration, breeding biology, food, bibliography

222. KRASNOW, L.D., G.A. SANGER, and D.W. WISWAR. 1979. Nearshore feeding ecology of marine birds in the Kodiak area, 1978, pp. 348-394. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents preliminary results of a study on the seasonal feeding habits of marine birds near Kodiak Island. The aggregate percent volume of prey is presented for four species collected in winter and for seven collected in summer. Possible impacts of petroleum development on prey species are briefly discussed. CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Fulmars and shearwaters, gulls and terns, alcids
Sooty Shearwater, Short-tailed Shearwater, Black-legged Kittiwake, Common Murre, Pigeon Guillemot, Marbled Murrelet, Tufted Puffin
Food, pollution

223. KUROCHIN, E.N. 1963. Distribution of some seabirds in the North Pacific. [In Russian with English summary.] Zool. Zh. 42:1223-1231.

This paper summarizes observations of 47 species of birds recorded during a cruise in fall 1961 in the Bering Sea, North Pacific, and western Gulf of Alaska. The author discusses the importance of food, temperature, seasonal migration, and faunal affinities in determining the distribution of seabirds. CMH

Gulf of Alaska
North Pacific
Bering Sea
Seabirds
Distribution, habitat, migration, food, zoogeography

224. KURODA, N. 1955. Observations on pelagic birds of the northwest Pacific. Condor 57:290-300.

This paper presents an annotated list of the 44 species of birds observed during a summer cruise between Japan and the western Bering Sea and North Pacific. Population densities are estimated by the number of birds observed per hour, and bird distribution is correlated with air and water temperatures. Forty-one of the species observed are water-associated. CMH

North Pacific
Bering Sea
Seabirds
Annotated list, distribution, habitat, abundance

225. KURODA, N. 1957. A brief note on the pelagic migration of the Tubinares. Misc. Rept. Yamashina's Inst. Ornith. Zool. 11:436-449.

This note remarks upon environmental influences on migration in the Tubinares. The importance of currents as carriers of the birds' food supply is discussed, as is the role of wind in orientation. Major migration routes are mapped. NMH

North Pacific
Albatrosses, fulmars and shearwaters, storm-petrels
Migration, food

226. KURODA, N. 1960. Analysis of sea bird distribution in the northwest Pacific Ocean. Pac. Sci. 14:55-67.

This paper analyzes the distribution of seabirds encountered on a cruise in summer 1954 between the western Bering Sea and Japan. Ocean currents, water and air temperatures, zoogeography, and food supplies are considered. Maps showing the distribution and abundance of each species observed are included. CMH

Aleutians
Bering Sea
Seabirds
Distribution, abundance, habitat, food, zoogeography

227. LADD, W.N. 1978. The new migratory bird treaty between the United States and Union of Soviet Socialist Republics. Pac. Seabird Group Bull. 5(2):39-57.

This article summarizes the provisions that differ from those in previous treaties and are significant to managing marine birds. Disturbance, subsistence use, and habitat protection are addressed. The full treaty is included. MRP

Alaska
Seabirds
Management

228. LAING, H.M. 1925. Birds collected and observed during the cruise of the Thiepval in the North Pacific, 1924. Can. Dept. Mines Mus. Bull. 40:1-46.

This paper provides an annotated list of the 112 species or subspecies collected and observed on a cruise in the North Pacific. The ship traveled from Vancouver, B.C., to Japan via the Alaska coast and Aleutians in spring, and returned via a more offshore route through the Bering Sea and North Pacific in late summer. Sixty of those species recorded are water-related forms. CMH

Gulf of Alaska
Aleutians
North Pacific
Bering Sea
Seabirds
Annotated list

229. LEHNHAUSEN, W. 1978. Habitat utilization by Tufted Puffins on Fish Island, Alaska. Pac. Seabird Group Bull. 5(1):39-40. (Abstract)

This paper describes nesting habitats used by Tufted Puffins on Fish Island during 1976 and 1977, and compares them with those used by other alcids on the island. Habitat selection is discussed in relation to the presence of predators. MRP

Gulf of Alaska - Prince William Sound (Fish Is.)
Alcids
Pigeon Guillemot, Parakeet Auklet, Horned Puffin, Tufted Puffin
Habitat, reproduction

230. LEHNHAUSEN, W.A. 1980. Nesting habitat relationships of four species of alcids at Fish Island, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 134 pp.

This thesis investigates the nesting habitat relationships of four species of alcids to determine if competition exists for nest sites on Fish Island. It examines in detail habitat characteristics, breeding chronology, seasonal and diurnal activity patterns, body size and flight capabilities, and interspecific behavioral interactions. A checklist giving the status of the 118 species of birds observed during summers 1976 and 1977 is appended. CMH

Gulf of Alaska - Prince William Sound (Fish Is.)
Alcids
Pigeon Guillemot, Parakeet Auklet, Horned Puffin, Tufted Puffin
Habitat, behavior, anatomy, reproduction, checklist

231. LENSINK, C.J. 1978. PSG meetings aid federal marine bird programs. Pac. Seabird Group Bull. 5(1):18-19.

This article gives a brief overview of the importance of the Pacific Seabird Group in stimulating and supporting research on seabirds. MRP

Alaska
Seabirds
Public interest

232. LENSINK, C.J., and J.C. BARTONEK. 1976. Population dynamics of marine birds, pp. 345-361. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This paper briefly reviews existing information on Alaska marine birds and describes the research conducted in 1975 and 1976 on each species. CMH

Alaska
Seabirds
Research

233. LENSINK, C.J., and J.C. BARTONEK. 1976. Seasonal distribution and abundance of marine birds: Part 1. Shipboard surveys, pp. 107-644. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes observations of marine birds during 21 cruises in Alaska offshore waters in 1975. Data are summarized by species, month, and oceanographic region in 165 tables. Monthly summaries of densities of all birds are depicted on 12 maps. CMH

Alaska
Seabirds
Abundance, distribution

234. LENSINK, C.J., J.C. BARTONEK, and C.S. HARRISON. 1976. Seasonal distribution and abundance of marine birds: Part 2. Aerial surveys, pp. 1-98. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes census data obtained from 11 offshore surveys conducted in 1972, 1973, and 1975. Summaries are presented by species, 3-month interval, and oceanographic region in 23 tables. Quarterly summaries of total bird densities are presented on 4 maps. CMH

Alaska
Seabirds
Distribution, abundance

235. LENSINK, C.J., J.C. BARTONEK, and G.A. SANGER. 1976. Feeding ecology and trophic relationships of Alaskan marine birds, pp. 321-344. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents data from preliminary analyses of the contents of 83 stomachs of 14 species of seabirds. Frequency of occurrence of major prey items and ranges in weights of the contents are presented. CMH

Alaska
Albatrosses, fulmars and shearwaters, storm-petrels, gulls and terns, alcids
Food

236. LENSINK, C.J., P.J. GOULD, and G.A. SANGER. 1979. Population dynamics and trophic relationships of marine birds in the Gulf of Alaska, pp. 7-20. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This paper identifies and briefly summarizes results of six studies conducted in the Gulf of Alaska in 1978. CMH

Gulf of Alaska
Seabirds
Research, population dynamics, distribution, abundance, breeding biology, food

237. LESCHNER, L.L., and G. BURRELL. 1977. Populations and ecology of marine birds on the Semidi Islands, pp. 13-109. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This paper discusses observations on the populations, breeding biology, and foods of 19 species of marine birds during summer 1976. A checklist presents the breeding status of the 54 species of birds observed. CMH

Gulf of Alaska - Kodiak (Semidi Is.)
Storm-petrels, cormorants, gulls and terns, alcids
Reproduction, food, abundance, checklist

238. LIVINGSTON, P. 1980. Marine Bird Information Synthesis. Unpublished report. NWAFC Processed Report 80-2. Natl. Mar. Fish. Serv., Northwest and Alaska Fisheries Center, Seattle, Washington. 25 pp.

This report includes a set of tables synthesizing information from other sources on the oceanic distribution of seabirds, their diets, and their body sizes. From this synthesis the author presents gross estimates of the annual consumption of foods by seabirds in Alaska waters south of Bering Strait. CMH

Gulf of Alaska
Aleutians
North Pacific
Bering Sea
Fulmars and shearwaters, storm-petrels, cormorants, gulls and terns, alcids
Abundance, distribution, food

239. LOOMIS, L.M. 1900. California water birds, V. Proc. Calif. Acad. Sci. (3rd ser.) 2:349-363.

On page 356 there is a brief reference to a specimen of Pigeon Guillemot from Kodiak. (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Alcids
Pigeon Guillemot
Specimen record

240. LOOMIS, L.M. 1918. A review of the albatrosses, petrels, and diving petrels. Proc. Calif. Acad. Sci., 4th ser., 2, pt. 2:1-187.

"Reference is made to specimens of Pterodroma inexpectata, Oceanodroma leucorhoa, and O. furcata from Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Fulmars and shearwaters, storm-petrels
Scaled Petrel, Fork-tailed Storm-Petrel, Leach's Storm-Petrel
Specimen record

241. LUCAS, F.A. 1901. Walrus Island, a bird metropolis of Bering Sea. Bird-Lore 3:45-49.

Not reviewed.

Bering Sea - Pribilof Is. (Walrus Is.)
Seabirds
Public interest

242. LUTZ, J.E. 1889. Report of J.E. Lutz, pp. 28-35. In Report of the Cruise of the Revenue Marine Steamer Corwin in the Arctic Ocean in 1884. Govt. Print. Off., Washington, D.C.

The author provides a list of specimens, mostly eggs, collected on Otter Island in early June 1884. REG

Bering Sea - Pribilof Is. (Otter Is.)
Gulls and terns, cormorants, alcids
Red-faced Cormorant, Black-legged Kittiwake, Red-legged Kittiwake, Common Murre, Parakeet Auklet, Crested Auklet, Horned Puffin, Tufted Puffin
Specimen record

243. MACLEAN, S.F., JR., and N.A.M. VERBEEK. 1968. Nesting of the Black Guillemot at Point Barrow, Alaska. Auk 85:139-140.

This note describes two nesting attempts by this species near Barrow, and discusses the importance of man-made structures as suitable nesting sites. REG

Arctic - Chukchi (Barrow)
Alcids
Black Guillemot
Status, distribution, habitat

244. MAHER, W.J. 1960. The relationship of the nesting density and breeding success of the Pomarine Jaeger to the population level of the brown lemming at Barrow, Alaska. Proc. Alaska Sci. Conf. 11:24-25.

The dynamics of Pomarine Jaeger predation on lemmings is discussed. The author presents the nesting densities and success of jaegers in relation to the densities of lemmings for nine consecutive years. NMH

Arctic - Chukchi (Barrow)
Jaegers
Pomarine Jaeger
Food, reproduction

245. MAHER, W.J. 1962. The ecology of the Pomarine, Parasitic, and Long-tailed Jaegers in northern Alaska. Ph.D. thesis. Univ. Calif., Berkeley.

Not reviewed.

Arctic
Jaegers
Pomarine Jaeger, Parasitic Jaeger, Long-tailed Jaeger
Breeding biology, population dynamics, food, predation, growth

246. MAHER, W.J. 1970. The Pomarine Jaeger as a brown lemming predator in northern Alaska. Wilson Bull. 82:130-157.

This paper reports on food habits, breeding density, and breeding success of Pomarine Jaeger populations and relates these aspects of the jaeger cycle to the brown lemming population. REG

Arctic - Chukchi (Barrow, Wainwright, Cape Sabine)
Jaegers
Pomarine Jaeger
Breeding biology, food, population dynamics

247. MAHER, W.J. 1974. Ecology of Pomarine, Parasitic, and Long-tailed Jaegers in Northern Alaska. Pac. Coast Avifauna 37. 148 pp.

This monograph discusses the breeding ecology of the three species of jaeger nesting in northern Alaska. Factors limiting distribution of species and ecological adaptations are discussed. MRP

Arctic
Jaegers
Pomarine Jaeger, Parasitic Jaeger, Long-tailed Jaeger
Breeding biology, food, population dynamics

248. MAILLIARD, J. 1898. Notes on the nesting of the Fork-tailed Petrel (Oceanodroma furcata). Auk 15:230-233.

Observations on the nesting of Fork-tailed and Leach's Storm-Petrels on St. Lazaria Island in 1896 are provided. REG

Gulf of Alaska - Southeastern (St. Lazaria Is.)
Storm-petrels
Fork-tailed Storm-Petrel, Leach's Storm-Petrel
Breeding biology, habitat

249. MAILLIARD, J. 1923. An explanation of a seeming discrepancy. Condor 25:108.

The author notes that on St. Lazaria Island Fork-tailed Storm-Petrels may be found nesting alone or in burrows with Leach's Storm-Petrels depending on the habitat surveyed. CMH

Gulf of Alaska - Southeastern (St. Lazaria Is.)
Storm-petrels
Fork-tailed Storm-Petrel, Leach's Storm-Petrel
Habitat

250. MANNING, T.H. 1964. Geographical and sexual variation in the Long-tailed Jaeger, Stercorarius longicaudus Vielot. Biol. Pap. Univ. Alaska 7. 16 pp.

Following an examination of specimens, the author suggests that Nearctic and Palearctic Long-tailed Jaegers can be separated into races by the amount of pigmentation. Sexual differences in measurements and pigmentation are also examined. NMH

Alaska
Jaegers
Long-tailed Jaeger
Taxonomy, plumage

251. MANUWAL, D.A. 1980. Breeding Biology of Seabirds on the Barren Islands, Alaska. Unpublished final report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 195 pp.

This report summarizes a study of the breeding biology of seabirds on the Barren Islands from 1976 to 1979. The report discusses local distribution, abundance, and nesting requirements of breeding seabirds; productivity; types and quantities of food consumed by selected species; and the effect of future oil development on their status. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Storm-petrels, cormorants, gulls and terns, alcids
Abundance, distribution, breeding biology, predation, pollution, food

252. MANUWAL, D.A. (CHAIRMAN), D. ANDERSON, G. KNODER, D. NETTLESHIP, and S.G. SEALY. 1975. Seabird Colony Census Techniques (Preliminary Draft). Pac. Seabird Group, Comm. Colony Censusing, Univ. Washington, College Forest Resources, Wildl. Sci. Group, Seattle. 18 pp.

This report provides standardized techniques for censusing 42 species of colonial seabirds along the Pacific Coast of North America. CMH

Alaska
Seabirds
Techniques

253. MANUWAL, D.A., and R.W. CAMPBELL. 1979. Status and distribution of breeding seabirds of southeastern Alaska, British Columbia, and Washington. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:73-91.

This paper reviews current breeding seabird population estimates, nest-site preferences, and population changes for southeastern Alaska, British Columbia, and Washington. Important research needs are identified. MRP

Gulf of Alaska - Southeastern
Seabirds
Status, abundance, distribution, habitat, research

254. MANUWAL, D.A., and N.J. MANUWAL. 1978. Behavior, habitat use, and time budget of the Parakeet Auklet in the Barren Islands, Alaska. Pac. Seabird Group Bull. 5(1):51-52. (Abstract)

This paper describes nesting, loafing, and staging habitats; displays; and time and energy budgets of Parakeet Auklets in the Barren Islands. Habitat use during various stages of the breeding cycle is described. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Alcids
Parakeet Auklet
Habitat, behavior

255. MANUWAL, D.A., and N.J. MANUWAL. 1979. Habitat specific behavior of the Parakeet Auklet in the Barren Islands, Alaska. West. Birds 10:189-200.

The authors discuss basic behavior patterns of this species and relate them to the reproductive cycle and components of the nesting environment. The study was conducted on East Amatuli Island in 1976. REG

Gulf of Alaska - Kodiak (Barren Is.)
Alcids
Parakeet Auklet
Habitat, behavior

256. MCKNIGHT, D.E., and C.E. KNODER. 1979. Resource development along coasts and on the ocean floor: Potential conflicts with marine bird conservation. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:183-194.

This paper discusses the potential for disastrous and irrecoverable losses to northern marine bird populations and identifies research needs. MRP

Alaska
Seabirds
Pollution, research

257. MICKELSON, P.G., J.S. HAWKINS, D.R. HERTER, and S.M. MURPHY. 1980. Habitat Use by Birds and other Wildlife on the Eastern Copper River Delta, Alaska. Unpublished report. Alaska Coop. Wildl. Res. Unit, Univ. Alaska, Fairbanks. 189 pp.

During a study of nesting and migrating birds on the eastern Copper River Delta in 1978 and 1979, the authors determined habitat preferences, distribution, abundance, and phenology for the avifauna of the area. Critical habitats are identified and recommendations made for future surveillance and management of populations. Detailed information is presented for Dusky Canada Geese, Sandhill Cranes, and shorebirds. REG

Gulf of Alaska - Copper River (eastern Copper R. Delta)
Cormorants, jaegers, gulls and terns, alcids
Double-crested Cormorant, Parasitic Jaeger, Glaucous-winged Gull, Mew Gull, Bonaparte's Gull, Arctic Tern, Aleutian Tern
Abundance, breeding biology, distribution, food, habitat, management, migration, predation, status, reproduction, checklist

258. MICKELSON, P.G., W. LEHNHAUSEN, and S.E. QUINLAN. 1978. Community structure of seabirds of Wooded Islands, Alaska, pp. 680-772. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

Information gathered in summer 1977 on abundance, habitat use, and reproductive ecology is presented for 10 species of seabirds, with emphasis on storm-petrels and Tufted Puffins. Tables present the status of all species of birds observed in 1976 and 1977. Information on abundance and phenology is included for some species. The susceptibility of each species to oil pollution is assessed. CMH

Gulf of Alaska - Prince William Sound (Wooded Is.)
Storm-petrels, cormorants, gulls and terns, alcids
Abundance, breeding biology, reproduction, habitat, food, status, predation, distribution, checklist

259. MICKELSON, P.G., W.A. LEHNHAUSEN, S.E. QUINLAN, and J.M. SHERWOOD. 1977. Seabirds of the Wooded Islands, Alaska, pp. 421-499. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents information on the abundance and breeding biology of seabirds nesting on the Wooded Islands in 1976. Tables list the other species observed on the islands and their breeding status. The abundance of species occurring in littoral and marine areas is briefly noted. Potential effects of oil pollution and disturbance are discussed. CMH

Gulf of Alaska - Prince William Sound (Wooded Is.)
Storm-petrels, cormorants, gulls and terns, alcids
Abundance, breeding biology, reproduction, pollution, disturbance, checklist

260. MOE, R.A., and P.A. BAIRD. 1978. Some notes on the feeding ecology of the Tufted Puffin (Lunda cirrhata) in the Sitkalidak Strait region of Kodiak Island, Alaska, during the 1977 breeding season. Pac. Seabird Group Bull. 5(1):42. (Abstract)

This paper presents data on the food habits of adult puffins and the fish brought by adults to young in burrows. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Alcids
Tufted Puffin
Food

261. MOE, R.A., and R.H. DAY. 1979. Populations and ecology of seabirds of the Koniuji Group, Shumagin Islands, Alaska, pp. 395-491. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

The distribution and abundance of 20 species of marine birds nesting in this group of islands are summarized and mapped. Information on breeding biology and feeding ecology is presented for 17 and 11 species, respectively. CMH

North Pacific - (Shumagin Is.)
Storm-petrels, cormorants, gulls and terns, alcids
Abundance, distribution, reproduction, habitat, food

262. MOE, A., D. WEHLE, M. HATCH, L. LESCHNER, B. LAWHEAD, G. BURRELL, K. POWERS, G. DIVOKY, R. DAY, and E. HOBERG. 1978. The breeding success of the Black-legged Kittiwake (Rissa tridactyla) in the southwestern Gulf of Alaska, 1974, 1976-1977. Pac. Seabird Group Bull. 5(1):37. (Abstract)

This paper compares and discusses factors influencing the breeding success of Black-legged Kittiwakes at Ugaiushak Island, Chowiet Island, and Big Koniuji Island. MRP

Gulf of Alaska - Kodiak (Ugaiushak Is., Chowiet Is., Big Koniuji Is.)
Gulls and terns
Black-legged Kittiwake
Reproduction

263. MORGAN, K.R., C.V. PAGANELLI, and H. RAHN. 1978. Egg weight loss and nest humidity during incubation in two Alaskan gulls. Condor 80:272-275.

This paper reports the water loss, water vapor conductance, and temperature of eggs of Glaucous-winged Gulls and Black-legged Kittiwakes, and calculates the nest humidity and the ventilation required to remove water vapor from the nest. MRP

Gulf of Alaska - Cook Inlet (Kachemak Bay)
Gulls and terns
Glaucous-winged Gull, Black-legged Kittiwake
Physiology

264. MOSSMAN, A.S. 1958. Selective predation of Glaucous-winged Gulls upon adult red salmon. Ecology 39:482-486.

Glaucous-winged Gulls killed proportionately many more female than male red salmon and were more likely to eviscerate female salmon than males. The mechanisms driving this selection are discussed. REG

Bering Sea - Bristol Bay (Aleknagik L.)
Gulls and terns
Glaucous-winged Gull
Food

265. MOSSMAN, A.S. 1959. Notes on gull and tern food habits in Alaska. Proc. Alaska Sci. Conf. 10:86-87. (Abstract)

Gull and tern predation on young salmon is briefly discussed. The population dynamics of predator and prey, and the potential for the birds having a depressant effect on the salmon population is mentioned. NMH

Alaska
Gulls and terns
Glaucous-winged Gull, Mew Gull, Arctic Tern
Food

266. MOTODA, S., and T. TUJII. 1956. Report from the Oshoro Maru on oceanographic and biological investigations in the Bering Sea and northern North Pacific in summer of 1955. I. Programme of investigations and records of eye observations of seabirds and marine mammals. Bull. Fac. Fish. Hokkaido Univ. 6(4):280-297.

Not reviewed.

Bering Sea
North Pacific
Seabirds
Distribution

267. MOYLE, P. 1966. Feeding behavior of the Glaucous-winged Gull on an Alaskan salmon stream. Wilson Bull. 78:175-190.

This paper, based on field work in 1963 and 1964, presents descriptions of several displays of this species and discusses feeding habits, interaction with bears, and the role of juvenile gulls in the feeding regime. REG

Gulf of Alaska - Prince William Sound (Olsen Creek)
Gulls and terns
Glaucous-winged Gull, Mew Gull, Bonaparte's Gull
Behavior, food

268. MURDOCH, J. 1899. A historical notice of Ross's Gull (Rhodostethia rosea). Auk 16:146-155.

The author summarizes specimen records of this species and describes his efforts to secure specimens at Barrow between 1881 and 1883. REG

Arctic - Chukchi (Barrow)
Gulls and terns
Ross' Gull
Specimen record, migration, distribution, plumage

269. MURIE, O.J. 1940. Food habits of the northern Bald Eagle in the Aleutian Islands, Alaska. Condor 42:198-202.

In 1936 and 1937, food items were collected and identified from 28 Bald Eagle nests. Among the identifiable food items were remains of 24 species of water-associated birds, mostly alcids, gulls, and fulmars. REG

Aleutians - (Amak Is., Sankin Is.)
Fulmars and shearwaters, storm-petrels, cormorants, gulls and terns, alcids
Predation

270. MURIE, O.J. 1945. Larus ridibundus sibericus from the Aleutian Islands. Auk 62:313.

This note records the collection of the first specimen of the Siberian Black-headed Gull in North America. CMH

Aleutians
Gulls and terns
Black-headed Gull
Distribution, plumage, specimen record

271. MURPHY, E.C. 1979. Monitoring Populations of Breeding Seabirds. Unpublished final report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 75 pp.

This report analyzes census data for murres and Black-legged Kittiwakes at Cape Thompson between 1960 and 1976. Census techniques are discussed. MRP

Arctic - Kotzebue Sound (Cape Thompson)
Gulls and terns, alcids
Black-legged Kittiwake, Common Murre, Thick-billed Murre
Techniques, abundance

272. MUSACCHIA, X.J. 1949. A study of the glucose content of the blood of Pomarine Jaegers from the Point Barrow region of Alaska. Anat. Rec. 105:619.

Not reviewed.

Arctic - Chukchi (Barrow)
Jaegers
Pomarine Jaeger
Physiology

273. MYRES, M.T. 1979. Long-term climatic and oceanographic cycles regulating seabird distributions and numbers. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:3-7.

This paper discusses the need to consider fluctuations in seabird numbers as possible responses to short-term or long-term climatic or oceanographic changes. CMH

Alaska
Seabirds
Distribution, abundance, status, research

274. MYRES, M.T., and J. GUZMAN. 1976. Ecology and behavior of southern hemisphere shearwaters (Genus Puffinus) and other seabirds, when over the outer continental shelf of the Bering Sea and Gulf of Alaska during the northern summer, pp. 1-52. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This preliminary report discusses primarily the distribution, abundance, and behavior of Short-tailed and Sooty Shearwaters as determined from shipboard surveys. Included is tabular information on the distribution of the 22 other species of marine birds observed during the cruises. CMH

Gulf of Alaska
Bering Sea
Seabirds, fulmars and shearwaters
Sooty Shearwater, Short-tailed Shearwater
Distribution, abundance, behavior, food, pollution

275. MYRES, M.T., and J. GUZMAN. 1977. Ecology and behavior of southern hemisphere shearwaters (Genus Puffinus) and other seabirds, when over the outer continental shelf of Bering Sea and Gulf of Alaska during the northern summer, pp. 179-191. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

Observations of shearwaters in summer 1976 are mapped and briefly discussed. A list noting relative abundance is included for the other marine birds observed. NMH

Gulf of Alaska
North Pacific
Bering Sea
Seabirds, fulmars and shearwaters
Sooty Shearwater, Short-tailed Shearwater
Abundance, distribution

276. NAKAMURA, K., and Y. TANAKA. 1977. Distribution and migration of two species of the genus Pterodroma in the North Pacific. Misc. Rep. Yamashina's Inst. Ornithol. 9:112-120.

This paper reports the distribution and abundance of Scaled and Solander's Petrels encountered during three cruises in the North Pacific and Bering Sea in 1974 and 1975. Distribution and migration are discussed in relation to ocean currents and water masses. Field descriptions are provided for the two species. CMH

North Pacific
Bering Sea
Fulmars and shearwaters
Scaled Petrel
Distribution, migration, habitat, abundance

277. NELSON, U.C. 1951. Migratory Waterfowl Studies, Breeding and Wintering Populations, Nesting and Banding. Unpublished report. Project No. 3-R-6. Fed. Aid in Wildl. Rest., Alaska 6(1):3-61.

This detailed report includes sections on the Shishmaref waterfowl project, the Innoko-Iditarod River waterfowl study, the study of goose and brant nesting on the Yukon-Kuskokim Delta, and the study of gull-waterfowl relationships on the Yukon-Kuskokwim Delta. MRP

Arctic - Kotzebue Sound
Interior - Innoko, Koyukuk, Tanana
Bering Sea - Yukon Delta
Jaegers, gulls and terns
Parasitic Jaeger, Long-tailed Jaeger, Glaucous Gull, Mew Gull
Predation, food

278. NEWBY, T.C., and R.O. LARSON. 1974. Aggression in the Pacific Fulmar, Fulmarus glacialis. Murrelet 55:10.

This note recounts observations of an apparently territorial battle between two Northern Fulmars in July 1973 beneath a bluff of St. George Island; the fight resulted in the drowning of one of the birds. Also mentioned are observations of Thick-billed Murres fighting to the death. CMH

Bering Sea - Pribilof Is. (St. George Is.)
Fulmars and shearwaters, alcids
Northern Fulmar, Thick-billed Murre
Behavior, mortality

279. NICHOLS, J.T. 1926. Standard and adaptive specialization in relation to migration and distribution. Can. Field-Nat. 40:169-171.

The Tufted Puffin is considered in this very general treatment of specialized migration. REG

Bering Sea
Alcids
Tufted Puffin
Migration, distribution

280. NICHOLS, J.T. 1927. Tubinares off the north-west coast. Auk 44:326-328.

This paper summarizes the general distribution and abundance of all tubinares encountered during a summer cruise between Seattle and Nome. A few notes on behavior are included. CMH

Gulf of Alaska
North Pacific
Bering Sea
Albatrosses, fulmars and shearwaters, storm-petrels
Black-footed Albatross, Northern Fulmar, New Zealand Shearwater, Sooty Shearwater, Short-tailed Shearwater, Scaled Petrel, Fork-tailed Storm-Petrel, Leach's Storm-Petrel
Distribution, abundance, plumage, behavior

281. NYSEWANDER, D.R., and D.B. BARBOUR. 1979. The breeding biology of marine birds associated with Chiniak Bay, Kodiak Island, 1975-1978, pp. 21-106. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Abundance, nesting habitat, breeding phenology, and productivity of 10 species are discussed, and data collected in 1978 are compared with those of 1975 and 1977. Chick growth and feeding rates are addressed for Black-legged Kittiwakes and Tufted Puffins. An annotated list of the 75 species observed in summer 1978 is appended. REG

Gulf of Alaska - Kodiak (Chiniak Bay)
Cormorants, gulls and terns, alcids
Pelagic Cormorant, Red-faced Cormorant, Glaucous-winged Gull, Mew Gull, Black-legged Kittiwake, Arctic Tern, Aleutian Tern, Tufted Puffin
Abundance, reproduction, growth, habitat, food, annotated list

282. NYSEWANDER, D., and E. HOBERG. 1978. The breeding biology of marine birds associated with Chiniak Bay, Kodiak Island, 1977, pp. 525-574. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The 1977 breeding season phenology and productivity are reported for eight species nesting over inner Chiniak Bay and on mainland Kodiak. Population estimates and densities of major breeding species are presented. Incidental notes are summarized for six other species breeding in the area. A list of the prey items taken by nine species of seabirds is presented. CMH

Gulf of Alaska - Kodiak (Kodiak Is., Chiniak Bay)
Pelagic Cormorant, Red-faced Cormorant, Glaucous-winged Gull, Mew Gull, Black-legged Kittiwake, Arctic Tern, Aleutian Tern, Tufted Puffin
Reproduction, abundance, distribution, food

283. NYSEWANDER, D., and P. KNUDTSON. 1977. The population ecology and migration of seabirds, shorebirds, and waterfowl associated with Constantine Harbor, Hinchinbrook Island, Prince William Sound, 1976, pp. 500-575. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

The results of seabird colony censuses are reported and compared with 1972 censuses. Reproductive phenology and success are discussed for major breeding species and results from "sea watch" and shoreline transects are reported. An annotated list of the 90 species observed in summer 1976 is appended. REG

Gulf of Alaska - Prince William Sound (Hinchinbrook Is.)
Gulls and terns, alcids
Glaucous-winged Gull, Black-legged Kittiwake, Arctic Tern, Common Murre, Tufted Puffin
Abundance, reproduction, food, annotated list

284. NYSEWANDER, D.R., R.A. MOE, P.A. BAIRD, and E. HOBERG. 1978. Reproductive success of the Black-legged Kittiwake on Kodiak Island in 1977. Pac. Seabird Group Bull. 5(1):38. (Abstract)

This paper reports on reproductive success, chronology, and clutch sizes of kittiwakes of Chiniak Bay and Sitkalidak Strait. Factors influencing reproductive success are discussed. MRP

Gulf of Alaska - Kodiak (Chiniak Bay, Sitkalidak Strait)
Gulls and terns
Black-legged Kittiwake
Reproduction

285. OAKLEY, K.L., and K.J. KULETZ. 1979. Summer Distribution and Abundance of Marine Birds and Mammals in the Vicinity of Naked Island, Prince William Sound, Alaska in 1978, and Aspects of the Reproductive Ecology of the Pigeon Guillemot. Unpublished annual report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 107 pp.

The first section of this report contains annotated species accounts of breeding and non-breeding marine birds and mammals in the vicinity of Naked Island. The second section is a report on the reproductive ecology of Pigeon Guillemots. Appended is an annotated list of all species observed between May 8 and August 31, 1978. MRP

Gulf of Alaska - Prince William Sound (Naked Is.)
Cormorants, gulls and terns, alcids
Pigeon Guillemot
Annotated list, food, breeding biology

286. OBERHOLSER, H.C. 1917. Notes on North American birds, I. Auk 34:191-196.

The specimen of Cepphus snowi Stejneger reported by Reichenow from Kenai was probably mislabeled as to origin and should not be added to the list of North American species. CMH

Gulf of Alaska - Cook Inlet (Kenai R.)
Alcids
Distribution, specimen record

287. OBERHOLSER, H.C. 1918. The subspecies of Larus hyperboreus Gunnerus. Auk 35:467-474.

Upon examination of 240 specimens of Glaucous Gulls, the author proposes that two races be recognized: L. h. hyperboreus and L. h. barrovianus. CMH

Alaska
Gulls and terns
Glaucous Gull
Taxonomy, plumage, anatomy

288. OFELT, C.H. 1975. Food habits of nesting Bald Eagles in southeast Alaska. Condor 77:337-338.

This note summarizes observations of foods brought to three eyries between June 30 and August 10, 1971. With the exception of one Larus gull and two "rodents," all foods brought to nests were fish or invertebrates. REG

Gulf of Alaska - Southeastern (Robert Is.)
Gulls and terns
Predation

289. OGI, H. 1978. Food and feeding habits of Thick-billed Murres in the northern North Pacific Ocean. Pac. Seabird Group Bull. 5(2):72. (Abstract)

This summarizes the most important food items for Thick-billed Murres in the northern North Pacific Ocean. MRP

North Pacific
Alcids
Thick-billed Murre
Food

290. OGI, H., and T. TSUJITA. 1973. Preliminary examination of stomach contents of murres (Uria spp.) from the eastern Bering Sea and Bristol Bay, June-August, 1970 and 1971. Jap. J. Ecol. 23:201-209.

After examination of contents of 163 stomachs, the authors assess the importance of larval and juvenile fishes, euphausiids, amphipods, and squids in providing energy for murres. The influence of murres on salmon populations is discussed. MRP

Bering Sea
Alcids
Common Murre, Thick-billed Murre
Food

291. OGI, H., and T. TSUJITA. 1975. Food and feeding habits of the Common Murre and Thick-billed Murre in the Okhotsk Sea, northwestern Pacific Ocean and Bering Sea. Pac. Seabird Group Bull. 2(1):29-30. (Abstract)

The authors examined the stomach contents of 1,855 murres that were captured accidentally in gill nets. MRP

North Pacific
Bering Sea
Alcids
Common Murre, Thick-billed Murre
Food

292. OGI, H., and T. TSUJITA. 1976. Sexual and geographic variations in body weight, culmen length, wing length, and tarsus length for Common Murres in the Bering Sea. Pac. Seabird Group Bull. 3(1):20. (Abstract)

The authors assess morphometric variations in this species based on a sample of 636 birds from 43 sampling stations. MRP

Bering Sea
Alcids
Common Murre
Anatomy

293. OHLENDORF, H.M., J.C. BARTONEK, G.J. DIVOKY, E.E. KLASS, and A.J. KRYNITSKY. 1979. Organochlorine residues in eggs of Alaskan seabirds. Pac. Seabird Group Bull. 6(2):43. (Abstract)

The authors report the organochlorine residues found in 440 clutches of eggs obtained between 1973 and 1976 from 19 species of seabirds in Alaska. MRP

Alaska
Seabirds
Pollution

294. OHLENDORF, H.M., J.C. BARTONEK, E.E. KLASS, and G.J. DIVOKY. 1975. Organochlorine residues in eggs of Alaskan seabirds. Pac. Seabird Group Bull. 2(1):36-37. (Abstract)

This paper reports on the amounts of organochlorine residues found in various seabird eggs. MRP

Gulf of Alaska - Kodiak (Alaska Peninsula)
Bering Sea - Bristol Bay (Shaiak Is., Round Is.)
Aleutians - (Bogoslof Is.)
Cormorants, gulls and terns, alcids
Double-crested Cormorant, Glaucous-winged Gull, Black-legged Kittiwake, Common Murre, Tufted Puffin
Pollution

295. OHLENDORF, H.M., J.C. BARTONEK, E.E. KLAAS, and G. DIVOKY. 1977. Organochlorine residues in Alaskan seabird eggs. Pac. Seabird Group Bull. 4(1):23-24. (Abstract)

This paper reports on the occurrence and mean residue levels of various organochlorines in the eggs of several species of seabirds. MRP

Gulf of Alaska
Aleutians
Bering Sea
Seabirds
Pollution

296. OLSON, S.T. 1954. Gull-waterfowl relationships on the waterfowl breeding grounds in Alaska. Proc. Alaska Sci. Conf. 5:38-39. (Abstract)

The author discusses the significance of gull predation on waterfowl breeding in Alaska. NMH

Alaska
Gulls and terns
Glaucous Gull, Glaucous-winged Gull, Mew Gull
Predation

297. PALLAS, P.S. 1769. Spicilegia Zoologica Quibus Novae Imprimus et Obscurae Animalium Species. Inconibus, Descriptionibus Atque Commentariis. Fasciculus Quintus, Berolini. 34 pp.

This paper "contains original descriptions of Short-tailed Albatross and Tufted Puffin from Bering Sea." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Bering Sea
Albatrosses, alcids
Short-tailed Albatross, Tufted Puffin
Plumage, specimen record, taxonomy

298. PALMER, R.S. (ed.). 1962. Handbook of North American Birds, Vol. 1. Yale University Press, New Haven, Conn. 567 pp.

This volume is the first in a planned series on the birds of North America. Published and unpublished materials are included for each species. Topics include: molts and plumage, field identification, voice, habitat, distribution, migration, reproduction, habits, and food. MRP

Alaska
Albatrosses, fulmars and shearwaters, storm-petrels, cormorants
Abundance, breeding biology, behavior, distribution, food, plumage, habitat, migration, population dynamics, status

299. PALMER, T.S. 1899. A review of economic ornithology in the United States, pp. 259-292. In Yearbook of Dept. Agriculture, Washington, D.C.

In this review, the author mentions the collection of Common Murre eggs from the Pribilof Islands for subsistence use. CMH

Bering Sea - Pribilof Is. (Walrus Is.)
Alcids
Common Murre
Subsistence

300. PARMENTER, H.E. 1937. Flights of shearwaters along the California coast. Condor 39:253.

A one-sentence reference is made to an "immense raft of shearwaters in the vicinity of the Aleutians." REG

Aleutians
Fulmars and shearwaters
Distribution, abundance

301. PATTEN, S.M., JR. 1976. Sympatry and interbreeding of Herring and Glaucous-winged Gulls in southern Alaska. Pac. Seabird Group Bull. 3(1):25-26. (Abstract)

This paper describes the morphological characteristics of Herring and Glaucous-winged Gulls at four colonies in the Gulf of Alaska, and assesses the degree of interbreeding between the two species. MRP

Gulf of Alaska - Copper River (Egg Is., Haenke Is., Dry Bay), Southeastern (Glacier Bay)
Gulls and terns
Glaucous-winged Gull, Herring Gull
Distribution, taxonomy

302. PATTEN, S.M., JR. 1978. Growth of large gull populations in Alaska. Pac. Seabird Group Bull. 5(2):87. (Abstract)

This paper reports on expanding gull populations and predicts further expansion due to an increase in artificial food sources. MRP

Gulf of Alaska
Gulls and terns
Glaucous Gull, Glaucous-winged Gull, Herring Gull
Pollution, population dynamics

303. PATTEN, S., and R. PATTEN. 1975. A Marine Bird Survey of the Dixon Harbor Area, Glacier Bay National Monument, Gustavus, Alaska, and a Marine Mammal Survey, Dixon Harbor Area, Glacier Bay National Monument. Unpublished report. Dept. Pathology, Johns Hopkins Univ., Baltimore, Maryland. 99 pp.

Not reviewed.

Gulf of Alaska - Southeastern (Glacier Bay)
Seabirds
Distribution, abundance

304. PATTEN, S.M., JR., and L.R. PATTEN. 1976. Breeding ecology of the Gulf of Alaska Herring Gull group, pp. 271-368. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

The initial results of a study of the breeding ecology of Herring and Glaucous-winged Gulls in the northeast Gulf of Alaska are reported. Also included is information on recoveries of gulls banded on the colonies. The role of gulls in the transmission of human parasitic and enteric diseases in Alaska is reviewed. CMH

Gulf of Alaska - Copper River, Southeastern
Gulls and terns
Glaucous-winged Gull, Herring Gull
Reproduction, population dynamics, distribution, disease and parasites

305. PATTEN, S.M., JR., and L.R. PATTEN. 1977. Effects of petroleum exposure on hatching success and incubation behavior of Glaucous-winged Gulls (Larus glaucescens) in the northeast Gulf of Alaska, pp. 418-445. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 12. NOAA, Environ. Res. Lab., Boulder, Colo.

A study was conducted in 1976 to test the effects of North Slope crude oil externally applied to eggs during early incubation. CMH

Gulf of Alaska - Copper River
Gulls and terns
Glaucous-winged Gull
Pollution, reproduction, mortality

306. PATTEN, S.M., JR., and L.R. PATTEN. 1977. Evolution, pathobiology and breeding ecology of the Gulf of Alaska Herring Gull group (Larus argentatus x Larus glaucescens), pp. 446-595. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 12. NOAA, Environ. Res. Lab., Boulder, Colo.

The results of a two-year study of the breeding biology of the Glaucous-winged Gull x Herring Gull group in the northeast Gulf of Alaska are reported. Information on food habits and band returns is also presented. The role of gulls in the transmission of human parasitic and enteric diseases in Alaska is reviewed. CMH

Gulf of Alaska - Copper River
Gulls and terns
Glaucous-winged Gull, Herring Gull
Breeding biology, food, migration, disease and parasites, taxonomy

307. PATTEN, S.M., JR., and L.R. PATTEN. 1978. Effects of petroleum exposure on the breeding ecology of the Gulf of Alaska Herring Gull group (Larus argentatus x Larus glaucescens) and reproductive ecology of large gulls in the northeast Gulf of Alaska, pp. 151-309. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 7. NOAA, Environ. Res. Lab., Boulder, Colo.

North Slope Crude oil was externally applied to eggs of Herring and Glaucous-winged Gulls. The effects on hatching success and incubation behavior are discussed. Much life history information is presented in support of the findings. PJG

Gulf of Alaska - Copper River (Dry Bay, Copper R. Delta, Haenke Is.), Cook Inlet (L. Louise)
Gulls and terns
Glaucous-winged Gull, Herring Gull
Abundance, behavior, breeding biology, distribution, pollution, food

308. PATTEN, S., JR., and A.R. WEISBROD. 1974. Sympatry and interbreeding of Herring and Glaucous-winged Gulls in southeastern Alaska. Condor 76:343-344.

The authors present evidence of interbreeding between these two species in the Glacier Bay region of southeastern Alaska. They discuss the lack of sufficient isolating mechanisms between the two species in the zone of sympatry. REG

Gulf of Alaska - Southeastern (Glacier Bay)
Gulls and terns
Glaucous-winged Gull, Herring Gull
Taxonomy, plumage

309. PETERSEN, M.R., and M.J. SIGMAN. 1977. Field studies at Cape Peirce, Alaska - 1976, pp. 633-693. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents information on the abundance, breeding biology, and predation of seabirds, and on spring migration, molt and foraging areas of loons and waterfowl in 1976. An appended table lists the 132 species of birds recorded from the area between 1963 and 1976; notes are included for those recorded only in 1976. CMH

Bering Sea - Bristol Bay (Cape Peirce)
Cormorants, gulls and terns, alcids
Reproduction, abundance, predation, subsistence, checklist

310. PHILLIPS, J.H. 1963. The pelagic distribution of the Sooty Shearwater. Ibis 105:340-353.

This major paper makes only brief mention of the migration and distribution of this species in Alaska waters. REG

Gulf of Alaska
Bering Sea
Fulmars and shearwaters
Sooty Shearwater, Short-tailed Shearwater
Migration, distribution

311. PITELKA, F.A., P.Q. TOMICH, and G.W. TREICHEL. 1955. Breeding behavior of jaegers and owls near Barrow, Alaska. Condor 57:3-18.

This paper presents rather extensive observations on the breeding behavior of the Pomarine Jaeger, Snowy Owl, and Short-eared Owl near Barrow in 1952 and 1953. Habitat utilization, breeding schedule, and territoriality are discussed for the three species. REG

Arctic - Chukchi (Barrow)
Jaegers
Pomarine Jaeger
Breeding biology, behavior, habitat

312. PITELKA, F.A., P.Q. TOMICH, and G.W. TREICHEL. 1955. Ecological relations of jaegers and owls as lemming predators near Barrow, Alaska. Ecol. Monogr. 25:35-117.

This major work describes the breeding near Barrow of three principal brown lemming predators (Pomarine Jaeger, Snowy Owl, and Short-eared Owl) and relates changes in their breeding schedule and population dynamics over a three-year period to a dramatic upswing in numbers of lemmings over this same period. REG

Arctic - Chukchi (Barrow)
Jaegers
Pomarine Jaeger
Breeding biology, behavior, population dynamics, food

313. PORTENKO, L. 1939. On some new forms of Arctic gulls. Ibis, 14th ser., 3:264-269.

This paper describes the type specimen of Larus (= Xema) sabini woznesenskii collected at Hooper Bay. It discusses forms of the Glaucous Gull and Sabine's Gull. (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Bering Sea - Yukon Delta (Hooper Bay)
Gulls and terns
Glaucous Gull, Sabine's Gull
Specimen record, taxonomy

314. QUINLAN, S.E. 1978. The effects of predation on storm-petrels nesting success at Fish Island, Alaska. Pac. Seabird Group Bull. 5(1):47. (Abstract)

This paper reports on predation of Fork-tailed and Leach's Storm-Petrels at Fish Island, Alaska. River otters were the most important predators in 1976 and 1977. MRP

Gulf of Alaska - Prince William Sound (Fish Is.)
Fork-tailed Storm-Petrel, Leach's Storm-Petrel
Predation, reproduction

315. QUINLAN, S.E. 1979. Breeding biology of storm-petrels at Wooded Islands, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 206 pp.

This thesis presents results of a two-year study of the comparative breeding biology of Leach's and Fork-tailed Storm-Petrels. Taxonomy, predation, and chick growth are also treated in depth. An appendix notes the breeding status of the 118 species recorded during the two summers. CMH

Gulf of Alaska - Prince William Sound (Wooded Is.)
Storm-petrels
Fork-tailed Storm-Petrel, Leach's Storm-Petrel
Breeding biology, food, predation, taxonomy, growth, anatomy, checklist

316. RALPH, W.L. 1898. Notes on the egg of the Marbled Murrelet. Auk 15:49.

The author has added a postscript to the note by G. G. Cantwell (same citation) describing the color and measurements of the egg. REG

Gulf of Alaska - Southeastern (Long Is.)
Alcids
Marbled Murrelet
Specimen record

317. RAMSDELL, C., and W.H. DRURY. 1979. Ecological studies of birds in the northern Bering Sea: Seabirds at Bluff, distribution of birds at sea, movements of birds in the Bering Strait, pp. 600-769. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 1. NOAA, Environ. Res. Lab., Boulder, Colo.

This report provides information on the populations and reproductive ecology of seabirds nesting at several sites on the south side of the Seward Peninsula. Most detailed information is presented for Black-legged Kittiwakes and Common Murres. The at-sea distribution of seabirds in relation to the location of the breeding colonies is also discussed. An appended paper (Flock and Hubbard 1979) addresses bird movements through Bering Strait. CMH

Bering Sea - Norton Sound
Seabirds
Abundance, reproduction, growth

318. RAND, A.L. 1942. Larus kumlieni and its allies. Can. Field-Nat. 56:123-126.

The author discusses the difficult question of taxonomic status of the Nearctic gulls of the genus Larus. CMH

Arctic
Bering Sea
Gulls and terns
Glaucous Gull, Herring Gull, Thayer's Gull, Iceland Gull
Taxonomy, plumage

319. RAUSCH, R. 1950. Observations on a cyclic decline of lemmings (Lemmus) on the Arctic Coast of Alaska during the spring of 1949. Arctic 3:166-177.

The author discusses the effects of gull and jaeger predation on populations of lemmings. REG

Arctic - Chukchi (Barrow)
Jaegers, gulls and terns
Pomarine Jaeger, Parasitic Jaeger, Long-tailed Jaeger, Glaucous Gull
Predation

320. RIDGWAY, R. 1882. Description of a new petrel from Alaska. Proc. U.S. Natl. Mus. 5:656-658.

The author describes the type specimen of Fisher's Petrel (= Scaled Petrel, Pterodroma inexpectata) collected at Kodiak, June 11, 1882 (cf. Ridgway, Auk 12:319-322, 1895). REG

Gulf of Alaska - Kodiak (Kodiak Is.)
Fulmars and shearwaters
Scaled Petrel
Distribution, plumage, specimen record, taxonomy

321. RIDGWAY, R. 1882. The Great Black-backed Gull from a new locality. Bull. Nutt. Ornithol. Club 7:60.

This is a brief note announcing that the National Museum received specimens of Great Black-backed Gulls. Birds were collected at Herald Island by C. M. Hooper and at Port Clarence by T. H. Bean. These were the first confirmed records from the American side of the Pacific. MRP

Bering Sea - Norton Sound (Port Clarence)
Gulls and terns
Great Black-backed Gull
Distribution, specimen record

322. RIDGWAY, R. 1886. On the Glaucous Gull of Bering's Sea and contiguous waters. Auk 3:330-331.

The author describes the new species Larus barrovianus, now considered a subspecies of the Glaucous Gull (L. hyperboreus barrovianus). CMH

Arctic - Chukchi (Barrow)
Bering Sea - Norton Sound (St. Michael)
Gulls and terns
Glaucous Gull
Taxonomy, plumage

323. RIDGWAY, R. 1895. On Fisher's Petrel (Aestrelata fisheri). Auk 12:319-322.

This paper provides a detailed description and a colored plate of Fisher's Petrel, now considered the Scaled Petrel (Pterodroma inexpectata). The identifying characteristics are compared with those of other closely related species. CMH

Gulf of Alaska - Kodiak
Fulmars and shearwaters
Scaled Petrel
Plumage

324. RITCHIE, R.J. 1974. Seabirds of Southeastern Waters. Unpublished report. U.S. Forest Service, Juneau, Alaska.

Not reviewed.

Gulf of Alaska - Southeastern
Seabirds

325. RITCHIE, R. 1978. Seabirds and their nesting habitat on western Nunivak Island, Alaska. Unpublished final report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 34 pp.

The author conducted surveys of breeding seabirds from July 1-29, 1978. Habitats and their use by seabirds are described and estimates of breeding populations are presented. Daily species checklists are appended. MRP

Bering Sea - Nunivak Is.
Cormorants, jaegers, gulls and terns, alcids
Abundance, checklist, habitat

326. RITCHIE, R., and T. SMITH. 1978. Seabirds and their nesting habitats on western Nunivak Island, Alaska. Pac. Seabird Group Bull. 5(2):79. (Abstract)

The authors present population estimates and descriptions of nesting habitats for 11 species of seabirds on Nunivak Island. MRP

Bering Sea - Nunivak Is.
Cormorants, gulls and terns, alcids
Pelagic Cormorant, Glaucous Gull, Glaucous-winged Gull, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Pigeon Guillemot, Parakeet Auklet, Crested Auklet, Horned Puffin, Tufted Puffin
Abundance, habitat

327. ROBBINS, C.S., and D.W. RICE. 1974. Recoveries of banded Laysan Albatrosses (Diomedea immutabilis) and Black-footed Albatrosses (D. nigripes). Smithson. Contrib. Zool. 158:232-277.

The authors describe the pelagic distribution of both species based on at-sea recoveries of banded birds. MRP

Aleutians
North Pacific
Albatrosses
Black-footed Albatross, Laysan Albatross
Distribution, migration

328. ROELKE, M., and G. HUNT. 1978. Cliff attendance, foraging patterns, and post fledging behavior of known-sex adult Thick-billed Murres (Uria lomvia). Pac. Seabird Group Bull. 5(2):81. (Abstract)

Adult birds were sexed via laparotomy technique and then marked to facilitate identification. Subsequent observations of adult attendance, feeding, and behavior during the chick fledging period are described. MRP

Bering Sea - Pribilof Is.
Alcids
Thick-billed Murre
Breeding biology

329. ROUDYBUSH, T., and C.R. GRAU. 1977. Yolk formation in some Pacific seabirds and shorebirds. Pac. Seabird Group Bull. 4(1):17-18. (Abstract)

The number of days required for rapid yolk formation is reported for 14 species of birds, determined from analysis of eggs collected in Alaska and elsewhere. MRP

Bering Sea - Yukon Delta (Clarence Rhode NWR)
Gulls and terns, alcids
Glaucous Gull, Mew Gull, Sabine's Gull, Arctic Tern, Pigeon Guillemot, Cassin's Auklet
Physiology

330. ROUDYBUSH, T.E., C.R. GRAU, M.R. PETERSEN, D.G. AINLEY, K.V. HIRSCH, A. P. GILMAN, and S.M. PATTEN. 1979. Yolk formation in some Charadriiform birds. Condor 81:293-298.

The authors estimate the number of days required for yolk formation in selected species of shorebirds, gulls, terns, and alcids. Most of the eggs examined were collected in Alaska. MRP

Bering Sea - Yukon Delta (Old Chevak)
Gulf of Alaska - Northern Gulf (Middleton Is.)
Gulls and terns, alcids
Glaucous Gull, Glaucous-winged Gull, Herring Gull, Mew Gull, Black-legged Kittiwake, Sabine's Gull, Arctic Tern, Common Murre, Black Guillemot, Pigeon Guillemot, Cassin's Auklet, Tufted Puffin
Physiology

331. RYDER, R.A. 1957. Avian-pinniped feeding associations. Condor 59:68-69.

This note, based on observations during winter and summer 1953, describes the feeding association of nine species of marine birds with four species of pinnipeds. REG

Arctic
Bering Sea
Fulmars and shearwaters, storm-petrels, gulls and terns
Northern Fulmar, Short-tailed Shearwater, Fork-tailed Storm-Petrel, Glaucous Gull, Ivory Gull, Black-legged Kittiwake, Sabine's Gull, Arctic Tern
Food

332. SALOMONSEN, F. 1932. Description of three new guillemots (Uria aalge). Ibis (13th ser.) 2:128-132.

Three new forms are described, including one from the eastern Bering Sea (Uria aalge inornata). REG

Bering Sea
Alcids
Common Murre
Taxonomy, distribution

333. SANGER, G.A. 1964. A possible sight record of a Short-tailed Albatross. Murrelet 45:47.

The author questions the unpublished sight record of a "Black-footed Albatross with a pink beak" from a cruise in the Gulf of Alaska in 1956. The author suggests that instead it was actually an immature Short-tailed Albatross. REG

Gulf of Alaska
Albatrosses
Short-tailed Albatross
Distribution, status

334. SANGER, G.A. 1972. Checklist of bird observations from the eastern North Pacific Ocean, 1955-1967. Murrelet 53:16-21.

The author has summarized observations collected aboard oceanographic vessels during 26 cruises between 1955 and 1967. Annotated accounts are presented for 36 species of birds, all typical marine forms except for Peregrine Falcon and Long-eared Owl. REG

Gulf of Alaska
Aleutians
North Pacific
Seabirds
Annotated list, distribution, abundance

335. SANGER, G.A. 1972. Preliminary standing stock and biomass estimates of seabirds in the subarctic Pacific region, pp. 581-611. In A. Yositada Takenouti (chief ed.), Biological Oceanography of the Northern North Pacific Ocean. Idemitsu Shoten, Tokyo.

Based upon observations at sea, the standing stock and biomass of seabirds are calculated and summarized by season and oceanographic domain for each ecological group of birds. Annual food consumption and nutrient transfer are estimated, and how seabirds fit into a simple, hypothetical food chain is discussed. CMH

Bering Sea
Gulf of Alaska
North Pacific
Seabirds
Abundance, distribution, food

336. SANGER, G.A. 1972. The recent pelagic status of the Short-tailed Albatross (Diomedea albatrus). Biol. Conserv. 4:189-193.

The author describes the former range of this species, summarizes recent pelagic sightings, and discusses the status of breeding and pelagic populations. REG

Gulf of Alaska
North Pacific
Albatrosses
Short-tailed Albatross
Distribution, status, management

337. SANGER, G.A. 1973. Pelagic records of Glaucous-winged and Herring Gulls in the North Pacific Ocean. Auk 90:384-393.

This paper documents the first pelagic specimen records of these two gulls off the Pacific Coast of North America, discusses concurrent pelagic sightings, and summarizes the literature on prior pelagic sightings. Pelagic food habits are also discussed. REG

Gulf of Alaska
North Pacific
Gulls and terns
Glaucous-winged Gull, Herring Gull
Distribution, food, migration, specimen record

338. SANGER, G.A. 1974. Black-footed Albatross (Diomedea nigripes). Smithson. Contrib. Zool. 158:96-128.

This paper summarizes at-sea observations of the Black-footed Albatross in the central and eastern Pacific Ocean. MRP

Aleutians
North Pacific
Albatrosses
Black-footed Albatross
Abundance, distribution

339. SANGER, G.A. 1974. Laysan Albatross (Diomedea immutabilis). Smithson. Contrib. Zool. 158:129-153.

This paper summarizes at-sea observations of the Laysan Albatross in the central and eastern Pacific Ocean. MRP

Aleutians
North Pacific
Albatrosses
Laysan Albatross
Abundance, distribution

340. SANGER, G.A. 1975. Observations on the pelagic biology of the Tufted Puffin. Pac. Seabird Group Bull. 2(1):30-31. (Abstract)

The author discusses the pelagic distribution of Tufted Puffins and presents results of a preliminary analysis of stomach contents. MRP

Gulf of Alaska
North Pacific
Alcids
Tufted Puffin
Distribution, food

341. SANGER, G.A., and P.A. BAIRD. 1977. Aspects of the feeding ecology of Bering Sea avifauna, pp. 372-417. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 12. NOAA, Environ. Res. Lab., Boulder, Colo.

This final report presents a review of published and unpublished literature pertinent to the feeding ecology of Bering Sea birds. The authors discuss imbalances which may have been created in the ecosystem from commercial fisheries activities, and how those changes may have benefited planktivorous birds. Recommendations for further research are included. MRP

Bering Sea
Seabirds
Food, research, fishing

342. SANGER, G.A., and P.A. BAIRD. 1977. The trophic relationships of marine birds in the Gulf of Alaska and the southern Bering Sea, pp. 694-757. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

The authors present a preliminary analysis of the stomach contents of 26 species of seabirds collected in Alaska waters. CMH

Gulf of Alaska
Bering Sea
Seabirds
Food

343. SANGER, G.A., P.J. GOULD, and R.A. MOE. 1978. The food habits and feeding ecology of Black-legged Kittiwakes in the Kodiak area. Pac. Seabird Group Bull. 5(1):35-36. (Abstract)

The authors describe the distribution, density, and foods of Black-legged Kittiwakes in the Kodiak Island area from mid-May through mid-September 1977. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Gulls and terns
Black-legged Kittiwake
Distribution, abundance, food

344. SANGER, G., V.F. HIRONAKA, and A.K. FUKUYAMA. 1978. The feeding ecology and trophic relationships of key species of marine birds in the Kodiak Island area, May - September 1977, pp. 773-848. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The food habits of five species of seabirds collected in the vicinity of Kodiak Island are described and quantified. Seasonal changes in body weight and fat condition and in prey species taken are examined. The function of interspecific differences in bill width is discussed. CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Fulmars and shearwaters, gulls and terns, alcids
Sooty Shearwater, Short-tailed Shearwater, Black-legged Kittiwake, Common Murre, Tufted Puffin
Distribution, food, anatomy

345. SANGER, G.A., R.D. JONES, JR., D.W. WISWAR. 1979. The winter feeding habits of selected species of marine birds in Kachemak Bay, Alaska, pp. 309-347. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes preliminary results from a study of the winter food habits of four species of marine birds in Kachemak Bay. Aggregate percent numbers, volume, and frequency of occurrence of prey species are graphed and tabulated for each bird species. CMH

Gulf of Alaska - Cook Inlet (Kachemak Bay)
Alcids
Common Murre, Marbled Murrelet
Food

346. SANGSTER, M. 1978. Reproductive success of the Black-legged Kittiwake in Prince William Sound and the northeastern Gulf of Alaska 1976-1977. Pac. Seabird Group Bull. 5(1):38-39. (Abstract)

This paper reports on the reproductive success of kittiwakes at Wooded Island and Porpoise Rocks. Causes of low production are discussed. MRP

Gulf of Alaska - Prince William Sound (Wooded Is., Porpoise Rocks)
Gulls and terns
Black-legged Kittiwake
Reproduction

347. SANGSTER, M.E., C.T. BENZ, and D.J. KURHAJEC. 1977. Critical Wildlife Areas in Port Etches and Constantine Harbor, Hinchinbrook Island, Prince William Sound. Unpublished report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 18 pp.

This paper describes critical habitats for waterfowl and seabirds in Port Etches and Constantine Harbor. Annotated species accounts and maps delineating critical habitats are included. MRP

Gulf of Alaska - Prince William Sound
Seabirds
Annotated list, habitat

348. SANGSTER, M.E., D.J. KURHAJEC, and C.T. BENZ. 1978. Reproductive Ecology of Seabirds at Hinchinbrook Island and a Census of Seabirds at Selected Sites in Prince William Sound, 1977. Unpublished annual report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 98 pp.

This report includes information on the abundance, breeding phenology, and productivity of seabirds using Constantine Harbor and Porpoise Rocks; general accounts of shorebirds, waterfowl, Bald Eagles, and marine mammals; information on breeding populations of Pigeon Guillemots and Parakeet Auklets on Smith and Little Smith Islands; and, census information on seabirds of Naked and Storey Islands. MRP

Gulf of Alaska - Prince William Sound
Seabirds
Abundance, distribution, breeding biology, food, annotated list, research

349. SAUNDERS, H. 1876. On the Sterninae, or terns, with descriptions of three new species. Proc. Zool. Soc. London 1876:638-672.

In his analysis of this group, the author discusses the taxonomic status of the Aleutian Tern, whose type was collected at Kodiak. CMH

Alaska
Gulls and terns
Aleutian Tern
Plumage, taxonomy

350. SCHAMEL, D.L. 1974. The breeding biology of the Pacific Eider (Somateria mollissima v-nigra Bonaparte) on a barrier island in the Beaufort Sea, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 95 pp.

The breeding biology of Common Eiders was studied on a barrier island in 1971 and 1972. Mechanisms for avoiding predation of eggs by Glaucous Gulls are discussed. MRP

Arctic - Beaufort
Gulls and terns
Glaucous Gull
Predation

351. SCHAMEL, D. 1977. Breeding of the Common Eider (Somateria mollissima) on the Beaufort Sea coast of Alaska. Condor 79:478-485.

This paper describes the interrelationships of eiders and Glaucous Gulls nesting in a mixed colony, but emphasizes the breeding biology of the Common Eider. REG

Arctic - Beaufort
Gulls and terns
Glaucous Gull
Food, predation

352. SCHILLER, B.L. 1951. Studies of the helminth fauna of Alaska. I. Two new cestodes from Sabine's Gull (Xema sabini). J. Parasitol. 37:266-272.

This paper describes two new species of cestodes found in specimens of Sabine's Gulls collected in July and August 1949. MRP

Arctic - Chukchi (Barrow), Beaufort (Alaktak R.)
Gulls and terns
Sabine's Gull
Disease and parasites

353. SCHILLER, B.L. 1951. Studies of the helminth fauna of Alaska. VIII. Some cestode parasites of the Pacific Kittiwake (Rissa tridactyla Ridgway) with a description of Haploparaxis rissae n. sp. Proc. Helminthol. Soc. 18:122-125.

This paper describes some cestode parasites found in 37 Black-legged Kittiwakes collected at St. Lawrence Island in August 1950. MRP

Bering Sea - St. Lawrence Is.
Gulls and terns
Black-legged Kittiwake
Disease and parasites

354. SCHLEGEL, H. 1862-1864. Museum d'Hist. Natur. des Pays-Bays. Revue meth. et crit. de la collection d'Oiseaux. 7 vols. Leyde.

This catalogue of birds in the Leyden Museum lists several species from Sitka, which are questioned by Willet (Condor 16:71-91, 1914). (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Gulf of Alaska - Southeastern (Sitka)
Albatrosses, fulmars and shearwaters, cormorants, alcids
Short-tailed Albatross, Short-tailed Shearwater, Brandt's Cormorant, Crested Auklet, Whiskered Auklet
Distribution, specimen record

355. SCHMIDT, G.D. 1969. Corynosoma bipapillum sp. n. from Bonaparte's Gull Larus philadelphia in Alaska, with a note on C. constrictum Van Cleave, 1918. J. Parasitol. 51:814-816.

This paper describes Corynosoma bipapillum sp. n. (a new species), taken from the posterior gut of a juvenile Bonaparte's Gull collected at Lake George. Also included is a description of Corynosoma constrictum, recovered from Pintail, Lesser Scaup, and White-winged Scoter. MRP

Interior - Tanana (Lake George)
Gulls and terns
Bonaparte's Gull
Disease and parasites

356. SCHOLANDER, P., R. HOCK, V. WALTERS, and L. IRVING. 1950. Adaptation to cold in Arctic and tropical mammals and birds in relation to body temperature, insulation, and basal metabolic rate. Biol. Bull. 99(2):259-271.

This paper "includes studies of Snow Bunting, Alaska Jay and arctic gulls at Pt. Barrow." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Arctic - Chukchi (Barrow)
Gulls and terns
Physiology

357. SCHOLANDER, P., V. WALTERS, R. HOCK, and L. IRVING. 1950. Body insulation of some Arctic and tropical mammals and birds. Biol. Bull. 99:(2):225-236.

This paper "includes studies on Snow Buntings and arctic gulls at Pt. Barrow." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Arctic - Chukchi (Barrow)
Gulls and terns
Physiology, plumage

358. SCHOLANDER, P., V. WALTERS, R. HOCK, and L. IRVING. 1950. Heat regulation in some Arctic and tropical mammals and birds. Biol. Bull. 99(2):236-258.

This paper "includes studies on Snow Buntings and arctic gulls at Pt. Barrow." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Arctic - Chukchi (Barrow)
Gulls and terns
Physiology

359. SEALY, S.G. 1968. A comparative study of breeding ecology and timing in plankton-feeding alcids (Cyclorrhynchus and Aethia spp.) on St. Lawrence Island, Alaska. M.S. thesis. Univ. British Columbia, Vancouver.

Not reviewed.

Bering Sea - St. Lawrence Is.
Alcids
Parakeet Auklet, Crested Auklet, Least Auklet
Breeding biology

360. SEALY, S.G. 1968. Some alcid leg sizes and band sizes. Bird-Banding 39:59.

Recommended band sizes are given for nine species of alcids common to St. Lawrence Island. REG

Bering Sea - St. Lawrence Is.
Alcids
Techniques

361. SEALY, S.G. 1969. Color aberrations in some alcids on St. Lawrence Island, Alaska. Wilson Bull. 81:213-214.

This note records observations of albinism in the Parakeet, Crested and Least Auklets, and melanism in the Common Murre. CMH

Bering Sea - St. Lawrence Is.
Alcids
Common Murre, Parakeet Auklet, Crested Auklet, Least Auklet
Plumage, specimen record

362. SEALY, S.G. 1969. Incubation and nestling periods of the Horned Puffin. Condor 71:81.

The author followed five nests to obtain incubation and nestling periods for this species. MRP

Bering Sea
Alcids
Horned Puffins
Reproduction

363. SEALY, S.G. 1970. Egg teeth and hatching methods in some alcids. Wilson Bull. 82:289-293.

The author describes the construction and persistence of egg teeth for 21 species of alcids, and discusses the methods of hatching for several of these species. CMH

Bering Sea - St. Lawrence Is.
Alcids
Anatomy, behavior

364. SEALY, S.G. 1972. Adaptive differences in breeding biology in the marine bird family Alcidae. Ph.D. thesis. Univ. Michigan, Ann Arbor. 295 pp.

Not reviewed.

Bering Sea - St. Lawrence Is.
Alcids
Breeding biology

365. SEALY, S.G. 1973. Adaptive significance of post-hatching developmental patterns and growth rates in the Alcidae. Ornis Scand. 4:113-121.

The author recognizes three patterns of post-hatching development in Alcidae: precocial, semi-precocial, and intermediate. The feeding ecologies of the species are discussed as potential factors in the evolution of these developmental patterns and growth rates. CMH

Alaska
Alcids
Taxonomy, growth, food, anatomy

366. SEALY, S.G. 1973. Breeding biology of the Horned Puffin on St. Lawrence Island, Bering Sea, with zoogeographical notes on the North Pacific puffins. Pac. Sci. 27:99-119.

The author presents detailed observations on the breeding biology of Horned Puffins and compares aspects of their ecology to that of Tufted Puffins. MRP

Bering Sea - St. Lawrence Is.
North Pacific
Alcids
Horned Puffin, Tufted Puffin
Breeding biology, zoogeography

367. SEALY, S.G. 1975. Influence of snow on egg-laying in auklets. Auk 92:528-538.

This paper examines the relationship between snowmelt and the timing of egg-laying in a population of Least, Crested, and Parakeet Auklets. Gonadal development, nest site tenacity, and food accessibility are considered in relation to availability of nesting habitat. CMH

Bering Sea - St. Lawrence Is.
Alcids
Parakeet Auklet, Crested Auklet, Least Auklet
Breeding biology, physiology, habitat

368. SEALY, S.G. 1977. Wing molt of the Kittlitz's Murrelet. Wilson Bull. 89:467-469.

Using published field observations and information from museum specimens, the author assesses the timing of molt in relation to breeding. MRP

Alaska
Alcids
Kittlitz's Murrelet
Plumage

369. SEALY, S.G., and J. BEDARD. 1974. Breeding biology of the Parakeet Auklet (Cyclorrhynchus psittacula) on St. Lawrence Island, Alaska. Astarte 2:59-68.

This paper describes the breeding biology of Parakeet Auklets. Included is information on the pre-egg stage, the egg stage, and the chick stage. MRP

Bering Sea - St. Lawrence Is.
Alcids
Parakeet Auklet
Breeding biology

370. SEARING, G.F. 1977. Population and breeding ecology of nesting seabirds at Kongkok Bay, St. Lawrence Island, Alaska. Pac. Seabird Group Bull. 4(1):20. (Abstract)

This paper discusses nesting chronology, abundance, and breeding success of seabirds on St. Lawrence Island in 1976. MRP

Bering Sea - St. Lawrence Is. (Kongkok Bay)
Gulls and terns, alcids
Black-legged Kittiwake, Common Murre, Thick-billed Murre, Crested Auklet, Least Auklet
Abundance, reproduction

371. SEARING, G.F. 1977. Some aspects of the ecology of cliff-nesting seabirds at Kongkok Bay, St. Lawrence Island, Alaska, during 1976, pp. 263-412. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

This final report provides population estimates and information on reproductive phenology for 12 species of seabirds nesting on the island in 1976. Aspects of breeding biology and feeding ecology are reported for selected species. CMH

Bering Sea - St. Lawrence Is.
Cormorants, gulls and terns, alcids
Abundance, breeding biology, food, growth, status, anatomy, habitat

372. SEARING, G.F., and W.J. RICHARDSON. 1975. A Study of Seabirds in the Coastal Beaufort Sea Area, 1972 and 1974. Unpublished report. Canadian Wildl. Serv., Edmonton, Alberta. 460 pp.

Not reviewed.

Arctic - Beaufort
Seabirds

373. SEKORA, P.C., G.V. BYRD, and D.D. GIBSON. 1979. Breeding distribution and status of marine birds in the Aleutian Islands, Alaska. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:33-46.

This paper discusses the breeding distribution and status of marine birds in the Aleutian Islands, and discusses gaps in the data. Recommendations for further study are given. An annotated list of seabirds breeding in the Aleutians is included. MRP

Aleutians
Seabirds
Distribution, status, research, annotated list

374. SEPTSON, M.M. 1959. Tubinares in the whaling areas of the northwest Pacific. [In Russian.] Ornithologiya 2:276-281.

Not reviewed.

North Pacific
Albatrosses, fulmars and shearwaters, storm-petrels

375. SERVENTY, D.L. 1967. Aspects of the population ecology of the Short-tailed Shearwater, Puffinus tenuirostris. Proc. Int. Ornithol. Congr. 14:165-190.

Not reviewed.

Fulmars and shearwaters
Short-tailed Shearwater

376. SHAW, W.T. 1924. The Sabine Gull in Oregon and on the lower Yukon. Condor 26:108.

This note records the collection of three specimens of this species, including two from St. Michael in 1908. REG

Bering Sea - Norton Sound (St. Michael)
Gulls and terns
Sabine's Gull
Distribution, specimen record

377. SHUFELDT, R.W. 1885. Variations in the form of the beak that takes place during its growth in the Short-tailed Albatross (Diomedea brachyura). Auk 2:175-178.

This paper is based on four specimens of Short-tailed Albatross taken by T. H. Bean in "various parts of Alaska." REG

Alaska
Albatrosses
Short-tailed Albatross
Anatomy

378. SHUFELDT, R.W. 1887. On a collection of birds' sterna and skulls, collected by Dr. Thomas H. Streets, U.S. Navy. Proc. U.S. Natl. Mus. 10:376-387.

The osteology of the skull, sternum, and shoulder girdle of a specimen of Pigeon Guillemot is discussed. REG

Gulf of Alaska - Southeastern
Alcids
Pigeon Guillemot
Anatomy, taxonomy

379. SHUNTOV, V.P. 1961. Migration and distribution of marine birds in southeastern Bering Sea during spring-summer season. [In Russian with English summary.] Zool. Zh. 40:1058-1069.

This paper presents data on the distribution and migration of eight species that inhabit the shallow open waters of the southeastern Bering Sea. The distribution of birds and the time, direction, and character of their migration are described in relation to the distribution and abundance of food resources. MRP

Bering Sea
Fulmars and shearwaters, storm-petrels, gulls and terns, alcids
Northern Fulmar, Short-tailed Shearwater, Fork-tailed Storm-Petrel, Glaucous Gull, Glaucous-winged Gull, Black-legged Kittiwake, Red-legged Kittiwake, Thick-billed Murre
Abundance, distribution, migration, food

380. SHUNTOV, V.P. 1963. Summer distribution of kittiwakes in the Bering Sea. [In Russian.] Ornitologiya 6:325-330.

The authors describe the distribution and abundance of Black-legged and Red-legged Kittiwakes in the Bering Sea and North Pacific. Maps indicate the distribution of Black-legged Kittiwakes over the entire Bering Sea, except for mainland coastal areas. GAS

North Pacific
Bering Sea
Gulls and terns
Black-legged Kittiwake, Red-legged Kittiwake
Distribution

381. SHUNTOV, V.P. 1964. Transequatorial migrations of the storm-petrel Puffinus tenuirostris (Temm.). [In Russian with English summary.] Zool. Zh. 43:590-598.

The author summarizes published and unpublished observations on the seasonal distribution of the Short-tailed Shearwater in the Pacific Ocean, and describes their spring and fall migration routes. The timing of migration and routes followed are discussed in relation to the productivity of the different oceanic water masses. CMH

Gulf of Alaska
Aleutians
North Pacific
Bering Sea
Fulmars and shearwaters
Short-tailed Shearwater
Migration, distribution, abundance, habitat

382. SHUNTOV, V.P. 1965. On Tubinares and alcids of the Bering Sea. [In Russian.] Ornitologiya 7:276-286.

This paper discusses seasonal distribution and abundance in relation to water temperature and the distribution of food resources. CMH

Bering Sea
Albatrosses, fulmars and shearwaters, storm-petrels, alcids
Distribution, abundance, migration, food, habitat

383. SHUNTOV, V.P. 1966. Concerning wintering of birds in the far eastern seas and the northern part of the Pacific Ocean. [In Russian. English translation for Can. Wildl. Serv.] Zool. Zh. 45:1698-1711.

This paper provides information on the density of birds wintering in the eastern Bering Sea, Aleutians, Kurile Islands, Hokkaido and Khonsyu Islands, Sea of Japan, East China Sea, South China Sea, and Indian Ocean. Latitudinal trends are discussed. MRP

Aleutians
Bering Sea - Bristol Bay
North Pacific
Gulf of Alaska - Kodiak
Albatrosses, fulmars and shearwaters, storm-petrels, gulls and terns, alcids
Laysan Albatross, Northern Fulmar, Short-tailed Shearwater, Fork-tailed Storm-petrel, Glaucous-winged Gull, Black-headed Gull, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Least Auklet
Abundance, distribution

384. SHUNTOV, V.P. 1968. Some regularities in distribution of albatrosses (Tubinares. Diomedeidae) in the northern Pacific. [In Russian with English summary.] Zool. Zh. 47(7):1054-1064.

The distribution and movements of the Laysan and Black-footed Albatross are discussed in relation to oceanic currents and biological productivity. (From Oceanographic Abstracts, original not seen.) NMH

Gulf of Alaska
Aleutians
North Pacific
Albatrosses
Black-footed Albatross, Laysan Albatross
Distribution, habitat, migration

385. SHUNTOV, V.P. 1972. Marine Birds and the Biological Structure of the Ocean. Pac. Res. Instit. Fish. Manage. Oceanogr. (TINRO), Far-Eastern Publishers, Vladivostok. 378 pp. [Transl. from Russian, Agence Tunisienne de Public-Relations for U.S. Dept. Int., Bur. Sport Fish. Wildl. and Natl. Sci. Found., 1974. 566 pp.]

The species' assortment, seasonal distribution, migration, population density, numbers and geographic dispersal of seabirds are examined with respect to the existing biological structure of the World Ocean. Considerable attention is given to 17 species, 9 of them common to Alaska waters. The number of seabirds on the World Ocean is estimated and their role as consumers of other animals is discussed. REG

Gulf of Alaska
Aleutians
North Pacific
Bering Sea
Seabirds
Black-footed Albatross, Laysan Albatross, Northern Fulmar, Sooty Shearwater, Short-tailed Shearwater, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Tufted Puffin
Distribution, migration, abundance, habitat, zoogeography, status

386. SIMONS, T. 1978. Attendance and feeding patterns of the Fork-tailed Storm-Petrel. Pac. Seabird Group Bull. 5(1):47. (Abstract)

Incubation rhythms of adults, incubation shifts, hatching, feeding of chicks, and feeding patterns are discussed. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Storm-petrels
Fork-tailed Storm-Petrel
Breeding biology, food

387. SIMONS, T.R. 1978. Nesting habits of the Marbled Murrelet. Pac. Seabird Group Bull. 5(2):82. (Abstract)

This is the first detailed account of the nesting habits and general breeding biology of the Marbled Murrelet. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Alcids
Marbled Murrelet
Breeding biology

388. SIMONS, T. 1979. Behavior and attendance patterns of the Fork-tailed Storm-Petrel. Pac. Seabird Group Bull. 6(2):25. (Abstract)

This paper describes the attendance patterns and behavior of nesting Fork-tailed Storm-Petrels, and correlates those observations to environmental factors and food resources. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Storm-petrels
Fork-tailed Storm-Petrel
Behavior, breeding biology

389. SIMONS, T.R. 1980. Discovery of a ground-nesting Marbled Murrelet. Condor 82:1-9.

This paper describes the breeding biology of the Marbled Murrelet based on observations of a nest discovered in 1978 on East Amatuli Island. Adaptations to reduce detection of the nest and avoid predators are discussed. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Alcids
Marbled Murrelet
Breeding biology

390. SNARSKI, D. 1970. Kittiwake ecology, Tuxedni National Wildlife Refuge. Alaska Coop. Wildl. Res. Unit Quart. Prog. Rep. 22(1):10-12.

This report presents a brief summary of results from a study of the nesting ecology of Black-legged Kittiwakes on Chisik Island. An annotated list of 57 species of birds, including 32 water-related forms, summarizes observations on and near Chisik Island. MRP

Gulf of Alaska - Cook Inlet (Tuxedni NWR)
Gulls and terns
Black-legged Kittiwake
Breeding biology, annotated list

391. SNARSKI, D. 1971. Kittiwake ecology, Tuxedni National Wildlife Refuge. Alaska Coop. Wildl. Res. Unit Quart. Prog. Rep. 23(1):6-8.

This report briefly summarizes and compares two years' data on the nesting ecology of Black-legged Kittiwakes on Chisik Island. The breeding failure of both years is briefly discussed. MRP

Gulf of Alaska - Cook Inlet (Tuxedni NWR)
Gulls and terns
Black-legged Kittiwake
Breeding biology

392. SOWL, L.W. 1979. The historical status of nesting seabirds of the northern and western Gulf of Alaska. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:47-71.

This paper discusses historical records of distribution and abundance of nesting seabirds in the Gulf of Alaska from 1741 to 1975. An annotated species list and a discussion of population changes during this period are included. MRP

Gulf of Alaska
Seabirds
Distribution, abundance, status, annotated list

393. SOWL, L.W., and J.C. BARTONEK. 1974. Seabirds - Alaska's most neglected resource. Trans. N. Am. Wildl. Nat. Resour. Conf. 39:117-126.

This paper briefly describes the seabird resources of Alaska, the lack of a coordinated management program, the threat to seabirds from past, present, and proposed development programs, and management and information needs. CJL

Alaska
Seabirds
Management, research

394. SOWLS, A. 1978. Kittiwake colony distribution. Pac. Seabird Group Bull. 5(1):30;36. (Abstract)

The author, using information from the "Catalog of Alaskan Seabird Colonies" (Sowls et al. 1978), discusses the distribution of kittiwake colonies in Alaska. MRP

Alaska
Gulls and terns
Black-legged Kittiwake
Distribution, abundance

395. SOWLS, A.L. 1978. Puffin colony distribution. Pac. Seabird Group Bull. 5(1):31;39. (Abstract)

The author, using information presented in the "Catalog of Alaskan Seabird Colonies" (Sowls et al. 1978), discusses the distribution of puffin colonies in Alaska. MRP

Alaska
Alcids
Horned Puffin, Tufted Puffin
Abundance, distribution

396. SOWLS, A.L., S.A. HATCH, and C.J. LENSINK. 1978. Catalog of Alaskan Seabird Colonies. FWS/OBS-78/78. U.S. Fish and Wildl. Serv., Biological Services Program, Anchorage, Alaska. 32 pp. and Atlas.

This atlas shows the locations of all known colonies of seabirds in Alaska. Accompanying tables provide estimates of the number of birds of each species at individual colony sites. Appended tables list, by species, the colony sites at which each occurs, providing a useful cross reference to maps. An introductory section provides brief narrative accounts of the distribution, biology, and population status of each species. The catalog identifies more than a thousand colony areas at which about 22.5 million birds occur. CJL

Alaska
Seabirds
Abundance, annotated list, distribution

397. SPRING, L.W. 1968. A comparison of functional and morphological adaptations in the Common Murre (Uria aalge) and the Thick-billed Murre (Uria lomvia). Ph.D. thesis. Univ. Washington, Seattle. 140 pp.

Not reviewed.

Alcids
Common Murre, Thick-billed Murre

398. SPRINGER, A.M. 1974. Effects of seasonal geographic and dietary changes on pollutant levels in Long-tailed Jaegers (Stercorarius longicaudus). M.S. thesis. Univ. Alaska, College.

Not reviewed.

Jaegers
Long-tailed Jaeger
Food, pollution

399. SPRINGER, A.M., and D.G. ROSENEAU. 1977. A comparative sea-cliff bird inventory of the Cape Thompson vicinity, Alaska, pp. 206-262. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents population estimates for the nine species of seabirds breeding at Cape Thompson and compares them with earlier estimates. Information on phenology, reproductive success, and food habits is provided for some species. CMH

Arctic - Kotzebue Sound (C. Thompson)
Cormorants, gulls and terns, alcids
Abundance, reproduction, food

400. SPRINGER, A.M., and D.G. ROSENEAU. 1978. Ecological studies of colonial seabirds at Cape Thompson and Cape Lisburne, Alaska, pp. 839-960. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report provides information on the numbers, reproductive biology, and feeding ecology of seabirds nesting from Cape Lisburne to Cape Thompson in 1977. Most extensive information is presented for murres and kittiwakes. Implications of petroleum development are discussed. CMH

Arctic - Kotzebue Sound (C. Thompson, C. Lisburne)
Cormorants, gulls and terns, alcids
Pelagic Cormorant, Glaucous Gull, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Black Guillemot, Pigeon Guillemot, Horned Puffin, Tufted Puffin
Abundance, reproduction, food, subsistence, pollution, disturbance, status

401. SPRINGER, A.M., D.G. ROSENEAU, and M. JOHNSON. 1979. Ecological studies of colonial seabirds at Cape Thompson and Cape Lisburne, Alaska, pp. 517-574. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Aspects of population dynamics, reproductive biology, and feeding habits are discussed primarily for Common Murres and Black-legged Kittiwakes, but some information on other species is presented. CMH

Arctic - Kotzebue Sound (C. Thompson, C. Lisburne)
Fulmars and shearwaters, cormorants, gulls and terns, alcids
Black-legged Kittiwake, Common Murre
Abundance, distribution, reproduction, habitat, food

402. SQUIBB, R. 1978. Nesting habitat differences between the Red-legged and Black-legged Kittiwake. Pac. Seabird Group Bull. 5(1):47-48. (Abstract)

This paper describes nesting habitats of Red-legged and Black-legged Kittiwakes in the Pribilof Islands. Behavioral differences associated with nesting habitat selection are described. MRP

Bering Sea - Pribilof Is.
Gulls and terns
Black-legged Kittiwake, Red-legged Kittiwake
Habitat, behavior

403. STEELE, B.B., and W.H. DRURY. 1977. Birds of coastal habitats on the south shore of the Seward Peninsula, Alaska, pp. 1-178. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

Detailed information is provided on distribution, abundance, and reproductive and feeding ecology of seabirds in the Norton Sound region. Maps depicting waterfowl densities along the coast in fall are presented, along with some brood counts. Shorebirds are discussed in general terms. CMH

Bering Sea - Norton Sound
Cormorants, gulls and terns, alcids
Pelagic Cormorant, Glaucous Gull, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Horned Puffin
Abundance, distribution, habitat, food, reproduction, pollution

404. STEJNEGER, L. 1884. Analecta Ornithologica. XI. Notes on Arctic Lari. Auk 1:358-360.

The author questions the validity of several statements by Nelson (Birds of the Bering Sea and Arctic Ocean, 1883) regarding four species of Larinae. CMH

Arctic
Bering Sea
Gulls and terns
Glaucous Gull, Glaucous-winged Gull, Lesser Black-backed Gull, Red-legged Kittiwake
Distribution

405. STEJNEGER, L. 1884. Priocella tenuirostris (Aud.) not a bird of Bering Sea or the Arctic Ocean. Auk 1:233-234.

The author notes the misidentification of a Short-tailed Shearwater (Puffinus tenuirostris) by E. W. Nelson (Birds of the Bering Sea and Arctic Ocean, 1883). The author also discusses the possibility of Nelson's misidentifying a dark phase Northern Fulmar as a Short-tailed Shearwater in the Aleutians. CMH

Arctic - Kotzebue Sound
Aleutians
Fulmars and shearwaters
Northern Fulmar, Short-tailed Shearwater
Distribution

406. STEJNEGER, L. 1884. Remarks on the species of the genus Cepphus. Proc. U.S. Natl. Mus. 7:210-229.

This paper is a detailed comparative treatment of the races of both Black and Pigeon Guillemots. References to material from Alaska occurs throughout. REG

Alaska
Alcids
Black Guillemot, Pigeon Guillemot
Taxonomy, distribution

407. STEJNEGER, L. 1889. Notes on the downy young of the Parrot Auk and of the Crested Auk, pp. 125-126. In Report of the Cruise of the Corwin in 1884. Govt. Printing Off., Washington, D.C.

The author provides the first description to science of the downy young of these two species. REG

Bering Sea - Pribilof Is. (Otter Is.)
Alcids
Parakeet Auklet, Crested Auklet
Plumage

408. STEPHENSON, R.O. 1970. A study of the summer food habits of the arctic fox on St. Lawrence Island, Alaska. M.S. thesis. Univ. Alaska, College. 75 pp.

This thesis presents results of a study in summer 1968 of the food habits of arctic foxes denning in lowland tundra and sea cliff habitats. Over 1,500 scats were analyzed from 24 dens. The composition of the diet is discussed in relation to availability of prey species. CMH

Bering Sea - St. Lawrence Is.
Seabirds
Predation

409. STORER, R.W. 1950. Geographic variation in Pigeon Guillemots of North America. Condor 52:28-31.

The author proposes two new subspecies of Cepphus columba: C. c. adianta of the Pacific Coast from Washington north and west to Umnak Island, and C. c. eureka of coastal California and Oregon. Neither form has subsequently been recognized. REG

Alaska
Alcids
Pigeon Guillemot
Distribution, taxonomy

410. STORER, R.W. 1952. A comparison of variation, behavior and evolution in the sea bird genera Uria and Cepphus. Univ. Calif. Publ. Zool. 52:121-122.

This paper "contains mensural data from Alaskan specimens. Also distribution and synonomy of all forms pertinent to Alaska. Section on evolutionary history is particularly cogent." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Alaska
Alcids
Common Murre, Thick-billed Murre, Black Guillemot, Pigeon Guillemot
Anatomy, behavior, taxonomy

411. STRANG, C.A. 1976. Feeding behavior and ecology of Glaucous Gulls in western Alaska. Ph.D. thesis. Purdue Univ., West Lafayette, Indiana. 145 pp.

The comparative feeding behavior and ecology of coastal and inland nesting populations of Glaucous Gulls were studied between 1972 and 1974. Included are chapters on time-energy budgets, harassment, waterfowl nesting among gulls, and factors limiting gull populations. REG

Bering Sea - Yukon Delta
Gulls and terns
Glaucous Gull
Food, breeding biology, behavior

412. STRANG, C.A. 1977. Variation and distribution of Glaucous Gulls in western Alaska. Condor 79:170-175.

This paper describes variation in pigmentation of iris eye-ring and primary remiges of Glaucous Gulls collected in western Alaska. MRP

Aleutians
Bering Sea
Gulls and terns
Glaucous Gull, Glaucous-winged Gull, Herring Gull
Anatomy, taxonomy, plumage

413. STRANG, C.A. 1980. Incidence of avian predators near people searching for waterfowl nests. J. Wildl. Manage. 44:220-222.

This paper discusses the incidence of Glaucous Gulls and jaegers near people searching for waterfowl nests and assesses the possible impacts of this association on nesting success. More research on loss of eggs from undisturbed nests is suggested. MRP

Bering Sea - Yukon Delta
Jaegers, gulls and terns
Parasitic Jaeger, Long-tailed Jaeger, Glaucous Gull
Predation

414. STRANG, G.L. 1974. Nesting and feeding ecology of Mew Gulls (Larus canus) and Sabine's Gulls (Xema sabini) on the Kashunuk River. Unpublished report. Dept. of Forestry and Natural Resources, Purdue Univ., West Lafayette, Indiana. 10 pp.

This report provides a description of the nests, nesting habitat, eggs, nesting success, and foods of Mew Gulls and Sabine's Gulls. MRP

Bering Sea - Yukon Delta (Kashunuk R., Old Chevak)
Gulls and terns
Mew Gull, Sabine's Gull
Food, breeding biology

415. STRATY, R.R., and R.E. HAIGHT. 1979. Interactions among marine birds and commercial fish in the eastern Bering Sea. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:201-219.

This paper discusses the interactions of marine birds and fish, and identifies areas in which further research is needed. MRP

Bering Sea
Seabirds
Fishing, food, research

416. SWARTZ, L.G. 1966. Sea-cliff birds, pp. 611-678. In N.J. Wilimovsky and J.N. Wolfe (eds.), Environment of the Cape Thompson Region, Alaska. U.S. Atomic Energy Comm., Oak Ridge, Tennessee.

This chapter presents data from a three-year study of seabirds at Cape Thompson. Information on phenology, breeding biology, and trophic relationships is presented for 9 species. MRP

Arctic - Chukchi (Cape Thompson)
Cormorants, gulls and terns, alcids
Pelagic Cormorant, Glaucous Gull, Black-legged Kittiwake, Common Murre, Thick-billed Murre, Black Guillemot, Pigeon Guillemot, Horned Puffin, Tufted Puffin
Abundance, breeding biology, food

417. SWARTZ, L.G. 1967. Distribution and movements of birds in the Bering and Chukchi Seas. Pac. Sci. 21:332-347.

This paper summarizes pelagic observations of 29 species of birds in the northern Bering Sea and the Chukchi Sea during a cruise in late summer 1960. Figures depicting abundance, distribution, and movements are presented for several species. REG

Arctic - Chukchi
Bering Sea
Seabirds
Distribution, abundance, annotated list

418. THAYER, J.E. 1914. Nesting of the Kittlitz Murrelet. Condor 16:117-118.

The author describes a nest found on the Alaska Peninsula. He also provides a description and measurements of several eggs of this species. CMH

North Pacific - (Alaska Peninsula)
Alcids
Kittlitz's Murrelet
Distribution, habitat, anatomy

419. THOMPSON, D.Q. 1951. Notes on the distribution of North Pacific albatrosses. Auk 68:227-235.

This paper summarizes observations of all albatrosses observed during 45,000 nautical miles of cruising in the North Pacific during 1945. The numbers of Black-footed Albatross are correlated with sea water temperatures, and the number of jellyfish observed is used as an index of local productivity. CMH

North Pacific
Albatrosses
Black-footed Albatross, Laysan Albatross
Distribution, abundance, habitat

420. THOMPSON, M.C., J.Q HINES, and F.S.L. WILLIAMSON. 1966. Discovery of the downy young of Kittlitz's Murrelet. Auk 83:349-351.

This article provides the first description of the downy young of the Kittlitz's Murrelet plus summarizes the nesting records of the species. REG

Arctic - Chukchi (Cape Thompson)
Alcids
Kittlitz's Murrelet
Plumage, distribution

421. TIMSON, R.S. 1975. Late Summer Migration at Barrow, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 45 pp.

This paper reports on fall migration of marine birds past Barrow from August 27 to September 16, 1975. Migration is analyzed for each species group in relation to weekly period, time of day, wind conditions, and flock size. Information on age and sex composition is presented for some species. Subsistence hunting activity is also analyzed. CMH

Arctic - Chukchi (Barrow)
Fulmars and shearwaters, jaegers, gulls and terns
Migration, subsistence, age and sex composition

422. TOWNSEND, C.H. 1913. The Crested Auklet. Bird-Lore 15:133-136.

This is a very informative account of the author's experiences in Alaska with this, at the time, very little known alcid. REG

Aleutians
Arctic - Kotzebue Sound
Bering Sea - Pribilof Is.
Gulf of Alaska - Kodiak
North Pacific - (Shumagin Is.)
Alcids
Crested Auklet
Behavior, food, habitat, plumage, reproduction, status, subsistence

423. TRAPP, J.L. Techniques used in reducing oil impact on bird populations. Presented at Leadership Oiled-Bird Rehabilitation Workshop. Anchorage, Alaska. November 14-15 1978.

This paper describes means of deterring marine birds from approaching the site of oil spills. Well-designed experiments to test the effects of these deterrent techniques are urged. MRP

Alaska
Seabirds
Pollution, techniques

424. TRAPP, J.L. 1975. Distribution and Abundance of Seabirds along the Aleutian Islands and Alaska Peninsula, Fall 1974. Unpublished report. U.S. Fish and Wildl. Serv., Aleutian Is. Nat. Wildl. Refuge, Adak, Alaska. 39 pp.

Not reviewed.

Gulf of Alaska - Kodiak (Alaska Peninsula)
North Pacific - Alaska Peninsula
Aleutians
Seabirds
Distribution, abundance

425. TRAPP, J.L. 1977. Aerial Bird Survey of the Coastal Waters of Kodiak Island, Alaska: March 9-14, 1977. Unpublished report. U.S. Fish and Wildl. Serv., Kodiak Nat. Wildl. Refuge, Kodiak, Alaska. 17 pp.

An aerial survey was conducted over coastal waters of Kodiak Island. Annotated accounts are presented for the species observed, and distribution patterns are discussed. Numbers of birds, densities, and frequency of occurrence are summarized in tabular form for each species. Results are compared with those of previous surveys. CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Seabirds
Abundance, habitat, annotated list, distribution

426. TRAPP, J.L. 1978. Effects of human disturbance on a Red-faced Cormorant nesting colony. Pac. Seabird Group Bull. 5(2):88. (Abstract)

This paper describes quantitatively the impact of human visits on cormorant colonies where the primary predator was the Glaucous-winged Gull. MRP

Aleutians
Cormorants, gulls and terns
Red-faced Cormorant, Glaucous-winged Gull
Disturbance, predation

427. TRAPP, J.L. 1979. Ranking Alaska's seabird colonies: A concept plan for habitat protection. Pac. Seabird Group Bull. 6(2):38. (Abstract)

The author, using data contained in Sowls et al. (Catalog of Alaskan Seabird Colonies, 1978), ranks the seabird colonies in Alaska, and describes a plan to manage and protect seabird nesting habitat. MRP

Alaska
Seabirds
Habitat, management

428. TRAPP, J.L 1979. Variation in summer diet of Glaucous-winged Gulls in the western Aleutian Islands: An ecological interpretation. Wilson Bull. 91:412-419.

Over 2,300 regurgitrated pellets of Glaucous-winged Gulls were examined from four locations in the western Aleutian Islands. The author examines the composition of their diet in relation to the abundance and vulnerability of the prey species. MRP

Aleutians - (Alaid-Nizki Is., Agattu Is., Little Kiska Is., Buldir Is.)
Gulls and terns
Glaucous-winged Gull
Food

429. TUCK, L.M. 1960. The Murres. Can. Wildl. Serv. Monogr. Ser. 1. 260 pp.

This landmark monograph provides a thorough discussion of the biology of murres. Topics include: evolution and adaptation, distribution and populations, breeding biology, factors affecting populations, and economics. MRP

Alaska
Alcids
Common Murre, Thick-billed Murre
Abundance, distribution, breeding biology, disease and parasites, pollution, predation, status, taxonomy, disturbance, fishing, food, habitat, management, migration, mortality, plumage

430. UDVARDY, M.D.F. 1963. Zoogeographical study of the Pacific Alcidae, pp. 85-111. In J.L. Grisset (ed.), Pacific Basin Biogeography: A Symposium. Bishop Museum Press, Honolulu.

The author analyzes the paleogeographic history of the Bering Strait region based primarily on the distribution of the family Alcidae. CMH

Alaska
Alcids
Zoogeography, taxonomy

431. UDVARDY, M.D.F. 1979. Zoogeography and taxonomic relationships of seabirds in northern North America. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:167-170.

This paper briefly summarizes the zoogeography and taxonomic relationships of marine birds from north and northwestern North America. MRP

Alaska
Seabirds
Zoogeography, taxonomy

432. U.S. FISH AND WILDLIFE SERVICE. 1980. Workshop on Migratory Bird Subsistence Hunting, Proceedings of Workshop. U.S. Dept. Int., U.S. Fish and Wildl. Serv., Anchorage, Alaska. 119 pp.

This publication contains the presentations, comments, and summaries of topics discussed at the migratory bird subsistence hunting workshop held January 29-30, 1980, in Anchorage. MRP

Alaska
Seabirds
Subsistence, public interest

433. UNITT, P. 1976. Occurrence and migration of the Long-tailed Jaeger in North America. Pac. Seabird Group Bull. 3(1):31. (Abstract)

The author has summarized records of occurrence of Long-tailed Jaegers in North America, and suggests a migration route through the continental interior. MRP

Alaska
Jaegers
Long-tailed Jaeger
Distribution, migration

434. VANKAMMEN, I.I. 1916. Whale birds. Oologist 33:171-172.

This brief note describes the occurrence of shearwaters and other "whale birds" near whales. It also notes that whaling vessels would attempt to find whales by spotting flocks of birds. MRP

Gulf of Alaska - Southeastern (Yakutat)
Fulmars and shearwaters, storm-petrels
Behavior

435. WAHL, T.R. 1976. Observations on seabird densities in the northwestern Pacific Ocean and the Bering Sea in June 1975. Pac. Seabird Group Bull. 3(1):23. (Abstract)

The author censused birds during a cruise from Hokkaido, Japan, to the Bering Sea and Kodiak. MRP

North Pacific
Bering Sea
Seabirds
Distribution, abundance

436. WAHL, T.R. 1978. Seabirds in the northwestern Pacific Ocean and south central Bering Sea in June 1975. West. Birds 9:45-66.

The distribution and abundance of birds recorded on a cruise from Hakodate, Hokkaido, Japan, to Kodiak, Alaska, are reported. MRP

Aleutians
Bering Sea
Seabirds
Abundance, distribution, annotated list

437. WALKER, E.P. 1920. Bird fatalities resulting from a shipwreck. Condor 22:157.

This note recounts observations of oiled Common Murres and Glaucous-winged Gulls after a shipwreck in southeastern Alaska in October 1918. CMH

Gulf of Alaska - Southeastern (Lynn Canal)
Gulls and terns, alcids
Glaucous-winged Gull, Common Murre
Mortality, pollution, behavior

438. WALKER, E. 1920. Probable breeding of the Aleutian Tern in southeastern Alaska. Condor 22:111-112.

The author reports Aleutian Terns near Yakutat in 1916 and 1917, and in Dry Bay in 1917, and discusses the probability of their nesting at those sites. CMH

Gulf of Alaska - Copper River (Yakutat, Dry Bay)
Gulls and terns
Arctic Tern, Aleutian Tern
Distribution

439. WALKER, E.P. 1920. Southerly nesting records of the Arctic Tern in southeastern Alaska. Condor 22:72-73.

This note records the discovery of a colony of Arctic Terns in Taku Inlet, the most southerly nesting recorded to that date. The author suggests that additional colonies may exist near Yakutat, Dry Bay, and Wrangell, based on observations of adults in these areas. CMH

Gulf of Alaska - Southeastern (Taku Inlet, Wrangell), Copper River (Yakutat, Dry Bay)
Gulls and terns
Arctic Tern
Distribution, habitat

440. WALKER, E.P. 1922. Bird fatalities resulting from a shipwreck. Condor 24:26-27.

This note is identical to that by the same author in 1920 (Condor 22:157). CMH

Gulf of Alaska - Southeastern (Lynn Canal)
Gulls and terns, alcids
Glaucous-winged Gull, Common Murre
Mortality, pollution, behavior

441. WALKER, E.P. 1922. The Kittlitz Murrelet in southeastern Alaska. Murrelet 3:9-10.

This paper discusses "observations and specimens from Glacier Bay in August 1921." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Gulf of Alaska - Southeastern (Glacier Bay)
Alcids
Kittlitz's Murrelet
Distribution, specimen record

442. WALKER, E.P. 1923. Definite breeding record for the Aleutian Tern in southern Alaska. Condor 25:113-117.

This note describes a mixed colony of Arctic and Aleutian Terns nesting at the Situk River flats in summer 1922. Mention is made of tern colonies at several other sites in the Gulf of Alaska and on the Alaska Peninsula; but reference to Aleutian Terns is made only once, that being of birds nesting on Isanotski Island in False Pass. REG

Gulf of Alaska - Copper River (Icy Bay, Situk R.), Northern Gulf (Middleton Is.), Kodiak (Kodiak Is.)
North Pacific (Simeonof Is., False Pass)
Gulls and terns
Arctic Tern, Aleutian Tern
Distribution

443. WALKER, W. 1977. Chlorinated hydrocarbon pollutants in Alaskan Gyrfalcons and their prey. Auk 94:442-447.

As part of a study on chlorinated hydrocarbon pollutants in Gyrfalcons, whole body DDE residues of Long-tailed Jaegers, American Golden Plovers, and Whimbrels were determined. MRP

Bering Sea - Norton Sound (Seward Peninsula)
Jaegers
Long-tailed Jaeger
Pollution

444. WARNER, I.M. 1975. Census of Seabirds: Gulf of Alaska, September 1975. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 13 pp.

The author presents results of shipboard transects in the Gulf of Alaska and provides information on food habits of birds collected during the cruise. MRP

Gulf of Alaska
Seabirds
Abundance, food, distribution

445. WARNER, I.M., and J. GUZMAN. 1975. Shipboard Census of Pelagic Birds: Bering Sea and Gulf of Alaska, 8 May to 21 June 1975. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 13 pp.

This report presents census data from shipboard transects in the Gulf of Alaska and Bering Sea. MRP

Gulf of Alaska
Bering Sea
Fulmars and shearwaters, storm-petrels, gulls and terns, alcids
Abundance, distribution

446. WARTER, S.L. 1975. Osteoarthritis in the Short-tailed Albatross: A crash-landing syndrome? Pac. Seabird Group Bull. 2(1):41. (Abstract)

The author presents evidence of an arthritic condition in certain joints of bones of Short-tailed Albatross excavated from Aleut middens on Amchitka Island. He suggests that these abnormalities may result from stresses received upon hard landings and/or take-offs. MRP

Aleutians - (Amchitka Is.)
Albatrosses
Short-tailed Albatross
Disease and parasites, archaeology

447. WATSON, G.E., and G.J. DIVOKY. 1972. Pelagic bird and mammal observations in the Eastern Chukchi, early fall 1970, pp. 111-172. In Websec - 70 (1970). An Ecological Survey in the Eastern Chukchi Sea, September - October 1970. U.S. Coast Guard Rep. No. 50. CG 373-50. Washington, D.C.

The authors present data on distribution, abundance, and foods, and relate them to the ice conditions and timing of migration. The observations, gathered during a cruise, are summarized in an annotated species list. Of the 35 species of birds recorded, 30 are marine forms. Distribution is plotted on maps for each species or species group. A table summarizes information on stomach contents for 56 birds of 9 species. CMH

Arctic - Chukchi
Fulmars and shearwaters, cormorants, jaegers, gulls and terns, alcids
Distribution, abundance, food, annotated list, habitat, migration

448. WATSON, G.E., and G.J. DIVOKY. 1974. Marine birds of the western Beaufort Sea, pp. 681-695. In J.C. Reed and J.E. Sater (eds.), The Coast and Shelf of the Beaufort Sea. Arct. Instit. North Am., Washington, D.C.

Censuses were conducted during two shipboard cruises in the western Beaufort Sea during fall 1971 and 1972. In an annotated species list, the authors summarize information on the distribution and food habits of the birds observed. MRP

Arctic
Seabirds
Annotated list, distribution, food

449. WEBER, W.M. 1956. Occurrence of the Aleutian Tern and Rustic Bunting in the Aleutian Islands. Condor 58:235.

The author records the occurrence of a group of Aleutian and Arctic Terns on Adak Island during the summer of 1951, and postulates that both species breed there. CMH

Aleutians - (Adak Is.)
Gulls and terns
Arctic Tern, Aleutian Tern
Distribution

450. WEBSTER, J.D. 1941. Where is the Marbled Murrelet in early summer? Wilson Bull. 53:124.

The author recounts dates when large numbers of Marbled Murrelets were observed near Sitka. NMH

Gulf of Alaska - Southeastern (Sitka)
Alcids
Marbled Murrelet
Distribution

451. WEHLE, D.H.S. 1976. Summer food and feeding ecology of Tufted and Horned Puffins on Buldir Island, Alaska -- 1975. M.S. thesis. Univ. Alaska, Fairbanks. 83 pp.

This thesis presents an analysis of major components of niche specificity relative to the summer feeding ecology of Tufted and Horned Puffins on Buldir Island. MRP

Aleutians - (Buldir Is.)
Alcids
Horned Puffin, Tufted Puffin
Food, breeding biology

452. WEHLE, D.H.S. 1978. Aspects of a comparative breeding biology of the Tufted and Horned Puffins on Buldir Island, Alaska, 1975, and Ugaiushak Island, Alaska, 1976 and 1977. Pac. Seabird Group Bull. 5(1):41-42. (Abstract)

This paper presents information on the breeding biology of Horned and Tufted Puffins. MRP

Aleutians - (Buldir Is.)
Gulf of Alaska - Kodiak (Ugaiushak Is.)
Alcids
Horned Puffin, Tufted Puffin
Breeding biology

453. WEHLE, D.H.S. 1978. Studies of marine birds on Ugaiushak Island, pp. 208-312. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The marine birds of Ugaiushak Island were studied in summer 1977. Abundance, phenology, and production are addressed for each of 15 species. Information on foods and foraging areas, chick growth, relaying and twinning experiments, and colony attendance is presented for some. CMH

Gulf of Alaska - Kodiak (Ugaiushak Is.)
Storm-petrels, cormorants, jaegers, gulls and terns, alcids
Reproduction, abundance, predation, food, mortality, growth

454. WEHLE, H., E. HOBERG, and K. POWERS. 1977. Studies of marine birds on Ugaiushak Island, pp. 155-277. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

The authors describe the populations, breeding biology, food habits, and foraging areas of 21 species of marine birds in summer 1976. A daily checklist of the 50 species observed on the island is appended. CMH

Gulf of Alaska - Kodiak (Ugaiushak Is.)
Storm-petrels, cormorants, jaegers, gulls and terns, alcids
Abundance, reproduction, food, checklist

455. WHEELWRIGHT, N.T., and P.D. BOERSMA. 1979. Egg chilling and the thermal environment of the Fork-tailed Storm-Petrel (Oceanodroma furcata) nest. Physiol. Zool. 52:231-239.

The authors discuss the physiological and ecological significance of interrupted incubation by Fork-tailed Storm-Petrels. Intermittent periods of egg neglect are considered in relation to selective factors influencing temperatures optimal for embryonic development and acquisition of endothermy in chicks, and as an adaption to an unpredictable and dispersed food supply. CJL

Gulf of Alaska - Kodiak (Barren Is.)
Storm-petrels
Fork-tailed Storm-Petrel
Physiology, reproduction, behavior

456. WHITE, C.M. 1975. The breeding seabird resource in the Rat Islands, Aleutians with emphasis on the Alcidae. Pac. Seabird Group Bull. 2(1):39. (Abstract)

This paper presents estimates of colony sizes in the Rat Islands. In addition, a new Red-faced Cormorant colony is described, and the incidence of plastic particles in auklet stomachs is discussed. MRP

Aleutians - (Rat Is.)
Fulmars and shearwaters, cormorants, gulls and terns, alcids
Distribution, abundance, pollution

457. WHITTAM, T.S., and D. SIEGEL-CAUSEY. 1979. The structure of Alaskan seabird breeding communities: The role of species interactions. Pac. Seabird Group Bull. 6(2):27. (Abstract)

The authors analyzed data presented in Sowls et al. (Catalog of Alaskan Seabird Colonies, 1978) to test the role of competition in structuring seabird breeding communities. MRP

Alaska
Seabirds
Distribution, abundance

458. WIENS, J.A., D. HEINEMANN, and W. HOFFMAN. 1978. Community structure, distribution and interrelationships of marine birds in the Gulf of Alaska, pp. 1-178. In Environmental Assessment of the Alaskan Continental Shelf, Final Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colorado.

The first part of this report discusses in detail the problems associated with censusing marine birds at sea. Current techniques are compared by computer simulations. A new survey technique is described and the results of pelagic surveys using the new technique are presented in terms of detection coefficients and mean densities. The second part discusses the formation and characteristics of feeding flocks, particularly those which contain more than one species. PJG

Gulf of Alaska
Seabirds
Techniques, behavior, food, abundance

459. WILLETT, G. 1920. Additional notes on the avifauna of Forrester Island, Alaska. Condor 22:138-139.

This brief note details observations of three species new to the island: Short-tailed Shearwater, Common Merganser, and Hermit Thrush. REG

Gulf of Alaska - Southeastern (Forrester Is.)
Fulmars and shearwaters
Short-tailed Shearwater
Annotated list, distribution

460. WILLETT, G. 1920. Comments upon the safety of sea birds and upon the "probable" occurrence of the northern Bald Eagle in California. Condor 22:204-205.

As an example of seabirds' ability to withstand severe weather conditions, the author describes the journey of Ancient Murrelet chicks to sea. CMH

Gulf of Alaska - Southeastern (Forrester Is.)
Alcids
Ancient Murrelet
Mortality, behavior, distribution

461. WILLETT, G. 1923. Comments on two recent numbers of Bent's Life Histories of North American Birds. Condor 25:25-27.

The author provides addenda to information appearing in Bent's Life Histories (U.S. Natl. Mus. Bull. 113 and 121) on the occurrence and distribution of certain birds in southeastern Alaska. REG

Gulf of Alaska - Southeastern
Storm-petrels, cormorants, gulls and terns
Fork-tailed Storm-Petrel, Double-crested Cormorant, Brandt's Cormorant, Glaucous-winged Gull, Herring Gull, Mew Gull
Distribution

462. WILLETT, G. 1926. Speaking of Marbled Murrelets. Murrelet 7:31-32.

This paper "describes the nesting habits and the specimens taken at Craig." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Gulf of Alaska - Southeastern (Craig)
Alcids
Marbled Murrelet
Habitat, specimen record

463. WILLIAMS, R.B. 1947. Notes on the Arctic Tern in Alexander Archipelago, southeastern Alaska. Auk 64:143-144.

The author briefly describes several colonies of nesting Arctic Terns, Mew Gulls, and Glaucous-winged Gulls found in the area in 1945. Information is included on habitat, nesting chronology, behavior, and size of the colonies. CMH

Gulf of Alaska - Southeastern (Alexander Archipelago)
Gulls and terns
Glaucous-winged Gull, Mew Gull, Arctic Tern
Habitat, reproduction, abundance, distribution

464. WILLIAMSON, F.S.L., and L.J. PEYTON. 1959. Breeding record of the Double-crested Cormorant in south-central Alaska. Condor 61:154-155.

This note documents the nesting of this species in southcentral Alaska, approximately 300 miles northeast of its known range in Alaska at that time. REG

Gulf of Alaska - Cook Inlet (L. Louise, Susitna R.)
Cormorants
Double-crested Cormorant
Distribution

465. WILLIAMSON, F.S.L., and L.J. PEYTON. 1963. Interbreeding of Glaucous-winged and Herring Gulls in the Cook Inlet region, Alaska. Condor 65:24-28.

The authors describe color variations in plumage and soft parts of specimens of both species and several intermediate forms. The incidence of interbreeding of the two species is discussed. REG

Gulf of Alaska - Cook Inlet (Kenai Peninsula)
Gulls and terns
Glaucous-winged Gull, Herring Gull
Distribution, taxonomy, plumage

466. WOHL, K.D. 1975. Sightings of New Zealand Shearwaters in the northern Gulf of Alaska. Can. Field-Nat. 89:320-321.

This note details the sightings of nine New Zealand Shearwaters between September 16 and 29, 1974 - the first records for this species from Alaska waters. REG

Gulf of Alaska - Northern Gulf, Copper River (Icy Bay)
Fulmars and shearwaters
New Zealand Shearwater
Distribution

467. WOHL, K.D. 1978. Survey of beached marine birds in Alaska, pp. 857-876. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The results of 54 beached bird surveys at 15 sites in the Gulf of Alaska during winter 1977-78 are summarized and briefly discussed. CMH

Gulf of Alaska
Fulmars and shearwaters, gulls and terns, alcids
Northern Fulmar, Short-tailed Shearwater, Glaucous-winged Gull, Black-legged Kittiwake, Common Murre, Thick-billed Murre
Mortality, pollution, techniques

468. WOODBY, D. 1979. Murres and prey patches in the Bering Sea. Pac. Seabird Group Bull. 6(2):39. (Abstract)

The author discusses the winter distribution of murres in relation to water depth and prey densities. MRP

Bering Sea
Alcids
Common Murre, Thick-billed Murre
Distribution, food

469. YESNER, D.R. 1976. Aleutian Island albatrosses: A population history. Auk 93:263-280.

Archaeological studies in the Aleutians are examined for their contribution to a more accurate reconstruction of albatross population history in the Aleutians and the North Pacific in general. Most of the albatross remains recovered were of the Short-tailed Albatross. REG

Aleutians - (Umnak Is.)
Albatrosses
Short-tailed Albatross, Black-footed Albatross, Laysan Albatross
Archaeology, distribution, abundance

SEABIRDS - AREA INDEX

SEABIRDS - SPECIES INDEX

SEABIRDS - SUBJECT INDEX

WATERFOWL - BIBLIOGRAPHY

1. ABRAHAM, K.F. 1978. Adoption of Spectacled Eider ducklings by Arctic Loons. Condor 80:339-340.

   This note describes the interactions between a brood of five Spectacled Eider ducklings and a pair of adult Arctic Loons. The author describes feeding behavior, parental transport of young, alarm responses, following responses, and preening-resting periods. MRP

   Arctic - Beaufort (Storkersen Point)
   Loons, ducks
   Arctic Loon, Spectacled Eider
   Behavior

2. AINLEY, D.G., and G.A. SANGER. 1979. Trophic relations of seabirds in the northeastern Pacific Ocean and Bering Sea. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:95-122.

   This paper reviews the literature on the diets of seabirds found in the northeastern North Pacific Ocean and Bering Sea, and broadly characterizes the diet of each species. Additional research on seabird feeding relations is suggested. MRP

   North Pacific
   Bering Sea
   Geese, ducks
   Food, research

3. ALASKA DEPARTMENT OF FISH AND GAME. 1970 to present. Report of Survey and Inventory Activities. Unpublished annual reports. Fed. Aid in Wildl. Rest., Alaska.

   These reports summarize information from surveys and inventories conducted in Alaska by State Fish and Game personnel. Many reports include results from hunter surveys, reports of banding activities, and information on production. MRP

   Alaska
   Waterfowl
   Management, reproduction, abundance, habitat

4. ALDRICH, J.W. 1946. Speciation in the White-cheeked Geese. Wilson Bull. 58:94-103.

This paper briefly discusses general differences in morphology and ecology of Canada Geese, and describes specimens of geese collected in Alaska. MRP

Gulf of Alaska
Aleutians
Interior
Bering Sea
Geese
Canada Goose
Taxonomy, anatomy

5. ALDRICH, J.W. (ed.) 1949. Migration of Some North American Waterfowl. U.S. Fish and Wildl. Serv., Spec. Sci. Rep. Wildl. 1. 49 pp.

This report presents information on banding locations and recoveries of ducks and geese banded in North America. Chapters with information pertinent to Alaska are: "Migration of the Baldpate" by A.G. Smith; "Migration of the Green-winged Teal" by S.H. Low; "Distribution and Migration of Canvas-back Populations" by R.E. Stewart; and "Migration of the Greater Scaup Duck" by J.W. Aldrich. MRP

Alaska
Ducks
Green-winged Teal, American Wigeon, Canvasback, Greater Scaup
Migration

6. AMERICAN ORNITHOLOGISTS' UNION. 1977. Report of the Committee on Conservation. Auk 94 (4, Suppl.):1DD-19DD.

This paper appraises the Recovery Team - Recovery Plan approach to conservation of endangered species in the United States, and summarizes the status of recovery plans for each species. Included is a discussion of the status of the Aleutian Canada Goose and Peregrine Falcon. CMH

Aleutians
Geese
Canada Goose
Status, management

7. ANONYMOUS. 1970. Bird deaths mount in Alaska. Marine Poll. Bull. 1:66.

This note records the oiling, from an unknown source of crude or bunker oil, of an estimated 10,000 birds in the Kodiak Island archipelago during February and March 1970. Those species identified and others probably affected are listed. CMH

Gulf of Alaska - Kodiak
Grebes, geese, ducks
Pollution, public interest, mortality

8. BAILEY, A.M. 1922. Notes on the Yellow-billed Loon. Condor 24:204-205.

This paper summarizes sight and specimen records of the Yellow-billed Loon in southeastern Alaska in 1920. Anecdotal information is given on behavior and food habits. CMH

Gulf of Alaska - Southeastern
Loons
Yellow-billed Loon
Distribution, abundance, food, behavior

9. BAILEY, A.M. 1923. The haunts of the Emperor Goose. Nat. Hist. 23:172-181.

This narrative account describes collecting adult Emperor Geese and their eggs during the spring. Other common species of birds are briefly mentioned. MRP

Bering Sea - Norton Sound (Wales)
Geese
Emperor Goose
Specimen record

10. BAILEY, A.M. 1924. Four species new to North America. Condor 26:195.

Specimen records of Dafila acuta acuta (= Anas acuta) are presented. REG

Arctic - Chukchi (Wainwright)
Bering Sea - Norton Sound (Wales)
Ducks
Pintail
Distribution, specimen record

11. BAILEY, A.M. 1928. Notes on variations in the White-fronted Goose. Condor 30:164-165.

This paper discusses differences in two forms of Anser albifrons with special emphasis on their breeding distribution. REG

Arctic - Chukchi (Wainwright, Barrow)
Bering Sea - Yukon Delta (Igiak Bay)
Geese
White-fronted Goose
Taxonomy, distribution

12. BAILEY, A.M. 1929. Additional notes from Cape Prince of Wales, Alaska. Condor 31:224-225.

This note describes specimens of six species of birds collected in June 1928. That of the Red-breasted Merganser and Black Brant represent new nesting records for the area. REG

Bering Sea - Norton Sound (Cape Prince of Wales)
Geese, ducks
Brant, Pintail, Black Scoter, Red-breasted Merganser
Specimen record, distribution

13. BAILEY, A.M. 1930. The Pintails of Northwestern Alaska. Condor 32:264-265.

This note considers the taxonomic affinities of Pintails from the Seward Peninsula. REG

Arctic - Chukchi (Barrow, Wainwright), Kotzebue Sound
Ducks
Pintail
Distribution, taxonomy

14. BAILEY, A.M. 1932. Additional records from Cape Prince of Wales, Alaska. Condor 34:47.

Specimens of Arctic Loon (Gavia arctica viridigularis), Dotterel, and Red-throated Pipit are reported. REG

Bering Sea - Norton Sound (Cape Prince of Wales)
Loons
Arctic Loon
Distribution, specimen record

15. BAILEY, A.M. 1933. The Baikal Teal from King Island, Alaska. Auk 50:97.

This note records the collection of two male Baikal Teal on King Island. CMH

Bering Sea - Norton Sound (King Is.)
Ducks
Baikal Teal
Distribution, specimen record

16. BAILEY, A.M. 1953. Green-throated Loon (Gavia arctica viridigularis) in southeastern Alaska. Auk 70:200.

This paper records a specimen collected on May 13, 1948, in Chatham Strait. CMH

Gulf of Alaska - Southeastern (Chatham Strait)
Loons
Arctic Loon
Specimen record

17. BAILEY, A.M. 1956. The Bean Goose and other birds from St. Lawrence Island, Alaska. Auk 73:560.

This note presents the first record of this subspecies of Bean Goose (Anser fabalis serrirostris) collected in North America, and records specimens of six other uncommon species collected on St. Lawrence Island between 1950 and 1953. CMH

Bering Sea - St. Lawrence Is.
Loons, grebes, geese
Arctic Loon, Red-necked Grebe, Bean Goose
Distribution, specimen record

18. BALDWIN, J.H. 1977. A comparative study of the Sandhill Crane subspecies, pp. 266-275. In C.B. DeWitt and E. Soloway (eds.), Wetlands Ecology, Values, and Impacts. Institute for Environmental Studies, Univ. Wisconsin, Madison.

This paper compares the anatomy, physiology, and development of four subspecies of Sandhill Crane. Eggs of Grus canadensis canadensis were collected in Alaska, and chicks hatched from those eggs were included in the study. MRP

Alaska
Cranes
Sandhill Crane
Growth, anatomy, physiology

19. BALDWIN, J.H. 1978. A comparative study of the Sandhill Crane subspecies, pp. 54-62. In Eastern Greater Sandhill Crane Symposium, 1977.

"This study defines and compares variation in the anatomy, physiology and development of four of the six Sandhill Crane subspecies. Eggs from four of the subspecies (including Alaskan)... were collected and transported to the International Crane Foundation where the chicks were hatched and reared under identical conditions." (From Wildlife Review 171:127. Original not seen). CMH

Alaska
Cranes
Sandhill Crane
Anatomy, physiology

20. BANKO, W.E. 1960. The Trumpeter Swan. North Am. Fauna 63. 214 pp.

This monograph presents a detailed account of the natural history of Trumpeter Swans. Most of the information is from Canada and the lower 48 states; however, information available from Alaska is included. MRP

Alaska
Swans
Trumpeter Swan
Abundance, distribution, breeding biology, habitat, food, management, population dynamics

21. BARRY, T.W. 1968. Observations on natural mortality and native use of eider ducks along the Beaufort Sea coast. Can. Field-Nat. 82:140-144.

The author describes a massive die-off of eiders, primarily King Eiders, along the Beaufort Sea coast in spring 1964. He also summarizes other major incidents of massive mortality, and compares these with the much lower mortality caused by subsistence use. CMH

Arctic - Beaufort
Ducks
Common Eider, King Eider
Mortality, subsistence

22. BARTELS, R.F. 1971. Waterfowl Observations, Western Beaufort Sea Ecological Cruise, 1971. Unpublished report. Iowa State Univ., Dept. Zool. Entom., Ames. 15 pp.

This paper presents information on the distribution of waterfowl observed in the western Beaufort Sea from August 17 to September 17, 1971. Vulnerability of the species to oil contamination is discussed. NMH

Arctic - Beaufort
Ducks
Oldsquaw
Pollution, distribution

23. BARTELS, R.F. 1973. Bird survey techniques on Alaska's north coast. M.S. thesis, Iowa State Univ., Ames. 47 pp.

This paper evaluates aerial survey techniques for estimating bird populations, and reports on the distribution of post-breeding waterfowl in Alaskan Arctic coastal waters. MRP

Arctic - Beaufort
Waterfowl
Techniques, distribution, abundance

24. BARTONEK, J.C. 1968. A Survey of Migratory Bird Problems in Alaska for the Purpose of Identifying Research Needs. Unpublished progress report. U.S. Fish and Wildl. Serv., Northern Prairie Wildl. Res. Center, Jamestown, N.D. 36 pp.

This paper identifies and discusses potential problems for birds arising from resource development and hunting, describes responsibilities of various management agencies, and suggests specific research projects which should be conducted in the state. CMH

Alaska
Waterfowl
Management, research

25. BARTONEK, J.C., J.G. KING, and H.K. NELSON. 1971. Problems confronting migratory birds in Alaska. Trans. N. Am. Wildl. Conf. 36:345-361.

This paper provides a general review of the principal habitats of breeding waterfowl, shorebirds, and seabirds; identifies the state and federal agencies managing these habitats; and discusses the types of resource development which may adversely affect birds. Recommendations for research and protection of avian habitats are made. MRP

Alaska
Waterfowl
Management, research

26. BARTONEK, J.C., and D.N. NETTLESHIP (eds.). 1979. Conservation of Marine Birds of Northern North America. U.S. Dept. Int., U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11. 319 pp.

This research report contains papers presented during the International Symposium on the Conservation of Marine Birds of Northern North America, May 13-15, 1975. Topics include: marine environment of birds; status of marine bird populations; the biology and ecology of marine birds in the north; conflicts between the conservation of marine birds and uses of other resources; programs and authorities related to marine bird conservation; and conservation of marine birds in other lands. MRP

Alaska
Waterfowl
Abundance, distribution, fishing, food, habitat, management, mortality, pollution, population dynamics, predation, research, status, taxonomy, zoogeography

27. BARTONEK, J.C., and S.G. SEALY. 1979. Distribution and status of marine birds breeding along the coasts of the Chukchi and Bering Seas. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:21-31.

This paper discusses the status and distribution of the species of marine birds breeding along the coasts of the Chukchi and Bering Seas, and identifies gaps in knowledge of the area. Recommendations for further research are presented. MRP

Arctic - Chukchi
Bering Sea
Waterfowl
Distribution, status, research

28. BAYSINGER, E.B., and R.D. BAUER. 1971. A documented instance of reverse migration in the Pintail. Auk 88:438.

This note reports on a Pintail banded in the Sacramento Valley of California in August and recovered near Wrangell, Alaska, the following October. REG

Gulf of Alaska - Southeastern (Wrangell, Stikine River Flats)
Ducks
Pintail
Migration

29. BELLROSE, F.C. 1976. Ducks, Geese, and Swans of North America. Stackpole Books, Harrisburg, Pa. 544 pp.

This book is an update of Kortright's (1942) classic work, The Ducks, Geese and Swans of North America. Included in this volume is a vast amount of information from unpublished reports and theses, as well as published material, much of it pertinent to Alaska. Species accounts are preceded by chapters that include general information on waterfowl surveys, migration corridors, population dynamics, classification, molts and plumages, migration, conservation, the role of hunting regulations, mortality and disease, and identification. MRP

Alaska
Swans, geese, ducks
Abundance, age and sex composition, anatomy, behavior, breeding biology, disease and parasites, distribution, food, habitat, management, migration, mortality, plumage, population dynamics, status, taxonomy

30. BELLROSE, F.C. 1979. Species distribution, habitats, and characteristics of breeding dabbling ducks in North America, pp. 1-15. In T.A. Bookhout (ed.), Waterfowl and Wetlands - an Integrated Review. LaCrosse Printing Co., Inc., LaCrosse, Wisconsin.

This paper reviews the abundance and distribution of dabbling ducks breeding in various habitats from the northcentral United States to the Arctic. Management strategies are suggested. MRP

Alaska
Ducks
Mallard, Gadwall, Pintail, Green-winged Teal, Blue-winged Teal, Northern Shoveler, American Wigeon
Abundance, distribution, habitat, management

31. BENT, A.C. 1919. Life Histories of North American Diving Birds. U.S. Natl. Mus. Bull. 107. 245 pp.

This is one part of the classic series on the life histories of North American birds. Accounts include detailed observations of various aspects of each species' life history. MRP

Alaska
Loons, grebes
Abundance, behavior, breeding biology, distribution, food, habitat, migration, plumage, status, subsistence

32. BENT, A.C. 1923. Life Histories of North American Wild Fowl. Part 1. U.S. Natl. Mus. Bull. 126. 250 pp.

This is one part of the classic series on the life histories of North American birds. Accounts include detailed observations of various aspects of each species' life history. MRP

Alaska
Ducks
Abundance, behavior, breeding biology, distribution, food, habitat, migration, plumage, status

33. BENT, A.C. 1925. Life Histories of North American Wild Fowl. Part 2. U.S. Natl. Mus. Bull. 130. 311 pp.

This is one part of the classic series on the life histories of North American birds. Accounts include detailed observations of various aspects of each species' life history. MRP

Alaska
Swans, geese, ducks
Abundance, behavior, breeding biology, distribution, food, habitat, migration, plumage, status

34. BENT, A.C. 1926. Life Histories of North American Marsh Birds. U.S. Natl. Mus. Bull. 135. 490 pp.

This is one part of the classic series on the life histories of North American birds. Accounts include detailed observations of various aspects of each species' life history. MRP

Alaska
Herons, cranes, rails
Abundance, behavior, breeding biology, distribution, food, habitat, migration, plumage, status

35. BERGMAN, R.D., and D.V. DERKSEN. 1977. Observations on Arctic and Red-throated Loons at Storkersen Point, Alaska. Arctic 30:41-51.

This paper discusses habitat requirements and facets of the breeding biology of Arctic and Red-throated Loons at Storkersen Point from 1971 to 1975. Spring arrival, abundance, production, distribution of nests, and feeding habits are addressed. MRP

Arctic - Beaufort (Storkersen Point)
Loons
Arctic Loon, Red-throated Loon
Breeding biology, food

36. BIDERMAN, J.O., W.H. DRURY, J.B. FRENCH, JR., and S. HINCKLEY. 1978. Ecological studies in the northern Bering Sea: Birds of coastal habitats on the south shore of Seward Peninsula, Alaska, pp. 510-613. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This reports information on the abundance, reproductive ecology, and foods of seabirds at several sites in Norton Sound in 1977. Concentrations of waterfowl along coastal habitats in spring and fall are mapped and discussed. Reproductive success of Whistling Swans is summarized. Census techniques, measurements of reproductive success, suggestions for future research, and possible effects of oil development are discussed. CMH

Bering Sea - Norton Sound
Swans, geese, ducks, cranes
Abundance, distribution, reproduction, pollution

37. BISHOP, L.B. 1921. Description of a new loon. Auk 38:364-370.

The author examines meristic data of Common Loons, including specimens from Alaska, and proposes a new subspecies. REG

Alaska
Loons
Common Loon
Anatomy, distribution, specimen record, taxonomy

38. BOISE, C. 1976. Breeding biology of the Lesser Sandhill Crane - A preliminary report. Proc. Int. Crane Workshop 1:126-129.

Not reviewed.

Bering Sea - Yukon Delta
Cranes
Sandhill Crane
Breeding biology

39. BOISE, C.M. 1977. Breeding biology of the Lesser Sandhill Crane Grus canadensis (L.) on the Yukon-Kuskokwim Delta. M.S. thesis. Univ. Alaska, Fairbanks. 74 pp.

This study includes information on breeding ecology, distribution and abundance, food habits, and migration and wintering areas. The project included monitoring of a natural population; color-banding; and rearing of a captive chick for information on behavior and food habits. CMH

Bering Sea - Yukon Delta
Cranes
Sandhill Crane
Breeding biology, management, migration, distribution, food

40. BOISE, C.M. 1979. Lesser Sandhill Crane banding program on the Yukon-Kuskokwim Delta, Alaska, pp. 229-236. In Proc. 1978 Crane Workshop.

Not reviewed.

Bering Sea - Yukon Delta
Cranes
Sandhill Crane
Techniques, population dynamics

41. BRANDT, J.F. 1836. Note sur l'Anser canadensis et l'Anser pictus de la zoogeographie de Pallas. Bull. Sci. Acad. Imp. St. Petersb. 1(5):37.

This includes "notes on Anser leucopareius, Aleutian Islands." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Aleutians
Geese
Canada Goose

42. BRANDT, J.F. 1849. Fuligulam (Lampronettam) fischeri, novam aviam Rossicarum speciem pracnissis observationibus ad fuligarum generis sectionum et subgenerum quorundam characters et affinitates spectantibus descripsit. Imp. Acad. Sci. St. Petersb., Mem. 6th Ser., 8:1-16.

This paper presents a "description of Spectacled Eider." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Ducks
Spectacled Eider
Specimen record, taxonomy

43. BROMLEY, R.G.H. 1976. Nesting and habitat studies of the Dusky Canada Goose (Branta canadensis occidentalis Baird) on the Copper River Delta, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 81 pp.

This thesis discusses the breeding ecology of the Dusky Canada Goose on the Copper River Delta, particularly in light of habitat requirements and the effect of the 1964 earthquake on habitat availability. CMH

Gulf of Alaska - Copper River (Copper R. Delta)
Geese
Canada Goose
Breeding biology, habitat, status

44. BROOKS, J.W., J.C. BARTONEK, D.R. KLEIN, D.L. SPENCER, and A.S. THAYER. 1971. Environmental Influences of Oil and Gas Development in the Arctic Slope and Beaufort Sea. U.S. Fish and Wildl. Serv. Resour. Publ. 96. 24 pp.

This paper describes in general the physical and demographic characteristics, fish and wildlife resources, and anticipated developments of the region, and outlines conflicts which are likely to arise. Recommendations are presented to mitigate environmental disturbance. CMH

Arctic
Waterfowl
Management, disturbance, pollution, research

45. BYRD, G.V., and P.F. SPRINGER. 1976. Restoration program for endangered Aleutian Canada Geese. Pac. Seabird Group Bull. 3(1):22. (Abstract)

The authors discuss the program to increase the population of Aleutian Canada Geese to a safe level. Work includes a study of the geese on Buldir Island, captive propagation, removal of introduced predators, release of captive-raised birds, and a study during migration and on the wintering areas. MRP

Aleutians
Geese
Canada Goose
Research, management

46. CADE, T.J. 1955. Records of the Black Brant in the Yukon Basin and the question of a spring migration route. J. Wildl. Manage. 19:321-324.

The author presents a case, based on several specimens and observations, for a large and regular spring movement of Brant through the Yukon Basin. REG

Interior - Upper Yukon
Bering Sea - Yukon Delta
Geese
Brant
Migration, distribution

47. CAMPBELL, J.M. 1969. The Canvasback, Common Goldeneye, and Bufflehead in Arctic Alaska. Condor 71:80.

This note records the occurrence of these three species in the central Brooks Range. CMH

Interior - Koyukuk
Ducks
Canvasback, Common Goldeneye, Bufflehead
Distribution

48. CAMPBELL, J.M. 1969. Subspecific status of Branta canadensis in the central Brooks Range, Alaska. Condor 71:80-81.

This note presents evidence that both B. c. taverneri and B. c. parvipes occur in the central Brooks Range. REG

Interior - Koyukuk (Brooks Range, Anaktuvuk Pass)
Geese
Canada Goose
Taxonomy, distribution

49. CHAPMAN, J.A., C.J. HENNY, and H.M. WIGHT. 1969. The status, population dynamics, and harvest of the Dusky Canada Goose. Wildl. Monogr. 18:1-48.

This study evaluates the status of the Dusky Canada Goose, its population dynamics, and the effects of harvest on the population. MRP

Gulf of Alaska - Copper River (Copper R. Delta), Southeastern
Geese
Canada Goose
Management, status, population dynamics

50. CHILD, K.N. 1972. A new distributional record for the Gadwall. Can. Field-Nat. 86:291-292.

This note records the collection of a male Gadwall near the Arctic coast in summer 1971, representing the northernmost occurrence of the species in continental North America to that date. CMH

Arctic - Beaufort (Prudhoe Bay)
Ducks
Gadwall
Distribution

51. COALE, H.K. 1915. The present status of the Trumpeter Swan (Olor buccinator). Auk 32:82-90.

This paper summarizes the information available to that date on the status of the Trumpeter Swan. Mentioned is a report by Nelson of one nesting at Fort Yukon, Alaska. CMH

Interior - Upper Yukon (Ft. Yukon)
Swans
Trumpeter Swan
Status, distribution, abundance

52. CONANT, B. 1978. Goose Banding, Koyukuk and North Slope Alaska - 1978. Unpublished annual report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 9 pp.

This report summarizes the numbers of birds banded in the Koyukuk and North Slope areas, and describes the techniques used. MRP

Arctic - Beaufort (Teshekpuk L.)
Interior - Koyukuk
Geese
Canada Goose, Brant, White-fronted Goose, Snow Goose
Techniques

53. CONANT, B., and J. HODGES. 1978. Fall Migration Survey Alaska Peninsula - 1978. Unpublished annual report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 10 pp.

This trip report summarizes observations and problems from aerial waterfowl surveys conducted October 13-20, 1978, between Anchorage and Cold Bay. Appended is a proposed filming procedure for estimating Black Brant numbers in Izembek Lagoon. MRP

Bering Sea - Bristol Bay
Swans, geese, ducks
Techniques, abundance

54. CONANT, B., J.G. KING, J.I. HODGES, and L.M. DRESCH. 1979. Alaska Productivity Surveys of Geese, Swans, Brant and Bald Eagles 1979. Unpublished annual report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 17 pp.

This report summarizes productivity data collected in 1979 during various projects. This is the beginning of an attempt to assemble and present the Alaska productivity data in a standard manner. MRP

Alaska
Swans, geese
Whistling Swan, Trumpeter Swan, Canada Goose, Brant, Emperor Goose, White-fronted Goose, Snow Goose
Reproduction

55. CONANT, B., R. KING, J.I. HODGES, and J.G. KING. 1980. A Winter Waterfowl Survey in Southeastern Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 7 pp.

A random stratified plot sampling technique was devised to determine the number of waterfowl within a quarter mile of the coastline of the Alexander Archipelago during March. Population estimates and confidence levels are provided for Bald Eagles and for total ducks along coastlines and in open waters. PJG

Gulf of Alaska - Southeastern (Alexander Archipelago)
Ducks
Abundance, techniques

56. COOKE, M.T. 1943. Returns from banded birds: Some miscellaneous recoveries of interest. Bird-Banding 14:67-74.

Mention is made of a wigeon banded in Oregon and recovered in Alaska eight years later. REG

Arctic - Chukchi (Shishmaref)
Ducks
American Wigeon
Distribution, migration

57. COOKE, M.T. 1945. Returns from banded birds: Some interesting recoveries. Bird-Banding 16:15-21.

Individuals of Whistling Swan, White-fronted Goose, and Pintail, either banded or recovered in Alaska, are mentioned in this summary. REG

Bering Sea - Yukon Delta (Hooper Bay, Chevak), Norton Sound (Golovin)
Swans, geese, ducks
Whistling Swan, White-fronted Goose, Pintail
Migration

58. COOKE, W.W. 1915. The Yellow-billed Loon: A problem in migration. Condor 17:213-214.

The author suggests possible spring and fall migration routes for this species, including its Arctic Alaska, Canada, and Siberia populations. REG

Arctic
Loons
Yellow-billed Loon
Migration

59. COTTAM, C. 1936. Food habits of North American diving ducks. Ph.D. thesis. George Washington Univ., Washington, D.C.

Not reviewed.

Alaska
Ducks
Food

60. COTTAM, C. 1939. Food Habits of North America Diving Ducks. U.S. Dept. Agric. Tech. Bull. 643. 139 pp.

This publication presents a detailed description and analysis of foods eaten by diving ducks. Data from specimens collected in Alaska are included. MRP

Alaska
Ducks
Food

61. COTTAM, C., and P. KNAPPEN. 1939. Food of some uncommon North American birds. Auk 56:138-169.

This paper provides information on the foods of 47 species of birds, including six species collected in Alaska. CMH

Alaska
Loons, geese, ducks
Yellow-billed Loon, Emperor Goose, Green-winged Teal
Food

62. CROW, J.H. 1971. Earthquake-initiated changes in the nesting habitat of the Dusky Canada Goose, pp. 130-136. In K.B. Krauskopf (chairman), The Great Alaska Earthquake of 1964: Biology. Natl. Research Council, Washington, D.C.

This paper describes the nesting habitat of Dusky Canada Geese in the Copper River Delta before the 1964 earthquake, and describes changes caused by the uplift. MRP

Gulf of Alaska - Copper River (Copper R. Delta)
Geese
Canada Goose
Habitat

63. DAU, C.P. 1974. Nesting biology of the Spectacled Eider Somateria fischeri (Brandt) on the Yukon-Kuskokwim Delta, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 72 pp.

This thesis describes the breeding biology of the Spectacled Eider. Topics include migration, nests and nest sites, eggs and egg laying, incubation, reproductive success, broods, and foods and feeding behavior. MRP

Bering Sea - Yukon Delta
Ducks
Spectacled Eider
Breeding biology, food, migration

64. DAU, C.P. 1975. Occurrence and possible significance of an abnormal plumage in a Spectacled Eider. Murrelet 45:17.

This paper describes an adult male Spectacled Eider with a black chevron in the throat region. MRP

Bering Sea - Yukon Delta (Hooper Bay)
Ducks
Spectacled Eider
Plumage

65. DAU, C.P. 1976. Capturing and marking Spectacled Eiders in Alaska. Bird-Banding 47:273.

This note describes use of a gill net to trap adult female and young Spectacled Eiders. Recaptures and sightings of marked birds provided information on site tenacity and return rates. CMH

Bering Sea - Yukon Delta
Ducks
Spectacled Eider
Techniques, behavior, reproduction

66. DAU, C.P. 1976. Clutch sizes of the Spectacled Eider on the Yukon-Kuskokwim Delta, Alaska. Wildfowl 27:111-113.

This paper discusses factors influencing nesting and clutch size of Spectacled Eiders, including climatological factors and habitat availability. MRP

Bering Sea - Yukon Delta
Ducks
Spectacled Eider
Reproduction, habitat

67. DAU, C.P. 1978. Observations on helminth parasites of the Spectacled Eider, Somateria fisheri (Brandt), in Alaska. Can. J. Zool. 56:1882-1885.

This note describes the helminth parasites from 11 Spectacled Eiders collected on the Yukon-Kuskokwim Delta. Parasites are discussed as a possible compounding factor in the mortality of young birds after they leave the breeding grounds. MRP

Bering Sea - Yukon Delta
Ducks
Spectacled Eider
Disease and parasites

68. DAU, C.P., and S.A. KISTCHINSKI. 1977. Seasonal movements and distribution of the Spectacled Eider. Wildfowl 28:65-75.

The authors review the published and unpublished information available on the distribution and spring migration of Spectacled Eiders. Post-breeding migration routes, molting areas, and wintering distribution of the species are discussed. A wintering area in the Bering Sea is hypothesized. MRP

Alaska
Ducks
Spectacled Eider
Distribution, migration

69. DAU, C.P., and P.G. MICKELSON. 1979. Relation of weather to spring migration and nesting of Cackling Geese on the Yukon-Kuskokwim Delta, Alaska, pp. 94-104. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese, A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

This paper reports on the phenology of spring migration and nesting of Cackling Geese from 1969 through 1978. Photoperiod, weather, and timing of snow melt and runoff are discussed in relation to timing of arrival and nesting. MRP

Bering Sea - Yukon Delta
Geese
Canada Goose
Reproduction

70. DAVIS, R.A., and A.N. WISELEY. 1974. Normal behaviour of Snow Geese on the Yukon-Alaska North Slope and the effects of aircraft-induced disturbance on this behaviour, September 1973. Arct. Gas Biol. Rep. Ser. 27:1-85.

This paper reports normal behavior of Snow Geese during staging, and evaluates the effects on their behavior of overflights by various types of aircraft. MRP

Arctic - Beaufort
Geese
Snow Goose
Disturbance, behavior

71. DEGANGE, A.R., and J.W. NELSON. 1978. Additional Studies of Seabirds on the Forrester Island National Wildlife Refuge, 31 May - 17 June 1977. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 29 pp.

This is a report of a short-term study of seabirds on the Forrester Island National Wildlife Refuge in 1977. Emphasis was on establishing permanent study plots, and determining breeding densities for comparison in other years. MRP

Gulf of Alaska - Southeastern (Forrester Island NWR)
Loons, ducks
Yellow-billed Loon, Surf Scoter
Distribution, annotated list

72. DELACOUR, J. 1951. Preliminary note on the taxonomy of Canada Geese, Branta canadensis. Am. Mus. Novit. 1537:1-10.

This paper provides a general description of the subspecies of Canada Geese, and includes measurements from specimens and a brief description of known breeding areas. MRP

Alaska
Geese
Canada Goose
Taxonomy, anatomy, distribution

73. DELACOUR, J. 1954-1964. The Waterfowl of the World. Vols. 1-4. Arco Publishing Company, Inc., New York.

These volumes address the taxonomic relationships of the waterfowl of the world. Detailed descriptions of species and subspecies of ducks, geese, and swans in Alaska are included. For each species, descriptions of distribution and general habits are included. Volume 4 contains chapters on general habits, the reproductive cycle, ecology, distribution and species relationships, hunting, conservation and management, aviculture, anatomy, and fossil Anseriformes. MRP

Alaska
Swans, geese, ducks
Abundance, distribution, breeding biology, food, habitat, management, migration, plumage, status, taxonomy

74. DELACOUR, J., and S.D. RIPLEY. 1975. Description of a new subspecies of the White-fronted Goose Anser albifrons. Am. Mus. Novit. 2565:1-4.

This paper describes a new subspecies of White-fronted Goose (Anser albifrons elgasi). A breeding range in the taiga zone in Alaska is postulated. MRP

Alaska
Geese
White-fronted Goose
Taxonomy, anatomy, distribution

75. DELACOUR, J., and J.T. ZIMMER. 1952. The identity of Anser nigricans Lawrence 1846. Auk 69:82-84.

Four subspecies of Anser nigricans (= Branta bernicla) are proposed. REG

Alaska
Geese
Brant
Taxonomy

76. DEMENT'EV, G.P., and N.A. GLADKOV (eds.). 1951. Birds of the Soviet Union, Vol. 2. [Transl. from Russian.] Israel Prog. Sci. Transl., Jerusalem. 553 pp.

This volume contains natural history accounts of all species of cranes, alcids, loons, grebes, tubenoses, and herons occurring in the Soviet Union. Some information on species also occurring in Alaska is included. MRP

Alaska
Loons, grebes, herons, cranes
Abundance, distribution, behavior, breeding biology, food, habitat, migration, status, taxonomy, plumage

77. DEMENT'EV, G.P., and N.A. GLADKOV (eds.). 1952. Birds of the Soviet Union, Vol. 4. [Transl. from Russian.] Israel Prog. Sci. Transl., Jerusalem. 683 pp.

This volume contains natural history accounts of all species of Anseriformes occurring in the Soviet Union. Some information on species also occurring in Alaska is included. MRP

Alaska
Swans, geese, ducks
Abundance, distribution, behavior, breeding biology, food, habitat, migration, status, taxonomy, plumage

78. DERKSEN, D.V., and W.D. ELDRIDGE. 1980. Drought-displacement of Pintails to the Arctic Coastal Plain, Alaska. J. Wildl. Manage. 44:224-229.

This paper presents information on Pintail migration, breeding densities, and production at sites on the Arctic Coastal Plain from 1971 to 1978, and relates those data to wetland conditions in the prairie pothole region. The importance of the availability of rich invertebrate food resources and stable water levels to drought-displaced Pintails is discussed. MRP

Arctic - Beaufort
Ducks
Pintail
Abundance, migration, food, habitat

79. DERKSEN, D.V., M.W. WELLER, and W.D. ELDRIDGE. 1979. Distributional ecology of geese molting near Teshekpuk Lake National Petroleum Reserve - Alaska, pp. 189-207. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese. A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

This paper describes the numbers, movements, and habitat requirements of geese molting near Teshekpuk Lake from 1976 to 1978. Recommendations are included for protection of the area from impacts of petroleum development. MRP

Arctic - Beaufort (Teshekpuk L.)
Geese
Canada Goose, Brant, White-fronted Goose, Snow Goose
Status, research, migration, plumage, habitat, disturbance, abundance

80. DIXON, J. 1916. Migration of the Yellow-billed Loon. Auk 33:370-376.

This paper presents observations on the migration of Yellow-billed Loons along the Beaufort Sea coast, and summarizes other observations. Fall migration routes could not be clearly defined. Observations during spring migration are discussed. MRP

Arctic - Beaufort
Loons
Yellow-billed Loon
Migration

81. DRURY, W.H. 1979. Population dynamics of northern marine birds. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:123-139.

This paper discusses human activities and natural processes that have caused changes in numbers and the distribution of seabirds, and presents a short discussion of theoretical models. Several goals for improving our understanding of the population dynamics and biology of marine birds are identified. MRP

Alaska
Waterfowl
Population dynamics, research, management

82. DRURY, W.H., and B.B. STEELE. 1977. Studies of populations, community structure and ecology of marine birds at King Island, Bering Strait Region, Alaska, pp. 75-149. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

Population estimates are presented for 11 species of seabirds nesting on King Island in 1976. Information on phenology, reproductive success, and food habits is provided for some. Distribution of waterfowl and seabirds at sea is discussed briefly. CMH

Bering Sea - Norton Sound (King Is.)
Ducks
Distribution

83. DUNAGAN, T.T. 1957. Paramonostomum malerischi n. sp. (Trematoda: Digenea: Notocotylidae) from the Emperor Goose (Philacte canagica L.) in Alaska. J. Parasitol. 43:586-589.

A new species of trematode is described from the coecum of an Emperor Goose collected near Nome. CMH

Bering Sea - Norton Sound (Nome)
Geese
Emperor Goose
Disease and parasites

84. DUNN, E.H. 1979. Time-energy use and life history strategies of northern seabirds. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:141-166.

This paper reviews information on the life history strategies and annual cycles of northern seabirds, particularly to determine the periods when they are most vulnerable to stress. MRP

Alaska
Ducks
Common Eider
Physiology, research

85. DWIGHT, J. 1918. A new species of loon (Gavia viridigularis) from Northeastern Siberia. Auk 35:196-199.

The author describes a new species of loon from northeastern Siberia and western Alaska, Gavia viridigularis, now considered G. arctica viridigularis. He considers three Alaska specimens mentioned by Hersey (Auk 34:283-290, 1917) to be this species. CMH

Bering Sea - Norton Sound (St. Michael, Nome), Pribilof Is.
Loons
Arctic Loon
Taxonomy, plumage

86. EINARSEN, A.S. 1965. Black Brant, Sea Goose of the Pacific Coast. Univ. Washington Press, Seattle, Washington. 142 pp.

This book summarizes published and unpublished data on the natural history of Black Brant. MRP

Alaska
Geese
Brant
Distribution, abundance, breeding biology, foods, migration, predation, management, public interest, plumage, habitat

87. EISENHAUER, D.I., and C.M. KIRKPATRICK. 1977. Ecology of the Emperor Goose in Alaska. Wildl. Monogr. 57:1-62.

This is a comprehensive reference on nesting ecology and behavior of Emperor Geese on the central Yukon Delta. Included are observations of wintering birds along the Alaska Peninsula and at Adak Island. MRP

Bering Sea - Yukon Delta (Kokechik Bay), Bristol Bay (Alaska P.)
Aleutians - (Adak Is.)
Geese
Emperor Goose
Breeding biology, behavior, management, research

88. EISENHAUER, J.H. 1978. Nesting ecology and behavior of Pacific Brant in Alaska. Proc. Mont. Acad. Sci. 37:85. (Abstract)

This brief abstract reports on the nesting success and clutch size of Black Brant on the Yukon-Kuskokwim Delta. MRP

Bering Sea - Yukon Delta
Geese
Brant
Reproduction, subsistence

89. ELKINS, W.A. 1952. Alaska Waterfowl Breeding Ground Survey. Unpublished report. Project No. W-3-R-6. Fed. Aid in Wildl. Rest., Alaska 6(4):9-15.

This report summarizes the June waterfowl transect information for Alaska. MRP

Gulf of Alaska - Copper River
Arctic - Kotzebue Sound
Interior - Innoko, Tanana, Koyukuk, Upper Yukon
Bering Sea - Yukon Delta
Swans, geese, ducks
Status, abundance, distribution

90. ELY, C.R. 1979. Breeding biology of White-fronted Geese. M.S. thesis, Univ. Calif., Davis. 110 pp.

This thesis presents a study of the breeding biology of White-fronted Geese on the Yukon-Kuskokwim Delta. The most important factors controlling reproduction are summarized. MRP

Bering Sea - Yukon Delta
Geese
White-fronted Goose
Breeding biology

91. FAY, F.H. 1961. The distribution of waterfowl to St. Lawrence Island, Alaska. Wildfowl 12:70-80.

This paper reports observations of waterfowl on St. Lawrence Island, Alaska. Changes in status and in the seasonal distribution and abundance are described for several species. Historic and current Eskimo waterfowl harvests are compared to determine changes in abundance of waterfowl. MRP

Bering Sea - St. Lawrence Is.
Swans, geese, ducks
Abundance, checklist, distribution, migration, status, subsistence, zoogeography

92. FLOCK, W.L. 1972. Radar observations of bird migration at Cape Prince of Wales. Arctic 25:83-98.

Observations of bird migration in springs 1969 and 1970, and fall 1969 are presented. Two species were positively identified, and several others suspected from the radar observations. Migration between Siberia and Alaska was examined by use of automatic camera exposures of the radar screen. MRP

Bering Sea - Norton Sound (Cape Prince of Wales)
Geese, cranes
Snow Goose, Sandhill Crane
Migration, techniques

93. FLOCK, W.L. 1973. Radar observations of bird movements along the Arctic Coast of Alaska. Wilson Bull. 85:259-275.

Bird movements along the Arctic Coast were studied at six DEW radar sites. King and Common Eiders are treated in detail, but other water-related birds are discussed. Some visual observations are presented. CMH

Arctic - Beaufort (Lonely, Oliktok, Barter Is.), Chukchi (Point Lay, Wainwright, Barrow)
Swans, geese, ducks
Whistling Swan, Brant, White-fronted Goose, Snow Goose, Oldsquaw, Common Eider, King Eider
Migration

94. FLOCK, W.L. 1976. The spring bird migration at Pt. Barrow. Pac. Seabird Group Bull. 3(1):22-23. (Abstract)

Spring migration past Pt. Barrow was monitored in 1974. Migration routes and influence of wind on the timing of migration are discussed. MRP

Arctic - Chukchi (Pt. Barrow)
Waterfowl
Migration

95. FRANCIS, K. (ed.). 1976. Arctic Slope Snow Goose studies. Northeast by East, Rev. Alaskan Arct. Gas Res. 1(4):1-4.

Not reviewed.

Arctic
Geese
Snow Goose

96. FRAZER, D.A., and C.M. KIRKPATRICK. 1979. Parental and brood behaviour of Emperor Geese in Alaska. Wildfowl 30:75-85.

This paper describes parental and brood behavior of Emperor Geese before, during, and after departure from the nest. Behavior of captive goslings is also described. MRP

Bering Sea - Yukon Delta (Kokechik Bay)
Geese
Emperor Goose
Behavior

97. FRIEDMANN, H. 1938. Further records from St. Lawrence Island, Alaska. Condor 40:88.

This note reports on three species of birds new to the island and one new to North America. REG

Bering Sea - St. Lawrence Is.
Geese, ducks
White-fronted Goose, Green-winged Teal
Specimen record, distribution

98. FRIEDMANN, H. 1948. The Green-winged Teal of the Aleutian Islands. Proc. Biol. Soc. Wash. 61:157-158.

This note presents measurements of Green-winged Teal (Anas crecca nimia) collected in the Aleutian Islands. MRP

Aleutians
Ducks
Green-winged Teal
Taxonomy, anatomy

99. FRITSCH, L.E., and I.O. BUSS. 1958. Food of the American Merganser in Unakwik Inlet, Alaska. Condor 60:410-411.

This paper presents information on the food habits of the American (= Common) Merganser based on analysis of stomach contents from 55 birds. MRP

Gulf of Alaska - Prince William Sound (Unakwik Inlet)
Ducks
Common Merganser
Food

100. GABRIELSON, I.N. 1941. Baikal Teal on St. Lawrence Island, Alaska. Auk 58:400.

This note documents the collection of a pair of Baikal Teal on St. Lawrence Island. CMH

Bering Sea - St. Lawrence Is.
Ducks
Baikal Teal
Distribution, specimen record

101. GABRIELSON, I.N. 1946. Trumpeter Swans in Alaska. Auk 63:102-103.

The author reports a population of 350 swans wintering in the vicinity of Ketchikan, which he surmises to be Trumpeter Swans. CMH

Gulf of Alaska - Southeastern (Ketchikan)
Swans
Trumpeter Swan
Distribution, abundance

102. GABRIELSON, I.N. 1947. A North American record of the Bean Goose. Auk 64:325.

The author describes the collection of a specimen of Anser fabalis sibiricus on St. Paul Island on April 19, 1946. REG

Bering Sea - Pribilof Is. (St. Paul Is.)
Geese
Bean Goose
Distribution, specimen record

103. GABRIELSON, I.N. 1952. Alaskan waterfowl and their management, pp. 292-305. In H.B. Collins (ed.), Science in Alaska. Arctic Institute of North America, Washington, D.C.

This article presents historical and current information on the importance of Alaska to North America waterfowl populations, and discusses at length problems confronting these populations. Several recommendations are listed to offset the decline of waterfowl populations in Alaska. REG

Alaska
Waterfowl
Management, subsistence

104. GABRIELSON, I.N., and F.C. LINCOLN. 1953. Status of the Lesser Common Loon. Condor 55:314-315.

The authors recommend that Gavia immer elasson be placed in synonomy and that G. immer be restored to its monotypic status. REG

Alaska
Loons
Common Loon
Taxonomy

105. GEIST, O.W. 1939. Sea birds found far inland in Alaska. Condor 41:68-70.

The author reports occurrence of a Crested Auklet and a Fork-tailed Storm-Petrel far inland, and describes the weather conditions associated with each incident. He also provides observations on behavior of birds during a storm at St. Lawrence Island, briefly discussing possible ties between such behavior and anomalous sightings. CMH

Bering Sea - St. Lawrence Is.
Ducks
Oldsquaw, Common Eider, King Eider
Behavior

106. GILL, R., JR., C. HANDEL, and M. PETERSEN. 1979. Migration of birds in Alaska marine habitats, pp. 245-288. In Environmental Assessment of the Alaskan Continental Shelf, Final Reports of Principal Investigators, Vol 5. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes published and unpublished information on spring and fall migration routes and staging areas. The species addressed are those thought to be highly vulnerable to oil contamination in Alaskan marine waters. REG

Alaska
Waterfowl, ducks, geese
Brant, Emperor Goose, Steller's Eider, Common Eider, King Eider, White-winged Scoter, Surf Scoter, Black Scoter
Migration, habitat, pollution

107. GILL, R., M. PETERSEN, C. HANDEL, J. NELSON, A. DEGANGE, A. FUKUYAMA, and G. SANGER. 1978. Avifaunal assessment of Nelson Lagoon, Port Moller, and Herendeen Bay, Alaska - 1977, pp. 69-131. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The distribution and abundance of waterfowl and shorebirds along the northcentral Alaska Peninsula are reported, with maps showing critical feeding and roosting areas. Information on the reproductive success of Common Eiders is also included. Appended is the paper "Feeding ecology of Steller's Eider." CMH

Bering Sea - Bristol Bay (Nelson Lagoon, Herendeen Bay)
Geese, ducks
Emperor Goose, Pintail, Oldsquaw, Common Eider, Steller's Eider, Black Scoter
Abundance, food, plumage, reproduction, habitat

108. GRAY, G.R. 1855. On a new species of Somateria and the female of Lampronetta fischeri Brandt. Proc. Zool. Soc. London 23:211-212.

This paper presents the "original description of the Pacific Eider and the description of the Spectacled Eider from specimens collected in Kotzebue and Norton Sounds respectively." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Arctic - Kotzebue Sound
Bering Sea - Norton Sound
Ducks
Spectacled Eider, Common Eider
Plumage, specimen record, taxonomy

109. GRAY, G.R. 1859. Description of a new species of diver (Colymbus). Proc. Zool. Soc. London 27:167.

This paper presents the original description of Colymbus adamsii (= Gavia adamsii) based on a specimen taken in Bering Strait. (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Bering Sea - Norton Sound (Bering Strait)
Loons
Yellow-billed Loon
Taxonomy, specimen record

110. GRIFFIN, D.R. 1951. Alaskan bird migrations, pp. 11-20. In Research Reviews. Office of Naval Research, Dept. Navy, Wash., D.C.

This paper, based primarily on the author's homing study of Semipalmated Plovers, discusses possible mechanisms birds use in navigating during migration. CMH

Arctic - Beaufort (Umiat)
Geese
Snow Goose
Migration

111. HADDOCK, L. 1970. North Slope Breeding Waterfowl Populations Survey - 1970. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 4 pp.

This report summarizes the results of a survey of populations of waterfowl breeding on the North Slope. Census procedures and the efficiency of helicopter surveys are discussed. NMH

Arctic - Beaufort
Waterfowl
Abundance, techniques

112. HALL, E.S., JR. 1969. Avian remains from the Kangiguksuk site, northern Alaska. Condor 71:76-77.

The author describes the avian remains excavated from a single Eskimo house occupied in the 16th century. He then discusses the probable means of hunting, the probable uses of each species, and the importance of such excavations for determining historical distribution of avian species. CMH

Arctic - Kotzebue Sound (Noatak R.)
Loons, swans
Arctic Loon, Red-throated Loon, Whistling Swan
Subsistence, distribution, archeology

113. HAMILTON, R.D. 1950. Food of young Pintail duck, Anas acuta, in Alaska. Auk 67:383.

The author reports on the stomach contents of a downy young Pintail and identifies needs for further studies. MRP

Arctic - Kotzebue Sound (Kobuk R.)
Ducks
Pintail
Food

114. HANDEL, C.M. 1979. Preliminary Assessment of Impacts to Bird Resources from the Grounding of the F/V Ryuyo Maru No. 2 on St. Paul Island, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 17 pp.

This report presents observations of oil contamination in Salt Lagoon on St. Paul Island after the grounding of the F/V Ryuyo Maru No. 2 on November 8, 1979. The effects on the birds and other marine life are discussed. MRP

Bering Sea - Pribilof Is. (St. Paul Is.)
Loons, grebes, geese, ducks
Pollution, checklist

115. HANNA, G.D. 1922. Bird drives in the Yukon Delta. Condor 24:100.

This is a brief account of Alaska Natives rounding up flightless waterfowl on the Yukon Delta for subsistence purposes. REG

Bering Sea - Yukon Delta (Nelson Is.)
Geese, ducks
Management, public interest, subsistence

116. HANSEN, H.A. 1956-1961. Annual Waterfowl Report, Alaska. Unpublished annual reports. Bureau of Sport Fisheries and Wildlife, Waterfowl Investigations, Juneau, Alaska.

This series of annual reports presents information from waterfowl studies, surveys, and banding programs, and discusses techniques as well as results. Although much of the new data can be found in the Federal Aid in Wildlife Restoration reports, they are summarized and discussed in these reports. MRP

Alaska
Waterfowl
Abundance, distribution, age and sex composition, reproduction, techniques, habitat, mortality

117. HANSEN, H.A. 1957. Migratory Waterfowl Studies. Unpublished job completion report. Project No. W-3-R-12. Fed. Aid in Wildl. Rest., Alaska 12(5):1-5.

This reports on a waterfowl study conducted in 1957 in the Selawik area. Primary emphasis was on banding and on assessing waterfowl production. MRP

Arctic - Kotzebue Sound (Selawik)
Geese, ducks
Abundance, reproduction

118. HANSEN, H.A. 1960. Changed status of several species of waterfowl in Alaska. Condor 62:136-137.

This note presents summer records which indicate a change in population status for five species of ducks in Alaska. The significance of a drought in the Canadian prairies is discussed. CMH

Interior - Tanana (Tetlin)
Gulf of Alaska - Copper River
Ducks
Blue-winged Teal, Redhead, Ring-necked Duck, Canvasback, Ruddy Duck
Distribution, abundance

119. HANSEN, H.A. 1961. Loss of waterfowl production to tide floods. J. Wildl. Manage. 25:242-248.

Data from studies on the Yukon-Kuskokwim Delta and the Copper River Delta are summarized with respect to tidal fluctuation and the timing of the nesting period. Losses from total destruction of nests and from lowered viability of eggs due to flooding are compared. MRP

Bering Sea - Yukon Delta
Gulf of Alaska - Copper River (Copper R. Delta)
Geese, ducks
Mortality

120. HANSEN, H.A. 1962. Alaska's waterfowl nesting habitat. Alaska Sportsman 28(6):20-22.

The regions of Alaska with the greatest densities of nesting waterfowl are outlined. The importance of habitat in Alaska for production of North American waterfowl is discussed. NMH

Alaska
Swans, geese, ducks
Public interest

121. HANSEN, H.A. 1962. Canada Geese of coastal Alaska. Trans. N. Am. Wildl. Nat. Resour. Conf. 27:301-320.

Based on ten years of banding data and a detailed production study in Alaska, this paper provides a comprehensive synthesis of information on breeding and wintering distribution, migration, population estimates, survival rates, harvest, and management of Branta canadensis fulva and B. c. occidentalis. CMH

Gulf of Alaska - Copper River (Copper R. Delta), Southeastern (Glacier Bay)
Geese
Canada Goose
Distribution, abundance, migration, reproduction, management, population dynamics

122. HANSEN, H.A. 1973. Trumpeter Swan management. Wildfowl 24:27-32.

This paper presents a summary of the population status of this species in North America. The Alaska population is discussed throughout. REG

Alaska
Swans
Trumpeter Swan
Management, status

123. HANSEN, H.A., and D.E. MCKNIGHT. 1964. Emigration of drought-displaced ducks to the Arctic. Trans. N. Am. Wildl. Conf. 29:119-127.

This paper describes the immigration of large populations of ducks into Alaska from Canadian provinces during times of drought. Factors responsible, routes taken, and reproductive success of displaced ducks are discussed. REG

Alaska
Ducks
Distribution, management, reproduction

124. HANSEN, H.A., and U.C. NELSON. 1957. Brant of the Bering Sea - migration and mortality. Trans. N. Am. Wildl. Nat. Resour. Conf. 22:237-256.

This paper summarizes nine years of banding data. Migration routes, wintering areas, mortality factors, and management needs are discussed. REG

Bering Sea - Yukon Delta
Geese
Brant
Migration, mortality, management

125. HANSEN, H.A., P.E.K. SHEPHERD, J.G. KING, and W.A. TROYER. 1971. The Trumpeter Swan in Alaska. Wildl. Monogr. 26:1-83.

This is a major contribution on the biology of Trumpeter Swans in Alaska. Primary study areas were on the Copper River Delta and the Kenai Peninsula. Other information is presented as available. MRP

Alaska
Gulf of Alaska - Copper River (Copper R. Delta), Cook Inlet (Kenai Peninsula)
Swans
Trumpeter Swan
Breeding biology, migration

126. HARRIS, S.W., and P.E.K. SHEPHERD. 1965. Age determination and notes on the breeding age of Black Brant. J. Wildl. Manage. 29:643-645.

This note presents a means of ageing Black Brant based on coloration of secondary coverts. Age of first breeding is discussed. NMH

Bering Sea - Yukon Delta
Geese
Brant
Techniques

127. HASBROUK, E.M. 1944. Apparent status of the European Widgeon in North America. Auk 61:93-104.

Records of occurrence of this species in North America are summarized by region and state. Ten records are presented from Alaska, all from islands of the Bering Sea or the Aleutians. REG

Aleutians
Bering Sea
Ducks
European Wigeon
Distribution, status

128. HATCH, S.A. 1979. Breeding Canada Geese on Kaliktagik Island, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 10 pp.

This report provides a summary of observations of Canada Geese on Kaliktagik and Anowik Islands from 1976 to 1979. The islands may be a previously undescribed nesting area for Aleutian Canada Geese. MRP

Gulf of Alaska - Kodiak (Semidi Is.)
Geese
Canada Goose
Distribution, abundance, anatomy

129. HATCH, S.A., D.R. NYSEWANDER, A.R. DEGANGE, M.R. PETERSEN, P.A. BAIRD, K.D. WOHL, and C.J. LENSINK. 1978. Population dynamics and trophic relationships of marine birds in the Gulf of Alaska and southern Bering Sea, pp. 1-68. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents a brief synopsis of the results of studies conducted during summer 1977 at one site on the Bering Sea and at seven sites in the Gulf of Alaska. Information on breeding distribution and abundance, nesting habitat, phenology, nesting success, and feeding ecology is summarized for 16 species of marine birds. CMH

Bering Sea
Gulf of Alaska
Ducks
Common Eider
Distribution, abundance, habitat, reproduction, food

130. HEMMING, J.E. 1968. Copulatory behavior of the Red-necked Grebe on open water. Wilson Bull. 80:326-327.

Copulation by a pair of grebes on open water is described. REG

Gulf of Alaska - Cook Inlet (Spenard L.)
Grebes
Red-necked Grebe
Behavior

131. HENNY, C.J. 1973. Drought displaced movement of North American Pintails into Siberia. J. Wildl. Manage. 37:23-29.

Based on an analysis of band recoveries, this paper examines movements of Pintail to breeding areas in Siberia, Alaska, and northern Canada during years of drought in interior North America. CMH

Alaska
Ducks
Pintail
Distribution, migration, habitat

132. HERSEY, F.S. 1917. The status of the Black-throated Loon (Gavia arctica) as a North American bird. Auk 34:283-290.

The author summarizes the status of G. arctica in 1917, when it was considered a separate species from G. pacifica (now G. arctica pacifica). CMH

Alaska
Loons
Arctic Loon
Distribution, status

133. HIBBEN, F.C., MRS. 1942. Pacific Eider nesting at Glacier Bay, Alaska. Condor 44:182.

This note provides the first breeding record of the Common Eider in Glacier Bay. Observations of Horned and Tufted Puffins, Glaucous-winged Gulls, and Pigeon Guillemots are also mentioned. CMH

Gulf of Alaska - Southeastern (Glacier Bay)
Ducks
Common Eider
Distribution

134. HILL, G.A. 1923. The migration of the King Eider at Synuk, Alaska. Condor 25:103-104.

The author briefly describes the spectacular spring migration of King Eiders along the coast of Norton Sound, and the fall migration of King Eiders, Mallards, and Canada Geese. CMH

Bering Sea - Norton Sound
Geese, ducks
Canada Goose, Mallard, King Eider
Migration, subsistence

135. HÖHN, E.O. 1965. Ornithological observations in the Askinuk Mountains and Scammon Bay area, Yukon Delta, Alaska. Arctic 18:260-261.

Eighty-seven species were recorded, but fewer than a dozen are treated in this short note. The Spotted Sandpiper and Red and Northern Phalaropes are the only shorebirds mentioned, and Bufflehead and Common Goldeneye the only waterfowl. REG

Bering Sea - Yukon Delta (Scammon Bay)
Ducks
Common Goldeneye, Bufflehead
Distribution

136. HOOPER, D.C. 1951. Waterfowl nesting at Minto Lakes. Proc. Alaska Sci. Conf. 2:318-321.

Not reviewed.

Interior - Tanana (Minto L.)
Waterfowl
Distribution

137. HOUT, J.L. 1967. Contribution toward a Bibliography on Brant. U.S. Fish and Wildl. Serv., Spec. Sci. Rep. Wildl. 103. 15 pp.

This leaflet is a compilation of 180 published and unpublished references on Brant, with emphasis on the Black Brant. CMH

Alaska
Geese
Brant
Bibliography

138. HOUT, J.L., and C.J. LENSINK. 1968. Survey of Waterfowl Populations and Habitat on Nelson Island, Alaska. Unpublished progress report. U.S. Fish and Wildl. Serv., Bethel, Alaska. 24 pp.

This report summarizes results of aerial surveys and describes habitat use, reproductive performance, and production of waterfowl. Included are observations of other nesting species. MRP

Bering Sea - Yukon Delta (Nelson Is.)
Waterfowl
Habitat, abundance, distribution, reproduction

139. HOWARD, R.L. 1974. Aquatic invertebrate-waterbird relationships on Alaska's Arctic Coastal Plain. M.S. thesis. Iowa State Univ., Ames. 49 pp.

The author relates seasonal abundance and availability of aquatic macroinvertebrates to use by water birds. He discusses possible consequences of industrial contamination of aquatic habitats, and makes several recommendations for mitigating ill effects. MRP

Arctic - Beaufort (Pt. Storkersen, Kuparuk R., Colville R., Sagavanirktok R.)
Loons, swans, geese, ducks
Habitat, food, pollution, research, management

140. HUBBARD, J.D. 1976. Black Brant migration from Alaska. J. Colo.-Wyo. Acad. Sci. 8(1):72. (Abstract)

This abstract briefly describes the premigratory behavior of Black Brant during the fall, and discusses weather systems associated with their migration. MRP

Bering Sea - Bristol Bay (Izembek Bay)
Geese
Brant
Migration

141. HUBBARD, J., and W. FLOCK. 1979. Spring migration at Cape Prince of Wales, Alaska. Pac. Seabird Group Bull. 6(2):41. (Abstract)

This paper reports visual and radar observations of spring migration near Wales during May and early June 1978. Murres, Black-legged Kittiwakes, Black Brant, Common Eiders, and Oldsquaw were the primary species observed. Factors affecting the timing of migration are discussed. MRP

Bering Sea - Norton Sound (Cape Prince of Wales)
Geese, ducks
Brant, Oldsquaw, Common Eider
Migration

142. HUMPHREY, P.S. 1955. The relationship of the sea-ducks (tribe Mergini). Ph.D. diss. Univ. Michigan, Ann Arbor. 200 pp.

This dissertation discusses the relationships of the sea-ducks, primarily on the basis of anatomical and plumage characteristics. Many of the specimens examined were collected in Arctic Alaska. CMH

Arctic
Ducks
Taxonomy, anatomy, plumage

143. HUMPHREY, P.S. 1957. Remarks on the courtship and voice of the Black Scoter. Condor 59:139-140.

The author briefly describes a sequence of courtship display postures and accompanying vocalizations of a pair of Black Scoters. These are compared with descriptions in earlier accounts. CMH

Bering Sea - Yukon Delta (Igiak Bay)
Ducks
Black Scoter
Behavior

144. IRVING, L. 1955. Nocturnal decline in the temperature of birds in cold weather. Condor 57:362-365.

The body temperatures of seven species of birds captured in Alaska and held in captivity at Anchorage were examined at various times of day. REG

Alaska
Geese
Brant, Emperor Goose
Physiology

145. IRVING, L., and J. KROG. 1956. Temperature during the development of birds in Arctic nests. Physiol. Zool. 29:195-205.

This paper reports on the incubation temperatures of eggs of seven species of birds, including Pintail and Semipalmated Sandpiper, nesting at Anaktuvuk. The behavior of incubating adults is discussed in relation to temperature of the embryo. MRP

Interior - Koyukuk (Anuktuvuk)
Ducks
Pintail
Physiology, behavior

146. JAQUES, F.L. 1929. Cranes crossing Bering Strait. Auk 46:230.

The southward migration of cranes across the Bering Strait is described. REG

Bering Sea - Norton Sound (Cape Prince of Wales), Little Diomede Is.
Cranes
Sandhill Crane
Migration

147. JARVIS, R.L. 1966. Occurrence of European or Aleutian Green-winged Teal in western North America, with a recent record. Murrelet 47:15-18.

This paper summarizes the information on distribution of the Aleutian Green-winged Teal. A specimen was collected at the Malheur National Wildlife Refuge in Oregon. MRP

Aleutians
Ducks
Green-winged Teal
Distribution

148. JARVIS, R.L., and J.C. BARTONEK (eds.). 1979. Management and Biology of Pacific Flyway Geese. A Symposium. OSU Book Stores, Inc., Corvallis, Oregon. 346 pp.

These proceedings contain a collection of papers presented at a symposium sponsored by the Northwest Section of the Wildlife Society, February 16, 1979. Major topics include: taxonomy and classification, breeding biology, molt and migration, wintering biology, and status and management. MRP

Alaska
Geese
Canada Goose, Brant, White-fronted Goose, Snow Goose, Ross' Goose
Abundance, distribution, breeding biology, food, management, migration, mortality, physiology, plumage, population dynamics, reproduction, research, status, taxonomy

149. JOHNSGARD, P.A. 1964. Observations on the biology of the Spectacled Eider. Wildfowl 15:104-107.

The author presents general observations of eiders nesting on the western Yukon Delta, including accounts on territoriality, behavior, and rearing of the young. REG

Bering Sea - Yukon Delta (Igiak Bay)
Ducks
Spectacled Eider
Status, behavior

150. JOHNSGARD, P.A. 1975. Waterfowl of North America. Indiana Univ. Press, Bloomington, Indiana. 575 pp.

This volume summarizes information on the biology of waterfowl in North America. General discussions of the biology of waterfowl, distribution, migration, hunting, and recreational values, and an identification key precede the species accounts. Within each species account are sections on identification, age and sex criteria, distribution and habitat, general biology, general ecology, and social and sexual behavior. MRP

Alaska
Swans, geese, ducks
Abundance, anatomy, behavior, breeding biology, distribution, food, habitat, migration, plumage, taxonomy, mortality, management

151. JOHNSON, D.H., D.E. TIMM, and P.F. SPRINGER. 1979. Morphological characteristics of Canada Geese in the Pacific Flyway, pp. 56-80. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese. A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

This report analyzes a variety of morphological measurements of the six subspecies of Canada Geese breeding in Alaska, and discusses the reliability of using meristic data to distinguish subspecies. MRP

Alaska
Geese
Canada Goose
Taxonomy, anatomy

152. JOHNSON, L.J. 1968. Another Alaskan record of a Mallard-Pintail hybrid. Bull. Alaska Ornithol. Soc. 6:10. (Mimeo)

Not reviewed.

Ducks
Mallard, Pintail

153. JOHNSON, L.L. 1971. The migration, harvest, and importance of waterfowl at Barrow, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 87 pp.

This thesis reports on summer migration and the Eskimo harvest of waterfowl at Barrow between July 13 and September 7, 1970. Species composition of flocks and prevailing weather conditions during migration are presented; hunting success is analyzed in relation to species, time of day, and age of hunter; and the subsistence value of waterfowl is discussed. MRP

Arctic - Chukchi (Barrow)
Loons, geese, ducks
Management, migration, subsistence

154. JOHNSON, S.R. 1978. Beaufort Sea barrier island - lagoon ecological process studies. Section 2. Avian ecology in Simpson Lagoon, 1977, pp. 467-586. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 7. NOAA, Environ. Res. Lab., Boulder, Colo.

This report addresses the migration, breeding, feeding, and staging/molting of birds at Simpson Lagoon in summer 1977. Tables summarize information on spring and fall migration for the 60 species of birds observed. Nesting densities and reproductive success are summarized for the 13 species breeding in the area. More detailed information on molt, staging, and feeding is presented for Oldsquaw, gulls, terns, and phalaropes. Possible effects of disturbance are briefly discussed. CMH

Arctic - Beaufort (Simpson Lagoon)
Waterfowl
Oldsquaw
Habitat, plumage, food, abundance, migration, disturbance

155. JOHNSON, S.R. 1979. Beaufort Sea barrier island - lagoon ecological process studies. Part 1. Avian ecology in Simpson Lagoon, Beaufort Sea, Alaska, pp. 238-362. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 6. NOAA, Environ. Res. Lab., Boulder, Colo.

This report compares information gathered in 1977 and 1978 to assess the importance to birds of barrier island/lagoon systems. Timing of migration is summarized for 63 species, and nesting densities are presented. The majority of the report addresses habitat use by molting Oldsquaws, and premigratory staging of shorebirds, gulls, and terns. Results of feeding studies are presented for Oldsquaw, both phalaropes, and Glaucous Gulls. CMH

Arctic - Beaufort (Simpson Lagoon)
Waterfowl
Oldsquaw
Habitat, anatomy, physiology, plumage, food, abundance

156. JONES, N.G.B. 1972. Moult migration of Emperor Geese. Wildfowl 23:92-93.

Observations of Emperor Geese in the Hooper Bay area from May to July 1960 suggested a northward molt migration to St. Lawrence Island. MRP

Bering Sea - Yukon Delta (Hooper Bay, Panowat Spit)
Geese
Emperor Goose
Migration

157. JONES, R.D., JR. 1963. Buldir Island, site of a remnant breeding population of Aleutian Canada Geese. Wildfowl 14:80-84.

This paper reports observations of a remnant breeding population of Aleutian Canada Geese on Buldir Island. The island's topography, climate, habitat, and avian and mammalian populations are described. Increased hunting pressure and the introduction of blue foxes to the breeding grounds are assessed as reasons for the decline of the subspecies. CMH

Aleutians - (Buldir Is.)
Geese, ducks
Canada Goose, Mallard, Pintail, Green-winged Teal
Status, habitat

158. JONES, R.D., JR. 1964. Age group counts of Black Brant in Izembek Bay, Alaska. Wildfowl 15:147-148.

The author presents counts of adult and first-year Black Brant in October 1963 at Izembek Bay. This information is discussed in relation to a major nesting failure on the Yukon-Kuskokwim Delta that summer. Habitat use and timing of migration are also addressed. CMH

Bering Sea - Bristol Bay (Izembek Bay)
Geese
Brant
Age and sex composition, migration, habitat

159. JONES, R.D., JR. 1965. Returns from Steller's Eiders banded in Izembek Bay, Alaska. Wildfowl 16:83-85.

The author presents band return data from Steller's Eiders, indicating that those molting in Izembek Bay breed in Siberia. MRP

Bering Sea - Bristol Bay (Izembek Bay)
Ducks
Steller's Eiders
Plumage, migration, techniques

160. JONES, R.D., JR. 1970. Reproductive success and age distribution of Black Brant. J. Wildl. Manage. 34:328-333.

Based on age group counts of Black Brant staging on Izembek Bay during the autumns of 1963-1969, information on reproductive success of the population is presented. CMH

Bering Sea - Bristol Bay (Izembek Bay)
Geese
Brant
Age and sex composition

161. JONES, R.D., JR. 1973. A method for appraisal of annual reproductive success in the Black Brant populations. M.S. thesis, Univ. Alaska, Fairbanks. 117 pp.

A technique, based on age-related plumage differences, is presented to assess reproductive success in the population. A simulation model is presented to test variables affecting population structure. REG

Bering Sea - Bristol Bay (Izembek Lagoon), Yukon Delta
Geese
Brant
Age and sex composition, population dynamics, migration, management, subsistence, reproduction, plumage

162. JONES, R.D., JR., and G.V. BYRD. 1979. Interrelations between seabirds and introduced animals. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:221-226.

This paper reviews the information available on the effects of introduced animals on insular seabird populations. The need for research on the ecological consequences of animal introductions to islands is stressed. MRP

Alaska
Geese, ducks
Canada Goose, Common Eider
Predation, research

163. JONES, R.D., JR., and D.M. JONES. 1966. The process of family disintegration in Black Brant. Wildfowl 17:75-78.

The authors describe the process of family disintegration in Black Brant at a staging area on the Alaska Peninsula. Age group counts are examined in light of changes in family group behavior. The importance of the area to this and several other species of waterfowl is also mentioned. CMH

Bering Sea - Bristol Bay (Izembek Bay)
Geese, ducks
Canada Goose, Brant, Emperor Goose, Pintail
Behavior, habitat, food, abundance, age and sex composition

164. KENNARD, F.H. 1918. Ferruginous stains on waterfowl. Auk 35:123-132.

The source of ferruginous stains on waterfowl is examined. Discussions pertaining to Emperor Geese, Canada Geese, Red-throated Loons, and Northern Phalaropes refer to Alaska birds. REG

Aleutians
Bering Sea - Yukon Delta, Bristol Bay
Gulf of Alaska - Prince William Sound
Loons, geese
Red-throated Loon, Canada Goose, Emperor Goose
Habitat, plumage

165. KENYON, K.W. 1963. Further observations of Whooper Swans in the Aleutian Islands, Alaska. Auk 80:540-542.

This paper presents records of the Whooper Swan on the Aleutian Islands. NMH

Aleutians - (Amchitka Is., Atka Is., Little Kiska Is.)
Swans
Whooper Swan
Distribution

166. KESSEL, B. 1955. Distributional records of waterfowl from the interior of Alaska. Condor 57:372-373.

This note presents new distributional records for the Blue-winged Teal, Ring-necked Duck, and European Wigeon. CMH

Interior - Tanana
Gulf of Alaska - Cook Inlet, Kodiak, Southeastern
Ducks
Blue-winged Teal, European Wigeon, Ring-necked Duck
Distribution

167. KESSEL, B. 1965. Mallard-Pintail hybrid at Fairbanks, Alaska. Bull. Ornithol. Soc. 5:7-8. (Mimeo)

This note reports a sight record of a probable Mallard-Pintail hybrid, and gives a description of its plumage and behavior. CMH

Interior - Tanana (Fairbanks)
Ducks
Mallard, Pintail
Plumage, behavior

168. KESSEL, B. 1979. Migration of Sandhill Cranes, upper Tanana River Valley, Alaska. Unpublished final report to Northwest Alaskan Pipeline Company, Fluor Northwest, Inc. Fairbanks, Alaska. 55 pp.

Not reviewed.

Interior - Tanana
Cranes
Sandhill Crane
Migration

169. KESSEL, B., and R.W. KELLY. 1958. First North American sighting and photographic record of Common Crane, Grus grus. Auk 75:465.

The occurrence of an individual of this species in Alaska in April 1958 is described. REG

Interior - Tanana (Fairbanks)
Cranes
Common Crane
Distribution

170. KING, J.G. The Alaskan Trumpeter Swan Management Council - a proposal. Presented at the Sixth Trumpeter Swan Society Conference. Anchorage, Alaska. September 7-9, 1978. 4 pp.

This paper suggests that an Alaskan Trumpeter Swan Management Council be founded, identifies agencies that should be represented on it, and describes the issues that should be addressed by such a group. MRP

Alaska
Swans
Trumpeter Swan
Management, research

171. KING, J.G. The status and future of the Alaska Trumpeter Swan population. Presented at the Second International Swan Symposium. Sapporo, Japan. February 19-21, 1980.

This paper reports on the status of Trumpeter Swans in Alaska. Changes in the size of breeding populations between 1968 and 1975 are discussed, and possible effects of future changes in land status and economic activity are assessed. MRP

Alaska
Swans
Trumpeter Swan
Status, abundance

172. KING, J.G. 1963. Duck banding in Arctic Alaska. J. Wildl. Manage. 27:356-362.

This is primarily a note on capture and banding techniques, but it does summarize banding efforts between 1960 and 1962. Fifteen species of ducks were banded, mostly Lesser Scaup. REG

Interior - Upper Yukon (Fort Yukon, Ohtig L.)
Ducks
Techniques, management

173. KING, J.G. 1965. Some Aspects of the Relationship of Eskimos and Waterfowl. Unpublished report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 7 pp.

King, using the information presented in Klein's paper (Arctic 19:319-336, 1966) on Eskimo waterfowl harvest, discusses the potential for increased waterfowl take in Alaska. He then presents suggestions for future studies of the impacts of subsistence hunting. MRP

Alaska
Swans, geese, ducks, cranes
Subsistence, management

174. KING, J.G. 1968. Trumpeter Swan survey Alaska - 1968. Unpublished report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 43 pp.

This paper presents data from surveys of Trumpeter Swans in Alaska in 1968. Included are population estimates and information on habitat preferences. MRP

Alaska
Swans
Trumpeter Swan
Abundance, habitat, distribution

175. KING, J.G. 1970. The swans and geese of Alaska's Arctic Slope. Wildfowl 21:11-17.

Results of a mid-summer aerial waterfowl survey conducted in 1966 over the Arctic Slope are presented, and population estimates for the geese and swans breeding or molting in the region are given. The importance of the Arctic Slope to these species is discussed in relation to other areas of greater nesting concentration and to prospective petroleum development. Better census methods and additional ground studies are suggested. CMH

Arctic - Beaufort
Swans, geese, ducks
Abundance, techniques

176. KING, J.G. 1973. A cosmopolitan duck moulting resort: Takslesluk Lake, Alaska. Wildfowl 24:103-109.

This paper describes a three-year effort to trap and band flightless ducks on the northern Yukon Delta. Nine species are addressed, with their natal origins, migration routes, wintering areas, and, for some, longevity discussed. REG

Bering Sea - Yukon Delta (Takslesluk L.)
Ducks
Migration, techniques, subsistence

177. KING, J.G. 1973. The use of small airplanes to gather swan data in Alaska. Wildfowl 24:15-20.

The author describes and discusses the limitations of five aerial census techniques used to estimate swan populations in Alaska over a 17-year period. These include complete census, random plot census, line transect surveys, random flights, and exploratory flights. REG

Alaska
Swans
Whistling Swan, Trumpeter Swan
Techniques

178. KING, J.G., and B. CONANT. 1978. Waterfowl Breeding Pair Survey: Alaska-Yukon. Unpublished annual report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 21 pp.

This report provides a brief summary of the species of geese and ducks observed during surveys. MRP

Bering Sea
Gulf of Alaska
Interior
Geese, ducks
Abundance, status

179. KING, J.G., and J.I. HODGES. 1979. A preliminary analysis of goose banding on Alaska's Arctic Slope, pp. 176-188. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese: A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

This paper analyzes recoveries of 12,997 geese banded near Teshekpuk Lake, an important molting area for Canada Geese and Black Brant. MRP

Alaska
Arctic - Beaufort (Teshekpuk L.)
Geese
Canada Goose, Brant, White-fronted Goose, Snow Goose
Migration, abundance, plumage

180. KING, J.G., and M.L. KING. Successful nesting of a captive Trumpeter Whistling Swan pair in Alaska. Presented at the First International Birds in Captivity Symposium. Seattle, Washington. March 8-12, 1978. 18 pp.

This paper reports the successful nesting between a female Trumpeter and a male Whistling Swan. The feeding and maintenance of injured and captive swans are also discussed. MRP

Gulf of Alaska - Southeastern (Juneau)
Swans
Whistling Swan, Trumpeter Swan
Behavior, breeding biology, rehabilitation

181. KING, J.G., and C.J. LENSINK. 1971. An Evaluation of Alaska Habitat for Migratory Birds. Unpublished report. U.S. Dept. of Int., Bur. Sport Fish. Wildl., Washington, D.C. 72 pp.

This paper evaluates the importance of Alaska habitats to migratory birds and identifies areas of the state where birds may be threatened by pollution and development. NMH

Alaska
Waterfowl
Distribution, abundance, habitat, migration, pollution

182. KING, J.G., and G.A. SANGER. 1979. Oil vulnerability index for marine oriented birds. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:227-239.

This paper presents a method to indicate the relative vulnerability of a marine bird species to oil pollution and related impacts of oil development. Each of 176 species of birds using marine habitats in Washington, Alaska, and British Columbia is ranked on the basis of 20 factors that affect its survival. The needs for such a system as a management tool are discussed. MRP

Alaska
Waterfowl
Management, pollution

183. KING, R.J. 1979. Loon abundance and distribution in the National Petroleum Reserve - Alaska (NPR-A). Pac. Seabird Group Bull. 6(2):41. (Abstract)

This paper reports on the abundance and distribution of loons in the National Petroleum Reserve - Alaska during the 1977 and 1978 breeding seasons. Average densities and population estimates are given. MRP

Arctic - Beaufort (National Petroleum Reserve - Alaska)
Loons
Yellow-billed Loon, Arctic Loon, Red-throated Loon
Abundance, distribution

184. KIRCHHOFF, M.D. 1978. Distribution and habitat relations of Pintails on the coast of the Yukon Delta, Alaska. M.S. thesis. Univ. Maine, Orono. 45 pp.

This thesis describes daily and seasonal changes in abundance, distribution, and habitat use of Pintail on the coast of the Yukon Delta. Feeding patterns over the intertidal were correlated with the tidal cycle and the abundance and distribution of invertebrates. MRP

Bering Sea - Yukon Delta
Ducks
Pintail
Food, habitat

185. KISTCHINSKI, A.A. 1971. Biological notes on the Emperor Goose in north-east Siberia. Wildfowl 22:29-34.

This paper provides information on the breeding biology, molt migration, flightless period, and foods of Emperor Geese on the Chukotsky Peninsula. Information from Alaska is included for comparison. MRP

Bering Sea
Geese
Emperor Goose
Distribution, habitat, breeding biology, plumage, food, disease and parasites, behavior

186. KISTCHINSKI, A.A., and V.E. FLINT. 1974. On the biology of the Spectacled Eider. Wildfowl 25:5-15.

This paper presents data on numbers, breeding, and diet of Spectacled Eiders on the Indigirka River Delta, Siberia. Much of the information is compared with that from Alaska. REG

Bering Sea - Yukon Delta
Ducks
Spectacled Eider
Breeding biology, population dynamics, food, status, distribution, behavior, abundance

187. KLEIN, D.R. 1966. Waterfowl in the economy of the Eskimos on the Yukon-Kuskokwim Delta, Alaska. Arctic 19:319-336.

This paper presents data collected during a survey of the inhabitants of the Yukon-Kuskokwim Delta from April to June 1964 and in February 1965. Estimates are given of the numbers of birds and eggs of each species harvested annually. Patterns of use are also discussed. MRP

Bering Sea - Yukon Delta
Swans, geese, ducks, cranes
Subsistence

188. KORTRIGHT, F.H. 1942. The Ducks, Geese and Swans of North America. Stackpole Company, Harrisburg, Pennsylvania and Wildlife Management Institute, Washington, D.C. 476 pp.

This book presents information on molts and plumage, breeding biology, migration, and conservation of ducks, geese, and swans of North America. Observations from Alaska are included. MRP

Alaska
Swans, geese, ducks
Abundance, distribution, breeding biology, habitat, food, management, migration, plumage, public interest, status

189. KOSKI, W.R. 1975. Study of the distribution and movement of Snow Geese, other geese and Whistling Swans on the MacKenzie Delta, Yukon North Slope and Alaskan North Slope in August and September, 1974, including a comparison with similar data from 1973. Arct. Gas Biol. Rep. Ser. 30:1-58.

This paper presents information on the abundance and distribution of geese and swans on the North Slopes of Alaska and the Yukon. MRP

Arctic - Beaufort
Swans, geese
Whistling Swan, Canada Goose, Brant, White-fronted Goose, Snow Goose
Abundance, distribution

190. KOSKI, W.R. 1976. Autumn staging of Snow Geese on the MacKenzie Delta, Yukon North Slope, and eastern Alaska North Slope. Proc. Alaska Sci. Conf. 27:237-238. (Abstract)

Premigratory dispersal and staging of Snow Geese in Arctic Alaska and Canada are discussed. Included are notes on specific staging areas, estimates of numbers using the region, and calculations of brood size and adult-to-immature ratios. NMH

Arctic - Beaufort
Geese
Snow Goose
Migration, abundance, age and sex composition, distribution

191. KOSKI, W.R. 1977. A study of the distribution and movements of Snow Geese, other geese and Whistling Swans on the MacKenzie Delta, Yukon North Slope, and Alaskan North Slope in August and September, 1975. Arct. Gas Biol. Rep. Ser. 35:1-54.

This paper reports on the numbers of geese and swans on the North Slope during fall, identifies staging areas, compares the timing of use among species, and evaluates year-to-year variations. MRP

Arctic - Beaufort
Swans, geese
Whistling Swan, Canada Goose, Brant, White-fronted Goose, Snow Goose
Abundance, distribution, migration

192. KOSKI, W.R., and M.A. GOLLOP. 1974. Migration and distribution of staging Snow Geese on the MacKenzie Delta, Yukon and eastern Alaska North Slope, August and September, 1973. Arct. Gas Biol. Rep. Ser. 27:1-38.

This paper presents information on the staging areas and timing of migration of Snow Geese on the North Slope. The two most important sites were at Walking River and Crow-Phillips. MRP

Arctic - Beaufort
Geese
Snow Goose
Distribution, abundance, migration

193. KRASNOW, L.D., G.A. SANGER, and D.W. WISWAR. 1979. Nearshore feeding ecology of marine birds in the Kodiak area, 1978, pp. 348-394. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This reports preliminary results of a study of the seasonal feeding habits of marine birds near Kodiak Island. The aggregate percent volume of prey is presented for four species collected in winter and for seven collected in summer. Possible impacts of petroleum development on prey species are briefly discussed. CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Ducks
Oldsquaw, Black Scoter
Food

194. KURHAJEC, D.J. 1977. Breeding Canada Geese of the Port Etches Area, Hinchinbrook Island, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 12 pp.

This report describes the habitat use, abundance, and reproductive success of Canada Geese in the Port Etches-Constantine Harbor area of Prince William Sound. The subspecies of Canada Goose was not determined. MRP

Gulf of Alaska - Prince William Sound (Hinchinbrook Is.)
Geese
Canada Goose
Reproduction, habitat, abundance, predation

195. KURY, C.R. 1972. Ring-necked Duck and Ruddy Turnstones wintering at Sitka. Murrelet 53:11.

This note reports the presence of a male Ring-necked Duck in Sitka during January. NMN

Gulf of Alaska - Southeastern (Sitka)
Ducks
Ring-necked Duck
Distribution

196. LADD, W.N. 1978. The new migratory bird treaty between the United States and Union of Soviet Socialist Republics. Pac. Seabird Group Bull. 5(2):39-57.

This article summarizes the provisions that differ from those in previous treaties and discusses their significance to marine bird management. Disturbance, subsistence use, and habitat protection are addressed. The full treaty is included. MRP

Alaska
Waterfowl
Management

197. LENSINK, C.J. 1957. Use of a gill net in trapping waterfowl. J. Wildl. Manage. 21:103-104.

The author describes how to construct and use a gillnet to trap flightless waterfowl. CMH

Interior - Upper Yukon
Waterfowl
Canvasback, Black Scoter
Techniques

198. LENSINK, C.J. 1962. Waterfowl Populations and Production within the Impoundment Area of the Proposed Dam at Rampart on the Yukon River, Alaska in 1961. Unpublished preliminary report. U.S. Fish and Wildlife Service, Migratory Bird Population Station, Laurel, Maryland. 44 pp.

This preliminary report summarizes results from the 1961 field season, and assesses the importance of the Yukon Flats as a breeding area for ducks. MRP

Interior - Upper Yukon
Loons, ducks, cranes
Abundance, distribution, age and sex composition, reproduction, techniques

199. LENSINK, C.J. 1962. Waterfowl Populations and Production within the Impoundment Area of the Proposed Dam at Rampart on the Yukon River, Alaska. Unpublished progress report. U.S. Fish and Wildlife Service, Migratory Bird Populations Station, Laurel, Maryland. 67 pp.

This progress report discusses the potential effects on waterfowl from construction of the proposed Rampart Dam, and summarizes data gathered during a field study in 1962. MRP

Interior - Upper Yukon
Loons, grebes, geese, ducks, cranes
Abundance, distribution, age and sex compositon, reproduction, management, checklist

200. LENSINK, C.J. 1964. Distribution of Recoveries from Banding of Ducklings. U.S. Fish and Wildl. Serv., Spec. Sci. Rep. Wildl. No. 89. 146 pp.

This report describes the distribution of recoveries of ducks banded as flightless young. Data from birds banded in Alaska are included. MRP

Alaska
Ducks
Mallard, Pintail, Green-winged Teal, Northern Shoveler, American Wigeon, Canvasback, Lesser Scaup
Distribution, migration

201. LENSINK, C.J. 1967. Arctic Loon predation on ducklings. Murrelet 48:41.

The author describes the attack and killing of a downy scaup by an adult loon. REG

Interior - Upper Yukon (Yukon Flats)
Loons, ducks
Arctic Loon, Lesser Scaup
Mortality, behavior

202. LENSINK, C.J. 1968. Neckbands as an inhibitor of reproduction in Black Brant. J. Wildl. Manage. 32:418-420.

This banding-recapture study indicated that female Black Brant marked with neck bands had significantly poorer nesting success than leg-banded controls or unbanded Brant. Possible causes are discussed. CMH

Bering Sea - Yukon Delta
Geese
Brant
Techniques, reproduction

203. LENSINK, C.J. 1969. The Distribution of Recoveries from White-fronted Geese (Anser albifrons frontalis) Banded in North America. Unpublished report. U.S. Fish and Wildl. Serv., Bethel, Alaska. 32 pp.

This report summarizes banding and recovery data for White-fronted Geese. The distribution of various populations is analyzed, and priorities in management and future banding are addressed. A discussion on the Tule White-fronted Goose is included. NMH

Alaska
Geese
White-fronted Goose
Distribution, migration

204. LENSINK, C.J. 1973. Population structure and productivity of Whistling Swans on the Yukon Delta, Alaska. Wildfowl 24:21-25.

This paper analyzes observations of Whistling Swans between 1963 and 1971 from low-flying aircraft. Annual variations in productivity are analyzed and correlated with climatic conditions. MRP

Bering Sea - Yukon Delta
Swans
Whistling Swan
Population dynamics, distribution

205. LENSINK, C.J., P.J. GOULD, and G.A. SANGER. 1979. Population dynamics and trophic relationships of marine birds in the Gulf of Alaska, pp. 7-20. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This paper introduces and briefly summarizes results of six studies conducted in the Gulf of Alaska in 1978. CMH

Gulf of Alaska
Waterfowl
Research, population dynamics, distribution, abundance, breeding biology, food

206. LEOPOLD, A.S., and R.H. SMITH. 1953. Numbers and winter distribution of Pacific Black Brant in North America. Calif. Fish Game 39:95-101.

Discussed are the results of a January 1952 survey of the distribution and numbers of Brant along the Pacific Coast. Survey data from southeastern Alaska are included. REG

Gulf of Alaska - Southeastern
Geese
Brant
Abundance, distribution, management, status

207. LESCHNER, L.L., and G. BURRELL. 1977. Populations and ecology of marine birds on the Semidi Islands, pp. 13-109. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This paper discusses observations on the populations, breeding biology, and foods of 19 species of marine birds during summer 1976. A checklist presents the breeding status of the 54 species of birds observed. CMH

Gulf of Alaska - Kodiak (Semidi Is.)
Ducks
Common Eider
Abundance, reproduction, food, checklist

208. LINCOLN, F.C. 1926. Bird banding - in progress and prospect. Auk 43:153-161.

Mention is made of banding work done on the Yukon Delta on Cackling Geese in summer 1924. REG

Bering Sea - Yukon Delta
Geese
Canada Goose
Migration

209. LINCOLN, F.C. 1926. The migration of the Cackling Goose. Condor 28:153-157.

From analysis of 39 returns of Cackling Canada geese banded on their breeding grounds, the author suggests a probable fall migration route and the principal winter range of this population. CMH

Bering Sea - Yukon Delta (Hooper Bay)
Geese
Canada Goose, Emperor Goose
Migration, subsistence, food

210. LITTLEJOHN, C. 1899. On the nesting of ducks. Osprey 3:78-79.

This paper "mentions the nesting of a colony of American Scaups as well as sets of eggs of Pintails and Merganser serrator." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Ducks
Pintail, Greater Scaup, Red-breasted Merganser
Distribution

211. LLOYD, H. 1925. Official Canadian record of bird-banding returns. Can. Field-Nat. 39:191-193; 206-208.

This paper "mentions a Pintail killed near Cordova, Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Gulf of Alaska - Prince William Sound (Cordova)
Ducks
Pintail
Migration

212. MAHER, W.J. 1960. Another record of the Baikal Teal in northwestern Alaska. Condor 62:138-139.

A pair of this species was observed on May 28, 1959 near the Pitmegea River, two miles from the Beaufort Sea coast. The possibility of nesting is discussed. REG

Arctic - Beaufort (Pitmegea R.)
Ducks
Baikal Teal
Distribution

213. MCILHENNY, E.A. 1934. Twenty-two years of banding migratory wild fowl at Avery Island, Louisiana. Auk 51:328-337.

Mention is made of three banded Pintail recovered in Alaska. REG

Arctic - Kotzebue Sound (Selawik)
Bering Sea - Yukon Delta (Quithlook), Bristol Bay (Dillingham)
Ducks
Pintail
Migration, distribution

214. MCKINNEY, F. 1959. Waterfowl at Cold Bay, Alaska, with notes on the display of the Black Scoter. Wildfowl 10:133-140.

This paper presents a general description of waterfowl use of Izembek Bay and Nelson Lagoon during April and May 1958. Twelve different displays of the Black Scoter are briefly described. REG

Bering Sea - Bristol Bay (Izembek Bay, Nelson Lagoon)
Waterfowl, ducks
Black Scoter
Behavior, distribution

215. MCKINNEY, F. 1965. The spring behavior of wild Steller's Eiders. Condor 67:273-290.

This paper describes the behavior and displays of wild Steller's Eiders. Strong tendencies to flock densely and fly readily are examined in light of their survival value and influence on feeding, pairing, and copulatory behavior patterns. The differences between the displays of Steller's and Common Eiders are discussed. MRP

Bering Sea - Bristol Bay (Nelson Lagoon, Izembek Bay)
Ducks
Steller's Eider, Common Eider
Behavior

216. MCKNIGHT, D.E., and B.L. HILLIKER. 1970. The impact of oil development on waterfowl populations in Alaska. Proc. Annu. Conf. W. Assoc. State Game Fish Comm. 50:1-12.

The authors present maps depicting areas of high waterfowl productivity and regions of potential oil development. The possible impact of such development on breeding and migrating waterfowl is discussed for each region. NMH

Arctic
Bering Sea
Gulf of Alaska
Swans, geese, ducks, cranes
Pollution, distribution

217. MCKNIGHT, D.E., and C.E. KNODER. 1979. Resource development along coasts and on the ocean floor: Potential conflicts with marine bird conservation. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:183-194.

This paper discusses the potential for disastrous and irrecoverable losses to northern marine bird populations and identifies research needs. MRP

Alaska
Waterfowl
Pollution, research

218. MCROY, C.P. 1966. The standing stock and ecology of eelgrass (Zostera marina L.) in Izembek Lagoon, Alaska. M.S. thesis. Univ. Washington, Seattle. 138 pp.

Included is a short discussion of the utilization of eelgrass by waterfowl in Izembek Lagoon. CMH

Bering Sea - Bristol Bay (Izembek Lagoon)
Geese
Canada Goose, Brant
Food

219. MICKELSON, P.G. 1973. Breeding biology of Cackling Geese (Branta canadensis minima Ridgway) and associated species on the Yukon-Kuskokwim Delta, Alaska. Ph.D. thesis. Univ. of Michigan, Ann Arbor. 246 pp.

This thesis presents detailed information on the breeding biology of Cackling Canada Geese, and less detailed information on Black Brant, Emperor Geese, White-Fronted Geese and Spectacled Eiders nesting on the study area. MRP

Bering Sea - Yukon Delta
Geese, ducks
Canada Goose, Brant, Emperor Goose, White-fronted Goose, Spectacled Eider
Breeding biology

220. MICKELSON, P.G. 1975. Breeding biology of Cackling Goose and associated species on the Yukon-Kuskokwim Delta, Alaska. Wildl. Monogr. 45:1-35.

This monograph presents detailed information on the breeding biology of the Cackling Canada Goose, with additional information on four associated species. The study was conducted from 1969 to 1972 on the Clarence Rhode National Wildlife Range. MRP

Bering Sea - Yukon Delta
Geese, ducks
Canada Goose, Brant, Emperor Goose, White-fronted Goose, Spectacled Eider
Breeding biology

221. MICKELSON, P.G., J.S. HAWKINS, D.R. HERTER, and S.M. MURPHY. 1980. Habitat Use by Birds and Other Wildlife on the Eastern Copper River Delta, Alaska. Unpublished report. Alaska Cooperative Wildlife Research Unit, Univ. Alaska, Fairbanks. 189 pp.

During a study of nesting and migrating birds on the eastern Copper River Delta in 1978 and 1979, the authors determined habitat preferences, distribution, abundance, and phenology for the avifauna of the area. Critical habitats were identified and recommendations made for future surveillance and management of populations. Detailed information is presented for Dusky Canada Geese, Sandhill Cranes, and shorebirds. REG

Gulf of Alaska - Copper River (eastern Copper R. Delta)
Loons, grebes, swans, geese, ducks, cranes
Whistling Swan, Canada Goose, Mallard, Sandhill Crane
Abundance, breeding biology, checklist, distribution, food, habitat, management, migration, predation, status, reproduction

222. MICKELSON, P.G., and H.M. WIGHT. 1974. The Dusky Canada Goose. Naturalist 25 (Spec. Issue No. 1):24-27.

Not reviewed.

Geese
Canada Goose

223. MILNE, H., and C.P. DAU. 1976. A Bibliography of Eiders. Fauna 20. Government of Quebec. 249 pp.

This bibliography lists over 2,000 references on eiders. MRP

Alaska
Ducks
Steller's Eider, Common Eider, King Eider, Spectacled Eider
Bibliography

224. MOFFITT, J. 1937. The White-cheeked Goose in California. Condor 39:149-159.

In this account of the wintering habitat and habits of Dusky Canada Geese (Branta canadensis occidentalis), the author briefly discusses their probable breeding grounds. CMH

Gulf of Alaska
Geese
Canada Goose
Distribution

225. MOISAN, G., R.I. SMITH, and R.K. MARTINSON. 1967. The Green-winged Teal: Its Distribution, Migration, and Population Dynamics. U.S. Fish and Wildl. Serv., Spec. Sci. Rep. Wildl. 100. 248 pp.

This comprehensive report, based on published information and data from banding studies and surveys, describes the distribution, migration, harvest characteristics, and population dynamics of Green-winged Teal. Additional studies are recommended. MRP

Alaska
Ducks
Green-winged Teal
Distribution, migration, population dynamics, management, research

226. MONSON, M.A. 1956. Nesting of Trumpeter Swan in the lower Copper River basin, Alaska. Condor 58:444-445.

This paper documents Trumpeter Swans nesting in the lower Copper River basin. Identification of Trumpeter and Whistling Swans is discussed. NMH

Gulf of Alaska - Copper River
Swans
Whistling Swan, Trumpeter Swan
Distribution, plumage

227. MOREHOUSE, K.A. 1974. Development, energetics and nutrition of captive Pacific Brant (Branta bernicla orientalis, Tougerinov). Ph.D. thesis. Univ. Alaska, Fairbanks. 134 pp.

Not reviewed.

Geese
Brant
Physiology, anatomy, food

228. MORGAN, R.P.,II, S.T. SULKIN, and C.J. HENNY. 1977. Serum proteins of Canada Goose (Branta canadensis) subspecies. Condor 79:275-278.

The taxonomic affinities of nine subspecies of Canada Geese are evaluated through examination of their serum protein patterns. MRP

Gulf of Alaska - Cook Inlet, Copper River
Geese
Canada Goose
Taxonomy

229. MORTON, J.K., and R.A. DIETERICH. 1979. Avian pox infection in an American Green-winged Teal (Anas crecca carolinensis) in Alaska. J. Wildl. Dis. 15:451-453.

This note reports on poxvirus infection diagnosed in a juvenile Green-winged Teal. This is the first report of avian pox in migratory ducks and the first report of the infection in wild birds in Alaska. MRP

Interior - Tanana (Minto Flats)
Ducks
Green-winged Teal
Disease and parasites

230. MOSSMAN, A.S. 1957. Hooded Mergansers at Afognak Island, Alaska. Condor 54:341.

This note reports the range extension of the Hooded Merganser into southwestern Alaska. NMH

Gulf of Alaska - Kodiak (Afognak Is.)
Ducks
Hooded Merganser
Distribution

231. MURDOCH, J. 1887. Note on eider ducks. Zoologist 10:108.

This brief note describes the reaction of the male when the female of a pair of King Eiders was collected during spring migration. MRP

Arctic - Chukchi (Barrow)
Ducks
King Eider
Behavior

232. MURIE, O.J. 1940. Food habits of the northern Bald Eagle in the Aleutian Islands, Alaska. Condor 42:198-202.

In 1936 and 1937 food items were collected and identified from 28 Bald Eagle nests. Among the identifiable food items were remains of 24 species of water-associated birds, mostly alcids, gulls, and fulmars. REG

Aleutians - (Amak Is., Sankin Is.)
Ducks
Predation

233. MUSACCHIA, X.J. 1949. Lipid metabolism in Arctic Alaskan birds. Proc. Fed. Am. Soc. Exper. Biol. 8(1):116.

This paper reports on "fat analysis of livers and kidneys from Old Squaw and Red Phalarope." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Arctic - Chukchi (Barrow)
Ducks
Oldsquaw
Physiology

234. MUSACCHIA, X.J. 1953. A study of the lipids in Arctic migratory birds. Condor 55:305-312.

This paper presents data on fatty acids, lipid phosphorus, and cholesterol levels in tissues of four Arctic migratory birds. The significance of variations in lipid patterns among the species is discussed. REG

Arctic - Chukchi (Barrow)
Ducks
Oldsquaw
Physiology, migration

235. MYRES, M.T. 1958. Preliminary Studies of the Behavior, Migration and Distributional Ecology of Eider Ducks in Northern Alaska, 1958. Unpublished report. Univ. British Columbia, Dept. Zool., Vancouver. 23 pp.

Preliminary results of a study of the spring and fall migration of eiders, their breeding requirements, and their use by natives are presented. Research needs are discussed. MRP

Arctic - Chukchi, Beaufort
Ducks
Steller's Eider, Common Eider, King Eider, Spectacled Eider
Research, food, specimen record, subsistence, migration, breeding biology, anatomy

236. MYRES, M.T. 1959. The behaviour of the sea-ducks and its value in the systematics of the tribes Mergini and Somateriini, of the family Anatidae. Ph.D. thesis. Univ. British Columbia, Vancouver. 506 pp.

This dissertation discusses the systematics of the sea-ducks, based primarily on studies of their behavior in Alaska and British Columbia. Detailed descriptions and drawings are provided for many of the displays. CMH.

Alaska
Ducks
Taxonomy, behavior

237. MYRES, M.T. 1962. The Display Behavior of the King Eider, with a Dicussion of Interspecific Selection for Reproductive Isolation between the King and Common Eiders. Unpublished report. Contracts AINA-37 and ONR-238, Arctic Institute of North America, Washington, D.C. 20 pp.

This paper describes some of the displays of the King Eider, compares the displays of King and Common Eiders, and discusses selection for interspecific isolating mechanisms which result in divergence of the displays. MRP

Arctic - Chukchi (Barrow), Beaufort (Colville R.)
Gulf of Alaska - Cook Inlet (Homer)
Ducks
Common Eider, King Eider
Behavior

238. NELSON, E.W. 1881. Habits of the Black Brant in the vicinity of St. Michael's, Alaska. Bull. Nutt. Ornithol. Club 6:131-138.

This paper presents observations of spring migration of Black Brant and several other early migrants. Flight behavior, body condition during spring migration, and possible migration routes of Black Brant are described. MRP

Bering Sea - Norton Sound (St. Michael)
Swans, geese, ducks, cranes
Whistling Swan, Canada Goose, Brant, Emperor Goose, White-fronted Goose, Pintail, Sandhill Crane
Migration, behavior

239. NELSON, U.C. 1949. Investigations on Breeding and Wintering Populations, Nesting Studies, and Banding of Migratory Waterfowl. Unpublished report. Project No. 3-R-4. Fed. Aid in Wildl. Rest., Alaska 4(1):4-40.

This is a compendium of reports on waterfowl studies in Alaska. Results of aerial surveys conducted over northwestern Alaska, the Arctic coast, and the Yukon Delta are presented. Data from nesting and banding studies on the Kashunuk River, Innoko, Pike Lake, and Iditarod areas are summarized. General observations of many species are included. MRP

Arctic - Beaufort, Kotzebue Sound
Bering Sea - Yukon Delta
Interior - Innoko, Koyukuk
Waterfowl
Abundance, distribution, habitat, annotated list, mortality, predation, subsistence, plumage, migration

240. NELSON, U.C. 1950. Investigations on Breeding and Wintering Populations, Nesting Studies and Banding of Migratory Waterfowl. Unpublished report. Project No. 3-R-4. Fed. Aid in Wildl. Rest., Alaska 4(4):4.

This report summarizes dates of spring migration of waterfowl at several locations in Alaska. MRP

Alaska
Loons, swans, geese, ducks
Migration

241. NELSON, U.C. 1950. Investigations on Breeding and Wintering Populations, Nesting Studies, and Banding of Migratory Waterfowl. Unpublished report. Project No. 3-R-5. Fed. Aid in Wildl. Rest., Alaska 5(1):2-26.

This report provides information from waterfowl surveys of the Seward Peninsula, northwestern Alaska, Arctic Coast, Minto Lakes, and Yukon Delta. Data from banding studies at Minto Lakes, Innoko River, and Lower Yukon areas are reported; results of a nesting study at Minto Lakes are also summarized. MRP

Arctic - Kotzebue Sound
Interior - Innoko, Koyukuk
Bering Sea - Yukon Delta
Swans, geese, ducks
Abundance, migration, plumage, predation

242. NELSON, U.C. 1951. Investigations on Breeding and Wintering Populations, Nesting Studies, and Banding of Migratory Waterfowl. Unpublished report. Project No. 3-R-5. Fed. Aid in Wildl. Rest., Alaska 5(4):6-24.

This report provides information from waterfowl surveys of the Yukon Delta, Innoko-Yukon, northwest Alaska, Arctic, Minto Lakes, Seward Peninsula, Fort Yukon, and Lake Louise. Some significant information on Snow Goose and Black Brant migration routes is included. MRP

Alaska
Swans, geese, ducks
Abundance, migration, plumage, predation, habitat

243. NELSON, U.C. 1951. Migratory Waterfowl Studies, Breeding and Wintering Populations, Nesting and Banding. Unpublished report. Project No. 3-R-6. Fed. Aid in Wildl. Rest., Alaska 6(1):3-61.

This is a compendium of several reports on waterfowl studies: geese nesting on the Yukon-Kuskokwim Delta; gull-waterfowl relationships on the Yukon-Kuskokwim Delta; waterfowl at Shishmaref; and waterfowl in the Innoko-Iditarod River area. Information on other species is included. MRP

Arctic - Kotzebue
Interior - Innoko, Koyukuk, Tanana
Bering Sea - Yukon Delta
Waterfowl
Abundance, distribution, checklist, food, migration, predation, reproduction, plumage, subsistence

244. NELSON, U.C. 1952. Migratory Waterfowl Studies - Nesting and Banding Studies. Unpublished report. Project No. W-3-R-7. Fed. Aid in Wildl. Rest., Alaska 7(1):4-17.

This summarizes information collected in 1952 on spring waterfowl migration in Alaska and from banding studies on the Yukon Delta, Copper River Delta, and Minto Lakes area. MRP

Bering Sea - Yukon Delta
Gulf of Alaska - Copper River
Interior - Tanana
Swans, geese, ducks, cranes
Abundance, mortality, plumage, predation, reproduction, migration

245. NELSON, U.C. 1952. Waterfowl banding and migrations in Alaska. Proc. Alaska Sci. Conf. 3:201-207.

This paper describes the waterfowl banding program in Alaska, and includes information on banding techniques, numbers of each species banded, and locations of banding returns. NMH

Arctic
Bering Sea
Gulf of Alaska
Interior
Loons, swans, geese, ducks
Migration, techniques

246. NELSON, U.C. 1953. Cliff-nesting Canada Geese on the Arctic Slope of Alaska. J. Wildl. Manage. 17:536.

This short note describes Canada Geese nesting on the steep, often inaccessible 50 to 300-foot cliffs of the upper Colville River. REG

Artic - Beaufort (Colville R.)
Geese
Canada Goose
Status, distribution, habitat

247. NELSON, U.C. 1953. Migratory Waterfowl Studies. Unpublished report. Project W-3-R-8. Fed. Aid in Wildl. Rest., Alaska 8(1):11-42.

This reports on several studies conducted in 1953: breeding ground survey of the Yukon Flats; nesting and banding study at Minto Lakes; and banding operations on the Copper River Delta. MRP

Interior - Upper Yukon, Tanana (Minto Lakes)
Gulf of Alaska - Copper River
Ducks
Abundance, distribution, reproduction, mortality, predation, plumage, food

248. NELSON, U.C. 1953. Northern record of nesting of Red-necked Grebe. Condor 55:220.

A nest near the junction of the Colville and Itkillik Rivers is reported. REG

Arctic - Beaufort (Colville R., Itkillik R.)
Grebes
Red-necked Grebe
Distribution

249. NELSON, U.C. 1954. Migratory Waterfowl Studies. Unpublished report. Project W-3-R-8. Fed. Aid in Wildl. Rest., Alaska 8(4):23-26.

This reports on two studies conducted in 1954: nesting and banding at Minto Lakes; and comparative breeding biology of Greater and Lesser Scaup. MRP

Interior - Tanana (Minto Lakes)
Swans, geese, ducks
Greater Scaup, Lesser Scaup
Reproduction, abundance, distribution

250. NELSON, U.C. 1954. Migratory Waterfowl Studies. Unpublished report. Project No. W-3-R-9. Fed. Aid in Wildl. Rest., Alaska 9(1):10-39 plus appendices A-D.

This is a compendium of reports on several studies of waterfowl in Alaska in 1954. Included are studies of production on the Yukon Delta, on the Copper River Delta, and at Minto Lakes; banding studies on the Yukon Delta, Innoko and Iditarod River areas, and Copper River Delta; and a breeding ground survey of the Fort Yukon Flats. MRP

Interior - Tanana (Minto Lakes), Innoko, Upper Yukon
Bering Sea - Yukon Delta
Gulf of Alaska - Copper River
Geese, ducks, cranes
Reproduction, abundance, habitat, techniques, mortality, predation

251. NELSON, U.C. 1954. Waterfowl banding and migrations in Alaska. Proc. Alaska Sci. Conf. 3:201-207.

The author presents, mostly in tabular format, a summary of waterfowl bandings and recoveries in and from Alaska between 1948 and 1952. The locations of bandings and recoveries are also given. Most of the information pertains to the Cackling Canada Goose and Black Brant. REG

Alaska
Waterfowl, geese
Canada Goose, Brant
Migration, management, distribution

252. NELSON, U.C. 1955. Migratory Waterfowl Studies. Unpublished report. Project No. W-3-R-10. Fed. Aid in Wildl. Rest., Alaska 10(1):30-71.

Several studies conducted in 1955 are reported, including banding and production on the Copper River Delta; nesting in the Selawik area; and a breeding ground survey of the Fort Yukon Flats. MRP

Arctic - Kotzebue Sound (Selawik)
Interior - Upper Yukon (Yukon Flats)
Gulf of Alaska - Copper River
Geese, ducks
Abundance, reproduction, habitat, distribution, mortality, predation

253. NELSON, U.C. 1958. Sora, Snowy Egret, Blue-winged Teal and Mourning Dove in Juneau, Alaska. Condor 60:142.

Details of the observations and/or collections of these species are provided. REG

Gulf of Alaska - Southeastern (Juneau)
Ducks, herons, rails
Blue-winged Teal, Snowy Egret, Sora
Distribution, specimen record

254. NELSON, U.C., and W.A. ELKINS. 1949. Preliminary Survey of the Species and Distribution of Food Plants Valuable for Waterfowl on the Stikine River Flats. Unpublished completion report. Project No. 3-R-4. Fed. Aid in Wildl. Rest., Alaska 4(2):30-40, 4(3):5.

This report reviews other reports on the Stikine, presents preliminary information on foods of ducks and geese, identifies needs for further research, and describes management measures. MRP

Gulf of Alaska - Southeastern (Stikine R. Flats)
Geese, ducks
Food, management, research, status

255. NELSON, U.C., and H.A. HANSEN. 1959. The Cackling Goose - its migration and management. Trans. N. Am. Wildl. Conf. 24:174-187.

This paper describes the breeding range, migratory route, mortality, population, and management needs of this small Canada Goose. REG

Bering Sea - Yukon Delta
Geese
Canada Goose
Management, migration, distribution, mortality, status

256. NOBLE, H. 1901. Exhibition of eggs. Bull. Brit. Ornithol. Club 11:54-55.

This list includes sets of eggs of five species from Alaska. (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Geese, ducks
Snow Goose, King Eider
Specimen record

257. NOWAK, M. 1975. Subsistence trends in a modern Eskimo community. Arctic 28:21-34.

This paper examines traditional and current subsistence activities of the residents of Mekoryuk on Nunivak Island. MRP

Bering Sea - Nunivak Is.
Geese, ducks, cranes
Subsistence

258. NYSEWANDER, D.R., and D.B. BARBOUR. 1979. The breeding biology of marine birds associated with Chiniak Bay, Kodiak Island, 1975-1978, pp. 21-106. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Abundance, nesting habitat, breeding phenology, and productivity of 10 species are discussed, and data collected in 1978 are compared with those of 1975 and 1977. Chick growth and feeding rates are addressed for Black-legged Kittiwakes and Tufted Puffins. An annotated list of the 75 species observed in summer 1978 is appended. REG

Gulf of Alaska - Kodiak (Chiniak Bay)
Ducks
Common Eider
Reproduction, abundance, annotated list

259. NYSEWANDER, D., and E. HOBERG. 1978. The breeding biology of marine birds associated with Chiniak Bay, Kodiak Island, 1977, pp. 525-574. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The 1977 breeding season phenology and productivity are reported for eight major species nesting on islands of inner Chiniak Bay and on mainland Kodiak. Population estimates and densities of major breeding species are presented. Incidental notes are summarized for six other species breeding in the area. A list of the prey items taken by nine species of seabirds is presented. CMH

Gulf of Alaska - Kodiak (Kodiak Is., Chiniak Bay)
Ducks
Common Eider, Red-breasted Merganser
Reproduction

260. OLSON, S.T. 1954. Gull-waterfowl relationships on the waterfowl breeding grounds in Alaska. Proc. Alaska Sci. Conf. 5:38-39. (Abstract)

The author discusses the significance of gull predation on breeding waterfowl in Alaska. NMH

Alaska
Waterfowl
Predation

261. PALMER, R.S. (ed.). 1962. Handbook of North American Birds. Vol. 1. Yale Univ. Press, New Haven, Conn. 567 pp.

This volume is the first in a planned series on the birds of North America. Published and unpublished material is included for each species. Topics addressed for each species include: molt and plumage, field identification, voice, habitat, distribution, migration, reproduction, habits, and food. MRP

Alaska
Loons, grebes, herons
Behavior, distribution, food, plumage, habitat, migration, population dynamics, abundance, status, reproduction

262. PALMER, R.S. (ed.). 1976. Handbook of North American Birds. Vol. 2. Yale Univ. Press, New Haven, Conn. 521 pp.

This volume is one of two edited by Palmer on the waterfowl of North America. Published and unpublished material is included for each species. Topics addressed for each species includes: molt and plumage, field identification, voice, habitat, distribution, migration, banding status, reproduction, habits and food. This volume includes swans, geese, and dabbling ducks. MRP

Alaska
Swans, geese, ducks
Abundance, breeding biology, distribution, food, habitat, behavior, migration plumage, population dynamics, status

263. PALMER, R.S. (ed.). 1976. Handbook of North American Birds. Vol. 3. Yale Univ. Press, New Haven, Conn. 560 pp.

This volume is one of two edited by Palmer on the waterfowl of North America. Published and unpublished material is included for each species. Topics addressed for each species includes: molt and plumage, field identification, voice, habitat, distribution, migration, banding status, reproduction, habits, and food. This volume includes eiders, wood ducks, diving ducks, mergansers, and stifftails. MRP

Alaska
Ducks
Abundance, breeding biology, behavior, distribution, food, plumage, habitat, migration, population dynamics, status

264. PEDERSEN, S. 1971. Status and trends of subsistence resource use at Point Hope, pp. 37-89. In B. MacLeen (dir.), Point Hope Project Report. Univ. Alaska, Fairbanks.

Not reviewed.

Arctic - Chukchi (Point Hope)
Waterfowl
Subsistence

265. PETERSEN, J.D. 1954. Lake Louise Waterfowl Banding Report, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 10 pp.

This brief report summarizes information on birds banded and broods observed in the vicinity of Lake Louise. Logistics are discussed, and recommendations are made for future studies. NMH

Gulf of Alaska - Copper River (Lake Louise)
Ducks
Mallard, Pintail, Green-winged Teal, American Wigeon, Bufflehead, Oldsquaw, Red-breasted Merganser
Techniques, abundance

266. PETERSEN, M.R. 1976. Breeding biology of Arctic and Red-throated Loons. M.S. thesis. Univ. California, Davis. 55 pp.

This thesis presents information on the breeding biology of Arctic and Red-throated Loons on the Yukon-Kuskokwim Delta. Included are observations of spring phenology, arrival, prenesting behavior, incubation, nests and nest sites, egg sizes, clutch size and chronology, hatching success, and broods of both species. The author discusses factors influencing arrival and nest initiation, hatching success, and brood survival. MRP

Bering Sea - Yukon Delta
Loons
Arctic Loon, Red-throated Loon
Breeding biology

267. PETERSEN, M.R. 1976. Nesting ecology of the Arctic Loon. Pac. Seabird Group Bull. 3(1):22. (Abstract)

This paper reports on the reproductive success of Arctic Loons and factors influencing it. MRP

Bering Sea - Yukon Delta
Loons
Arctic Loon
Breeding biology

268. PETERSEN, M.R. 1978. The feeding ecology of Steller's Eiders. Pac. Seabird Group Bull. 5(1):33. (Abstract)

The foods and feeding behavior of Steller's Eiders are reported from a study at Nelson Lagoon. MRP

Bering Sea - Bristol Bay (Nelson Lagoon)
Ducks
Steller's Eider
Food, behavior

269. PETERSEN, M.R. 1979. Nesting ecology of Arctic Loons. Wilson Bull. 91:608-617.

Arctic Loons were studied on the Yukon-Kuskokwim Delta during the nesting seasons of 1974 and 1975. Various aspects of their breeding biology discussed in this paper include: spring phenology and loon arrival, nests and nest-sites, clutch-size and chronology, and hatching success. Pond availability, timing of egg-laying, timing of the goose hatch, and predation are discussed in relation to reproductive success of the loons. MRP

Bering Sea - Yukon Delta (Old Chevak)
Loons, geese
Arctic Loon, Canada Goose
Breeding biology, predation

270. PETERSEN, M.R. 1980. Observations of wing-feather moult and summer feeding ecology of Steller's Eiders at Nelson Lagoon, Alaska. Wildfowl 31: in press.

This paper provides information on the population size, molt chronology, food habits, and feeding behavior of Steller's Eiders at Nelson Lagoon. Differences in the timing of molt between age and sex groups, and changes in foods and feeding behavior throughout the summer are discussed. MRP

Bering Sea - Bristol Bay (Nelson Lagoon)
Ducks
Steller's Eider
Food, plumage, abundance

271. PETERSEN, M.R. 1980. Populations, Feeding Ecology, and Molt of Steller's Eiders. Unpublished final report. U.S. Fish and Wildl. Serv., Div. Wildl. Ecol. and Research, Washington, D.C. 20 pp.

This report provides information on summer populations, feeding ecology, and energetics during the molt of Steller's Eiders on the Alaska Peninsula. MRP

Bering Sea - Bristol Bay (Alaska Peninsula)
Ducks
Steller's Eider
Distribution, abundance, food, physiology

272. PETERSEN, M.R., and M.J. SIGMAN. 1977. Field studies at Cape Peirce, Alaska - 1976, pp. 633-693. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This reports information on the abundance, breeding biology, and predation of seabirds, and on spring migration, molt and foraging areas of loons and waterfowl in 1976. An appended table lists the 132 species of birds recorded from the area between 1963 and 1976; notes are included for those recorded only in 1976. CMH

Bering Sea - Bristol Bay (Cape Peirce)
Loons, geese, ducks
Migration, habitat, plumage, reproduction, predation

273. PLOEGER, P.L. 1968. Geographical differentiation in Arctic Anatidae as a result of isolation during the last glacial. Ardea 56:1-159.

This paper discusses geographical, phytogeographical, and zoogeographical evidence for differentiation in Anatidae during the last glaciation. The author presents maps depicting current and surmised historical breeding ranges for the major species. He also compares geographical differentiation in the families Anatidae and Gaviidae, and the genera Calidris and Tringa. NMH

Alaska
Loons, swans, geese, ducks
Zoogeography

274. QUIMBY, R. 1972. Waterbird habitat and use of Chickaloon Flats. M.S. thesis. Univ. Alaska, Fairbanks. 85 pp.

Not reviewed.

Gulf of Alaska - Cook Inlet (Chickaloon Flats)
Waterfowl
Habitat

275. RATTI, J.T., and D.E. TIMM. 1979. Migratory behavior of Vancouver Canada Geese: Recovery rate bias, pp. 208-212. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese: A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

This paper analyzes the recoveries from 4,665 Vancouver Canada Geese banded in Southeast Alaska to determine the relative importance of different wintering areas. MRP

Gulf of Alaska - Southeastern
Geese
Canada Goose
Migration, distribution, research

276. RATTI, J.T., D.E. TIMM, and D.R. ANDERSON. 1978. Reevaluation of survival estimates for Vancouver Canada Geese: Application of modern methods. Wildl. Soc. Bull. 6:146-148.

The mean life span of Vancouver Canada Geese is calculated, based on analysis of 351 recoveries from 3,491 birds banded as adults. The authors compare and evaluate modern and older methods of calculating survival estimates. MRP

Gulf of Alaska - Southeastern (Glacier Bay)
Geese
Canada Goose
Population dynamics, techniques

277. RATTI, J.T., D.E. TIMM, and F.C. ROBARDS. 1977. Weights and measurements of Vancouver Canada Geese. Bird-Banding 48:354-357.

Weights and several other measurements of 309 molting Vancouver Canada Geese captured at Glacier Bay in 1973 are summarized and tested for differences between sexes. Body condition is briefly discussed. CMH

Gulf of Alaska - Southeastern (Glacier Bay)
Geese
Canada Goose
Anatomy, physiology, techniques

278. RAVELING, D.G. 1978. Morphology of the Cackling Canada Goose. J. Wildl. Manage. 42:897-900.

This article provides measurements of Cackling Canada Geese collected near Old Chevak, Alaska, and in California. MRP

Bering Sea - Yukon Delta
Geese
Canada Goose
Anatomy

279. RAVELING, D.G. 1978. Spring Surveys of Geese and Swans in Cook Inlet, Kvichak Bay, Nushagak Bay, Kuskokwim Bay to Hazen Bay, and Innoko River, Alaska. Unpublished report. Dept. Wildl. Fish. Biol., Univ. California, Davis. 9 pp.

Aerial surveys of the intertidal areas of Cook Inlet, Kamishak Bay, Nushagak Bay, and the Yukon Delta were conducted May 3-7, 1978, to assess use of the areas by geese and swans during spring migration. Follow-up studies are recommended. MRP

Gulf of Alaska - Cook Inlet
Bering Sea - Bristol Bay, Yukon Delta
Swans, geese
Whistling Swan, Trumpeter Swan, Canada Goose, Brant, Emperor Goose, White-fronted Goose, Snow Goose
Abundance, distribution

280. RAVELING, D.G. 1978. The timing of egg laying by northern geese. Auk 95:294-303.

This paper presents data on the delay between peak arrival and peak nest initiation by Cackling Geese as it relates to the time required for rapid yolk development. Data available from other studies of Brant, Lesser Snow Geese, and Ross' Geese are reviewed. The plasticity in ovary preparation is discussed in relation to weather patterns that affect spring thaw and the availability of nest sites. MRP

Alaska
Bering Sea - Yukon Delta (Old Chevak)
Geese
Canada Goose, Brant
Physiology, reproduction

281. RAVELING, D.G. 1979. The annual cycle of body composition of Canada Geese with special reference to control of reproduction. Auk 96:243-252.

This paper reports on fluctuations in weight, lipids, and protein content of the body, breast muscles, and liver, and changes in the size of leg muscles, gizzard, and intestines of adult Cackling Geese. Specimens were collected during various stages of the nesting cycle in Alaska, and during fall migration, winter, and spring migration in California. The lipid and protein reserves stored by the geese during spring migration are discussed in relation to initiation of nesting and control of clutch size. MRP

Bering Sea - Yukon Delta
Geese
Canada Goose
Physiology

282. RAVELING, D.G. 1979. The annual energy cycle of the Cackling Canada Goose, pp. 81-93. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese: A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

This paper analyzes the relative contributions of energy supplied from the diet and that obtained from stored reserves during the annual cycle of Cackling Geese. Methods of meeting increased energy demands in various stages of the cycle are discussed. MRP

Alaska
Geese
Canada Goose
Physiology, food

283. RAVELING, D.G., M. SIFRI, and R.B. KNUDSEN. 1978. Seasonal variation of femur and tibiotarsus constituents in Canada Geese. Condor 80:246-248.

This paper presents results of analysis of constituents of the femur and tibiotarsus of 10 Cackling Canada Geese collected on the Clarence Rhode NWR in 1974, and 5 Cackling Canada Geese collected on the Sacramento NWR, California, in 1973. The importance of medullary bone is discussed in relation to rapid yolk development and calcium mobilization for egg-laying. MRP

Bering Sea - Yukon Delta (Clarence Rhode NWR)
Geese
Canada Goose
Physiology

284. REARDEN, J.D. 1951. Minto Lakes Waterfowl Studies. Unpublished completion report. Project No. 3-R-6. Fed. Aid in Wildl. Rest., Alaska 6(2):22-37.

This report summarizes banding activities, evaluates banding and trapping techniques, and presents biological information on waterfowl in the Minto Lakes region. Annotated accounts of waterfowl are included. MRP

Interior - Tanana (Minto Lakes)
Swans, geese, ducks
Abundance, distribution, reproduction, predation, annotated list

285. RHODE, E. 1979. This wild goose chase paid off. Natl. Wildl. 17(2):4-9.

This popular article recounts the efforts of U.S. Fish and Wildlife Service biologists to restore the endangered Aleutian Canada Goose to its former breeding range. CMH

Aleutians
Geese
Canada Goose
Public interest, status

286. RIDGWAY, R. 1880. The Little Brown Crane (Grus fraterculus Cassin). Bull. Nutt. Ornithol. Club 5:187-188.

This paper mentions several locations in Alaska where the Little Brown Crane (= Sandhill Crane) was taken. (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Alaska
Cranes
Sandhill Crane
Distribution

287. RIDGWAY, R. 1883. Notes on the Anser leucopareius of Brandt. Proc. U.S. Natl. Mus. 8:21-22.

The Cackling Canada Goose (Branta minima) is distinguished from other Branta species and the specific name minima is proposed. REG

Bering Sea
Geese
Canada Goose
Taxonomy

288. RIDGWAY, R. 1885. Melanetta fusca (Linn.) in Alaska. Proc. U.S. Natl. Mus. 7:68.

The author describes a specimen of Velvet Scoter collected at Allokuagik Lake, July 20, 1882. The bird was later determined by Osgood (1904, North Am. Fauna 24) to be a White-winged Scoter (M. deglandi). REG

Bering Sea - Bristol Bay
Ducks
White-winged Scoter
Distribution, specimen record

289. ROBARDS, F.C. 1960. Construction and operation of a portable goose trap. J. Wildl. Manage. 24:329-331.

This note describes the design, construction and use of a trap developed for a goose banding operation at Adams Inlet, Glacier Bay National Monument. NMH

Gulf of Alaska - Southeastern (Adam's Inlet)
Geese
Canada Goose
Techniques

290. ROSENEAU, D. 1961. A new record of Great Blue Heron for Cook Inlet. Bull. Alaska Ornithol. Soc. 1:26-27. (Mimeo)

Not reviewed.

Gulf of Alaska - Cook Inlet
Herons
Great Blue Heron
Distribution

291. ROUDYBUSH, T., and C.R. GRAU. 1977. Yolk formation in some Pacific seabirds and shorebirds. Pac. Seabird Group Bull. 4(1):17-18. (Abstract)

The number of days required for rapid yolk formation is reported for 14 species of birds. MRP

Bering Sea - Yukon Delta (Clarence Rhode NWR)
Loons
Arctic Loon, Red-throated Loon
Physiology

292. SAGE, B.L. 1971. A study of White-billed Divers in Arctic Alaska. Br. Birds 64:519-528.

Results of a study from 1969-1971 of the habitat, breeding biology, and behavior of the Yellow-billed Loon are presented. Some information on feeding behavior and on interactions with Arctic Loons and diving ducks is also given. CMH

Arctic - Beaufort (Sagavanirktok R.)
Loons, ducks
Yellow-Billed Loon, Arctic Loon
Breeding biology, food

293. SALOMONSEN, F. 1968. The moult migration. Wildfowl 19:5-24.

The author reviews the information available on molt migration of waterfowl, and classifies the various types. He discusses the ultimate and proximate causes of a molt migration. Several species in Alaska are discussed, particularly eiders. The need for further studies is emphasized. MRP

Alaska
Waterfowl
Migration, research

294. SANGER, G.A., R.D. JONES, JR., and D.W. WISWAR. 1979. The winter feeding habits of selected species of marine birds in Kachemak Bay, Alaska, pp. 309-347. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes preliminary results on the winter food habits of four species of marine birds in Kachemak Bay. Aggregate percent numbers, volume, and frequency of occurrence of prey species are graphed and tabulated for each bird species. CMH

Gulf of Alaska - Cook Inlet (Kachemak Bay)
Ducks
Oldsquaw, White-winged Scoter
Food

295. SANGSTER, M.E., C.T. BENZ, and D.J. KURHAJEC. 1977. Critical Wildlife Areas in Port Etches and Constantine Harbor, Hinchinbrook Island, Prince William Sound. Unpublished report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 18 pp.

This report describes critical habitats for waterfowl and seabirds in Port Etches and Constantine Harbor. Annotated species accounts and maps delineating critical habitats are included. MRP

Gulf of Alaska - Prince William Sound
Waterfowl
Annotated list, habitat

296. SCHAMEL, D.L. 1974. The breeding biology of the Pacific Eider (Somateria mollissima v-nigra Bonaparte) on a barrier island in the Beaufort Sea, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 95 pp.

The breeding biology of Common Eiders was studied on a barrier island in 1971 and 1972. Mechanisms for avoiding predation of nests are discussed. Some information on the spring migration of the King Eider is included. MRP

Arctic - Beaufort
Ducks
Common Eider, King Eider
Breeding biology, predation, migration

297. SCHAMEL, D. 1977. Breeding of the Common Eider (Somateria mollissima) on the Beaufort Sea Coast of Alaska. Condor 79:478-485.

This paper describes the interrelationships of eiders and Glaucous Gulls nesting in a mixed colony, but emphasizes the breeding biology of the Common Eider. REG

Arctic - Beaufort
Ducks
Common Eider
Breeding biology

298. SCHILLER, B.L. 1951. Studies on the helminth fauna of Alaska. VI. The parasites of the Emperor Goose (Philacte canagica L.) with the description of Hymenolepis philactes, n. sp. J. Parasitol. 37:217-220.

This paper describes a new species of cestode parasite taken from Emperor Geese collected on St. Lawrence Island in August and September 1950. MRP

Bering Sea - St. Lawrence Is.
Geese
Emperor Goose
Disease and parasites

299. SCHMIDT, G.D. 1969. Corynosoma bipapillum sp. n. from Bonaparte's Gull Larus philadelphia in Alaska, with a note on C. constructum van Cleave, 1918. J. Parasitol. 51:814-816.

This paper describes Corynosoma bipapillum sp. n. (a new species) taken from the posterior gut of a juvenile Bonaparte's Gull collected at Lake George. Also included is a description of Corynosoma constrictum, recovered from Pintail, Lesser Scaup, and White-winged Scoter. MRP

Interior - Tanana (Lake George)
Ducks
Pintail, Lesser Scaup, White-winged Scoter
Disease and parasites

300. SCHNEIDER, K.B. 1965. Growth and plumage development of ducklings in Interior Alaska. M.S. thesis. Univ. Alaska, College. 67 pp.

This thesis describes rates of growth and plumage development of known-age Mallard, Canvasback, Lesser Scaup, and Bufflehead ducklings. The possibility of using measurements and plumage characteristics to determine age is discussed. MRP

Interior - Tanana (Tetlin)
Ducks
Mallard, Canvasback, Lesser Scaup, Bufflehead
Plumage, techniques

301. SCHROEDER, L.D., S.M. CARNEY, and E.M. MARTIN. 1974. Distribution of Duck Stamp Sales within States during Fiscal Years 1962-71. U.S. Fish and Wildl. Serv., Spec. Sci. Rep. Wildl. 180. 46 pp.

This report presents information on the relative number of waterfowl hunters in each area in Alaska and changes in numbers during the 10-year period ending June 30, 1971. MRP

Alaska
Waterfowl
Management

302. SCOTT, D. 1977. Breeding behaviour of wild Whistling Swans. Wildfowl 28:101-106.

This paper describes the roles of the male and female in incubation, territorial defense, and care of the young, and evaluates the ecological significance of their division of labor. CMH

Bering Sea - Yukon Delta (Old Chevak)
Swans
Whistling Swan
Behavior

303. SCOTT, R.F. 1948. Banding of Waterfowl and Study of Nesting Conditions. Unpublished report. Fed. Aid in Wildl. Rest., Alaska. Project No. 3-R-3, Work Plan No. 8, Job. No. 8. 49 pp.

This report provides information from an intensive survey of the Innoko River region. General life history information, numbers, and distribution of waterfowl are presented. A checklist and notes on common species are included. MRP

Interior - Innoko
Geese, ducks, cranes
Checklist, distribution, mortality, subsistence, reproduction, plumage, techniques

304. SCOTT, R.F. 1956. Migratory Waterfowl Studies. Unpublished report. Project No. W-3-R-11. Fed. Aid in Wildl. Rest., Alaska 11(1):3-6.

This report summarizes results of a waterfowl banding study conducted in 1952 on the Copper River Delta. Brood size data for ducks and geese are also presented. MRP

Gulf of Alaska - Copper River (Copper R. Delta)
Geese, ducks
Reproduction, techniques

305. SEVASTIANOFF, L'ADJOINT. 1802. Description d'une Nouvelle Espece de Canard et d'une Variete de L'Huitrier. Nova Acta Acad. Sci. Imp. Petrop. 13:346-351.

This paper gives the "original description of Emperor Goose, probably from Kanaga or Kyktak, Aleutian Islands." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Aleutians
Geese
Emperor Goose
Specimen record, taxonomy

306. SHEPHERD, P.E.K. 1960. Distribution and Abundance of the Black Brant in Alaska. Alaska Dept. Fish and Game, Div. Game, Pittman-Robertson Proj. Rep. 2(8):58-60.

Aerial surveys of the coast from Cape Lisburne to the Colville River Delta were conducted in late June and early July 1960. Significant Brant breeding populations were located. MRP

Arctic - Beaufort, Chukchi
Geese
Brant
Abundance, reproduction

307. SHEPHERD, P.E.K. 1960. Mortality studies of Western Canada Geese - Copper River Delta. Alaska Dept. Fish and Game, Div. Game, Pittman-Robertson Proj. Rep. 2(8):50-57.

A total of 619 Western Canada Geese was captured in 1960 by hand netting and use of a wire trap. Methods of capture were compared for efficiency. MRP

Gulf of Alaska - Copper River
Geese
Canada Goose
Techniques, status

308. SHEPHERD, P.E.K. 1960. Production, Harvest, Distribution and Migration of Waterfowl in Alaska. Alaska Dept. Fish and Game, Div. Game, Pittman-Robertson Proj. Rep. 2(8):61-77.

Results from brood surveys of puddle ducks in the Minto Lakes area are compared with those from previous years. Wire diver traps and baited traps used to capture ducks for banding are described, and age and sex composition of the birds trapped is noted. The average harvest per day for 110 hunters is given. MRP

Interior - Tanana (Minto Lakes)
Geese, ducks
Age and sex composition, techniques, mortality, status, management

309. SHEPHERD, P.E.K. 1962. An ecological reconnaissance of the Trumpeter Swan in southcentral Alaska. M.S. thesis. Wash. State Univ., Pullman. 168 pp.

This thesis presents detailed information on the breeding biology, distribution, abundance, and habitat requirements of Trumpeter Swans in Alaska. Recommendations for management and research are included. MRP

Gulf of Alaska - Cook Inlet (Kenai Peninsula), Copper River (Copper R. Delta, Martin R. Flats, Bremner R.)
Swans
Trumpeter Swan
Distribution, abundance, habitat, breeding biology, management, research, checklist

310. SHEPHERD, P.E.K. 1965. A preliminary evaluation of earthquake damage to waterfowl habitat in southcentral Alaska. Proc. Annu. Conf. W. Assoc. State Game Fish Comm. 45:76-80.

The effects of the March 1964 earthquake on waterfowl habitats in southcentral Alaska are assessed and discussed. REG

Gulf of Alaska - Copper River (Copper R. Delta), Cook Inlet
Swans, geese
Trumpeter Swan, Canada Goose
Habitat

311. SHEPHERD, P.E.K. 1965. Waterfowl Report. Unpublished report. Project No. W-6-R-5. Fed. Aid in Wildl. Rest., Alaska 6:1-13.

This report summarizes information from waterfowl studies conducted in Alaska in 1964. Included are: Minto Flats breeding drake censuses; a study of productivity on Minto Flats; studies on the Yukon-Kuskokwim Delta; and studies on the Copper River Delta. MRP

Alaska
Interior - Tanana (Minto Lakes)
Bering Sea - Yukon Delta
Gulf of Alaska - Copper River (Copper R. Delta)
Swans, geese, ducks, cranes
Abundance, reproduction, mortality

312. SHEPHERD, P.E.K., B.L. HILLIKER, and J.H. CROW. 1968. Waterfowl Report. Unpublished annual report. Project No. W-13-R-2 and 3. Fed. Aid in Wildl. Rest., Alaska 9:1-39.

This report summarizes information from waterfowl studies conducted in Alaska in 1967. General comments on Alaska as well as specific studies are included. Studies reported are: production of waterfowl on the Copper River Delta; waterfowl habitat inventory; ecological survey of waterfowl habitats in the Juneau-Mendenhall area; and a study of Mallards wintering in southeast Alaska. MRP

Alaska
Gulf of Alaska - Southeastern (Juneau-Mendenhall), Copper River
Geese, ducks
Management, habitat, reproduction, abundance

313. SHEPHERD, P.E.K., B.L. HILLIKER, and R.J. SOMERVILLE. 1967. Waterfowl Report. Unpublished annual report. Project No. W-13-R-1 and 2. Fed. Aid in Wildl. Rest., Alaska 8:1-27.

This report summarizes information from waterfowl studies conducted in Alaska in 1966. General comments on Alaska as well as specific studies on Canada Geese of the Copper River Detla, wetland inventory work, and waterfowl use of the Juneau-Mendenhall tidelands are included. MRP

Alaska
Gulf of Alaska - Copper River, Southeastern
Geese, ducks
Management, habitat, reproduction

314. SHERWOOD, G. 1962. Chevak and the Black Brant. Alaska Sportsman 28:23-26.

This is a popular article describing Brant nesting on a portion of the western Yukon Delta. REG

Bering Sea - Yukon Delta (Chevak)
Geese
Brant
Public interest

315. SHORTT, T.M. 1940. Eared Grebe at Yakutat, Alaska - A correction. Condor 42:170.

The author referred to Columbus nigricollis (= Podiceps nigricollis) as a common migrant at Yakutat (Shortt, Contrib. Royal Ontario Mus. Zool. 17, 1939) when instead he meant C. auritus (= P. auritus). REG

Gulf of Alaska - Copper River (Yakutat)
Grebes
Horned Grebe
Distribution

316. SJOLANDER, S. and G. AGREN. 1976. Reproductive behavior of the Yellow-billed Loon, Gavia adamsii. Condor 78:454-463.

The authors describe the reproductive behavior of the Yellow-billed Loon, and discuss its taxonomic relationship with other species of loons. MRP

Arctic - Beaufort (Alaktak)
Loons
Yellow-billed Loon
Behavior, taxonomy

317. SLADEN, W.J.L. 1970. Studies on the Whistling Swan, 1970. J. Wildl. Dis. 6:128-129.

This note describes the migration of Whistling Swans and research involving individually marked birds. NMH

Alaska
Swans
Whistling Swan
Techniques, migration

318. SLADEN, W.J.L. 1973. A continental study of Whistling Swans using neck collars. Wildfowl 24:8-14.

The author describes the use of color-coded neck collars on Whistling Swans and the success of band reporting. Details of the continental marking protocol are included. MRP

Alaska
Swans
Whistling Swan, Trumpeter Swan
Techniques

319. SLADEN, W.J.L., and A.A. KISTCHINSKI. 1977. Some results from circumpolar marking problems on northern swans and Snow Geese. Int. Congr. Game Biol. 13:498-507.

This paper presents information on the reporting rates of neck-collared swans banded in Alaska and northeast Siberia. A similar program of marking Snow Geese is reported from non-Alaska areas, and a program for marking Anser species geese is proposed. MRP

Alaska
Swans
Whistling Swan, Trumpeter Swan
Management, migration, distribution

320. SLADEN, W.J.L., and C. LENSINK. 1971. A continental study of the Whistling Swan. Proc. Alaska Sci. Conf. 22:37. (Abstract)

The effectiveness of Whistling Swan banding and neck-collaring programs is discussed. Notes on migration based upon observations of marked swans are included. NMH

Alaska
Swans
Whistling Swan
Techniques, migration, distribution

321. SLADEN, W.J.L., R. SCHWEINSBURG, and W. GUNN. 1970. The migrations of the Whistling Swan. Proc. Alaska Sci. Conf. 21:121-122. (Abstract)

The authors describe a banding program for Whistling Swans. Preliminary results on migration patterns based on observations of marked birds and radio tracking are presented. NMH

Alaska
Swans
Whistling Swan
Techniques, migration

322. SPAULDING, M. 1978. Waterfowl Hunter Bag Checks on the Mendenhall Flats, Juneau, Alaska, 1978. Unpublished annual report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 57 pp.

This report establishes a sampling base of the hunting harvest of the Mendenhall wetlands, compares game bag checks in 1978 to those of previous years, and recommends ways to improve estimates of the hunting harvest. A sample form, map of the area, and weekly game bag check data are appended. MRP

Gulf of Alaska - Southeastern (Mendenhall Flats)
Geese, ducks
Techniques, abundance, management

323. SPENCER, D.L., U.C. NELSON, and W.A. ELKINS. 1951. America's greatest goose-brant nesting area. Trans. N. Am. Wildl. Conf. 16:290-295.

The importance of the Yukon-Kuskokwim Delta as a waterfowl production area is established. Limited information is presented on bandings, recoveries, and adult weights. REG

Bering Sea - Yukon Delta
Geese
Canada Goose, Brant, Emperor Goose, White-fronted Goose
Anatomy, distribution

324. SPRINGER, A.M., D.G. ROSENEAU, and M. JOHNSON. 1979. Ecological studies of colonial seabirds at Cape Thompson and Cape Lisburne, Alaska, pp. 517-574. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Aspects of population dynamics, reproductive biology, and feeding habits are discussed primarily for Common Murres and Black-legged Kittiwakes, but some information on other species is presented. CMH

Arctic - Kotzebue Sound (Cape Thompson, Cape Lisburne)
Ducks
Common Eider, King Eider
Habitat

325. STEELE, B.B., and W.H. DRURY. 1977. Birds of coastal habitats on the south shore of the Seward Peninsula, Alaska, pp. 1-178. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

Detailed information is provided on distribution, abundance, and reproductive and feeding ecology of seabirds in the Norton Sound region. Maps depicting waterfowl densities along the coast in fall are presented, along with some brood counts. Shorebirds are discussed in general terms. CMH

Bering Sea - Norton Sound
Waterfowl
Distribution, abundance, reproduction, pollution, management

326. STEPHENSON, D., and G. SMART. 1972. Egg measurements for three endangered species. Auk 89:191-192.

This note provides external measurements of eggs of the Whooping Crane, Aleutian Canada Goose, and Masked Bobwhite Quail. CMH

Aleutians - (Buldir Is.)
Geese
Canada Goose
Anatomy

327. STEPHENSON, R.O. 1970. A study of the summer food habits of the arctic fox on St. Lawrence Island, Alaska. M.S. thesis. Univ. Alaska, College. 75 pp.

This presents results of a study in summer 1968 of the food habits of arctic foxes denning in lowland tundra and seacliff habitats. Over 1,500 scats were analyzed from 24 dens. The composition of the diet is discussed in relation to availability of prey species. CMH

Bering Sea - St. Lawrence Is.
Waterfowl
Predation

328. STEWART, P.A. 1967. Diving schedules of a Common Loon and a group of Oldsquaws. Auk 84:122-123.

Diving times of a Common Loon and Oldsquaws were recorded near Petersburg in 1962. MRP

Gulf of Alaska - Southeastern (Wrangell Narrows)
Loons, ducks
Common Loon, Oldsquaw
Food, behavior

329. STONE, W. 1899. The summer molting plumage of certain ducks. Proc. Acad. Nat. Sci. Phila. 1899:467-472.

The author discusses the summer molt of Arctic birds and provides brief descriptions of birds collected by E.A. McIlhenny at Point Barrow. MRP

Arctic - Chukchi (Point Barrow)
Ducks
Steller's Eider, Common Eider, King Eider, Spectacled Eider, Red-breasted Merganser
Plumage, specimen record

330. STRANG, C.A. 1976. Feeding behavior and ecology of Glaucous Gulls in western Alaska. Ph.D. thesis. Purdue Univ., Lafayette, Indiana. 145 pp.

The comparative feeding behavior and ecology of a coastal and inland nesting population of Glaucous Gulls were studied from 1972 to 1974. Included are chapters on time-energy budgets, harassment, waterfowl nesting among gulls, and factors limiting gull populations. REG

Bering Sea - Yukon Delta
Geese, ducks
Canada Goose, Brant, Common Eider
Predation

331. STRANG, C.A. 1980. Incidence of avian predators near people searching for waterfowl nests. J. Wildl. Manage. 44:220-222.

This paper discusses the incidence of Glaucous Gulls and jaegers near people searching for waterfowl nests and assesses the possible impacts of this association on nesting success. More research on loss of eggs from undisturbed nests is suggested. MRP

Bering Sea - Yukon Delta
Geese
White-fronted Goose
Predation

332. SUTTON, G.M. 1943. The wing molts of adult loons: A review of the evidence. Wilson Bull. 55:145-150.

The author discusses the timing of wing molt for Yellow-billed, Common, Arctic, and Red-throated Loons. His discussion is based in part on examination of specimens of all but the Common Loon collected by the McIlhenny Expedition to Pt. Barrow in 1897-1898. CMH

Arctic - Chukchi (Barrow)
Loons
Yellow-billed Loon, Arctic Loon, Red-throated Loon
Plumage

333. SWARTH, H.S. 1913. A study of a collection of geese of the Branta canadensis group from the San Joaquin Valley, California. Univ. Calif. Publ. Zool. 12:1-24.

The author "mentions four specimens of Branta canadensis occidentalis from Prince William Sound." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Gulf of Alaska - Prince William Sound
Geese
Canada Goose
Taxonomy, distribution

334. SWARTH, H.S., and H.C. BRYANT. 1917. A study of the races of the White-fronted Goose (Anser albifrons) occurring in California. Univ. Calif. Publ. Zool. 17:209-222.

Mention is made of a record from Cape Vancouver, Nelson Island, Alaska. (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) REG

Bering Sea - Yukon Delta (Nelson Is.)
Geese
White-fronted Goose
Specimen record, taxonomy

335. TAVERNER, P.A. 1931. A study of Branta canadensis (Linnaeus), the Canada Goose. Bull. Nat. Mus. Can. 67:28-40.

This paper "mentions records of specimens from Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Geese
Canada Goose
Distribution, specimen record, taxonomy

336. THOMPSON, D.Q., and R.A. PERSON. 1963. The eider pass at Point Barrow, Alaska. J. Wildl. Manage. 27:348-356.

This paper presents observations of King and Common Eiders during migration past Point Barrow from July through September 1953. Age and sex segregation are noted, and patterns of migration are analyzed in relation to weather. Subsistence harvest by Eskimos is discussed, and information on weights, molt, and plumage of collected birds is presented. MRP

Arctic - Chukchi (Point Barrow)
Ducks
Common Eider, King Eider
Age and sex composition, migration, plumage, subsistence, anatomy

337. THOMPSON, M.C., and R.L. DELONG. 1969. Birds new to North America and the Pribilof Islands, Alaska. Auk 86:747-749.

Four species new to North America and 11 new to the Pribilof Islands were recorded during summer field seasons from 1964 to 1968. Dates of observations and specimen data are presented. MRP

Bering Sea - Pribilof Is.
Loons, ducks
Common Loon, Surf Scoter
Annotated list, specimen record, distribution

338. TIMM, D. 1975. Ingested Lead Shot in Alaska Waterfowl - 1974-75 Hunting Season. Unpublished report. Alaska Dept. Fish and Game, Anchorage, Alaska. 9 pp.

This report analyzes the incidence of ingested lead shot in gizzards of 664 ducks and 57 geese collected at 17 locations in Alaska in 1974. Problem areas are identified, and further research is suggested. MRP

Bering Sea - Bristol Bay
Gulf of Alaska - Kodiak, Cook Inlet, Copper River, Southeastern
Geese, ducks
Mortality, pollution, research

339. TIMM, D.E., and R.G. BROMLEY. 1976. Driving Canada Geese by helicopter. Wildl. Soc. Bull. 4:180-181.

This brief article describes methods and analyzes the cost and efficiency of using aircraft to drive flightless Canada Geese on the Copper River Delta. Use of a helicopter and Piper Super Cub are compared. MRP

Gulf of Alaska - Copper River (Copper R. Delta)
Geese
Canada Goose
Techniques

340. TIMM, D.E., R.G. BROMLEY, D.E. MCKNIGHT, and R.S. ROGERS. 1979. Management evolution of Dusky Canada Geese, pp. 322-330. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese: A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

This paper reviews the management of Dusky Canada Geese, and discusses challenges for future managers. MRP

Gulf of Alaska - Copper River
Geese
Canada Goose
Management

341. TIMM, D.E., and C.P. DAU. 1979. Productivity, mortality, distribution and population status of Pacific Flyway White-fronted Geese, pp. 280-298. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese: A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

This paper analyzes production, mortality, distribution, and inventory data for the Pacific Flyway White-fronted Goose. Total harvest in recent years is discussed in relation to the capabilities of the population to sustain itself. MRP

Alaska
Geese
White-fronted Goose
Abundance, distribution, management, migration, mortality, population dynamics, status

342. TIMM, D.E., S.O. MORGAN, and R.E. WOOD. 1975. Wolf as predator on Mallards in a bait trap. Can. Field-Nat. 89:322.

This note reports an observation of wolves removing Mallards from a bait trap near Petersburg. MRP

Gulf of Alaska - Southeastern (Petersburg)
Ducks
Mallard
Predation

343. TIMSON, R.S. 1975. Late Summer Migration at Barrow, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 45 pp.

This paper reports on fall migration of marine birds past Barrow between August 27 and September 16, 1975. Migration is analyzed for each species group in relation to weekly period, time of day, wind conditions, and flock size. Information on age and sex composition is presented for some species. Subsistence hunting activity is also analyzed. CMH

Arctic - Chukchi (Barrow)
Loons, geese, ducks
Migration, subsistence, age and sex composition

344. TODD, W.E. 1950. Nomenclature of the White-fronted Goose. Condor 52:63-68.

The nomenclature and distribution of all races of the White-fronted Goose are examined; three American races, with accompanying meristic data, are discussed. REG

Alaska
Geese
White-fronted Goose
Distribution, specimen record, taxonomy

345. TRAPP, J.L. Techniques used in reducing oil impact on bird populations. Presented at Leadership Oiled-bird Rehabilitation Workshop. Anchorage, Alaska. November 14-15, 1978.

This paper describes means of deterring marine birds from approaching the site of oil spills. Well designed experiments to test the effects of these deterrent techniques are urged. MRP

Alaska
Waterfowl
Pollution, techniques

346. TRAPP, J.L. and R.A. MACINTOSH. 1978. First North American specimen of the Spotbill Duck. West. Birds 9:127-128.

This note provides information on the first specimen and second record of the Spotbill Duck for North America. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Ducks
Spotbill Duck
Distribution, specimen record

347. TRAUGER, D.L., and J.C. BARTONEK. 1977. Leech parasitism of waterfowl in North America. Wildfowl 28:143-152.

This is a review of the distribution and significance of leech parasitism of waterfowl in North America. Included is a previously unpublished occurrence of infestation of Dusky Canada Geese in Alaska. CMH

Gulf of Alaska - Copper River
Geese
Canada Goose
Disease and parasites

348. UDVARDY, M.D.F. 1979. Zoogeography and taxonomic relationships of seabirds in northern North America. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:167-170.

This paper briefly summarizes the zoogeography and taxonomic relationships of marine birds from northern and northwestern North America. MRP

Alaska
Waterfowl
Zoogeography, taxonomy

349. U.S. DEPARTMENT OF DEFENSE. 1967. Waterfowl Report 1967. Unpublished report. U.S. Army, Fish and Wildlife Office, Fort Richardson, Alaska. 19 pp.

This report provides spring and fall census data of waterfowl, and the number of ducks and geese harvested during a special opening of an area previously closed to hunting on the Fort Richardson Military Reservation. The area appears to be important for migrating puddle ducks and Trumpeter Swans. MRP

Gulf of Alaska - Cook Inlet (Fort Richardson Military Reservation)
Swans, geese, ducks
Abundance, management

350. U.S. FISH AND WILDLIFE SERVICE. 1980. Workshop on Migratory Bird Subsistence Hunting. Proceedings of Workshop. U.S. Dept. Interior, U.S. Fish and Wildl. Serv., Anchorage, Alaska. 119 pp.

This publication contains the presentations, comments, and summaries of topics discussed at the migratory bird subsistence hunting workshop held January 29-30, 1980 in Anchorage. MRP

Alaska
Waterfowl
Subsistence, public interest

351. VAN CLEAVE, H.J., and R.L. RAUSCH. 1951. The Acanthocephalan parasites of eider ducks. Proc. Helminthol. Soc. Wash. 18:81-84.

This paper lists several species of Acanthocephalan parasites found in Common Eiders and King Eiders collected in Alaska. MRP

Alaska
Ducks
Common Eider, King Eider
Disease and parasites

352. VAN HORN, D. 1979. Surveys and investigations of the Vancouver Canada Goose (Branta canadensis fulva) in southeast Alaska. Proc. Alaska Sci. Conf. 29:259. (Abstract)

This abstract identifies studies of Vancouver Canada Geese on National Forest lands in southeast Alaska. MRP

Gulf of Alaska - Southeastern
Geese
Canada Goose
Research

353. VAN HORN, D., P. HARRINGTON, and J.T. RATTI. 1979. Preliminary results of surveys of the Vancouver Canada Goose (Branta canadensis fulva) in southeast Alaska, pp. 310-315. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese: A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

This paper provides information on distribution, habitat use, and reproduction of Vancouver Canada Geese in southeast Alaska. Implications to forest management are discussed. MRP

Gulf of Alaska - Southeastern
Geese
Canada Goose
Distribution, habitat, reproduction, management

354. WALKINSHAW, L.H. 1949. Some Whistling Swan observations in western Alaska. Wilson Bull. 61:111.

This note provides observations of Whistling Swans breeding near Bethel. NMH

Bering Sea - Yukon Delta (Bethel)
Swans
Whistling Swan
Abundance, distribution

355. WARBURTON, S., JR. 1931. Nesting of the Little Brown Crane. Murrelet 12:3-6.

The author presents a narrative account of observations of a pair of Sandhill Cranes nesting on the Yukon Delta in 1929. REG

Bering Sea - Yukon Delta
Cranes
Sandhill Crane
Breeding biology

356. WEBSTER, J.D. 1941. The Ring-necked Duck in southeastern Alaska. Wilson Bull. 53:42.

This note presents observations of Ring-necked Ducks in Petersburg. NMH

Gulf of Alaska - Southeastern (Petersburg)
Ducks
Ring-necked Duck
Distribution

357. WEEDEN, R., P. LE ROUX, and B. HILLIKER. 1969. Waterfowl Report. Unpublished annual report. Project No. W-13-R-3 and W-17-1. Fed. Aid in Wildl. Rest., Alaska 10:1-19.

This report summarizes information from waterfowl studies conducted in Alaska in 1968. General comments on Alaska as well as specific studies are reported. Studies included are: Canada Goose banding on the Copper River Delta; waterfowl bag checks in southcentral Alaska and Cordova; and Mallard banding in southeastern Alaska. MRP

Alaska
Gulf of Alaska - Copper River, Southeastern, Cook Inlet
Geese, ducks
Management, habitat, reproduction, abundance

358. WEHLE, D.H.S. 1978. Studies of marine birds on Ugaiushak Island, pp. 208-312. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

A study of the marine birds of Ugaiushak Island was conducted in 1977. Abundance, phenology, and production are addressed for each of 15 species. Information on foods and foraging areas, chick growth, relaying and twinning experiments, and colony attendance is presented for some. CMH

Gulf of Alaska - Kodiak (Ugaiushak Is.)
Ducks
Common Eider
Reproduction, habitat, abundance

359. WEHLE, H., E. HOBERG, and K. POWERS. 1977. Studies of marine birds on Ugaiushak Island, pp. 155-277. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This reports on the populations, breeding biology, food habits, and foraging areas of 21 species in summer 1976. A daily checklist of the 50 species observed on the island is appended. CMH

Gulf of Alaska - Kodiak (Ugaiushak Is.)
Swans, ducks
Harlequin Duck, Common Eider
Abundance, reproduction, checklist

360. WELLER, M.W. 1964. Distribution and migration of the Redhead. J. Wildl. Manage. 28:64-103.

This comprehensive paper includes a brief summary of nesting records of this species in Alaska. Birds are noted to breed in two areas of the interior of Alaska, and possibly in the Aleutians. REG

Alaska
Aleutians
Interior - Tanana, Upper Yukon
Ducks
Redhead
Distribution, migration, status

361. WIENS, J.A., D. HEINEMANN, and W. HOFFMAN. 1978. Community structure, distribution and interrelationships of marine birds in the Gulf of Alaska, pp. 1-178. In Environmental Assessment of the Alaskan Continental Shelf, Final Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colorado.

This report discusses in detail the problems associated with censusing marine birds at sea and discusses the formation and characteristics of feeding flocks, particularly those which contain more than one species. Loons are mentioned. PJG

Gulf of Alaska
Loons
Common Loon, Arctic Loon, Red-Throated Loon
Techniques, behavior, food, abundance

362. WILKE, F. 1944. Three new bird records for St. Paul Island, Alaska. Auk 61:655-656.

This note provides the first records of the Whooper Swan, Black Scoter, and Sanderling for the Pribilof Islands. Other species are mentioned. CMH

Bering Sea - Pribilof Is.
Swans, ducks
Whooper Swan, Black Scoter
Distribution, Food

363. WILLETT, G. 1920. Additional notes on the avifauna of Forrester Island, Alaska. Condor 22:138-139.

This brief note provides observations of three species new to the island: Short-tailed Shearwater, Common Merganser, and Hermit Thrush. REG

Gulf of Alaska - Southeastern (Forrester Is.)
Ducks
Common Merganser
Annotated list, distribution

364. WOHL, K.D. 1978. Survey of beached marine birds in Alaska, pp. 857-876. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The results of 54 beached bird surveys at 15 sites in the Gulf of Alaska conducted in winter 1977-1978 are summarized and briefly discussed. CMH

Gulf of Alaska
Ducks
Oldsquaw, Harlequin Duck, Steller's Eider, White-winged Scoter, Black Scoter
Mortality, pollution, techniques

365. WOOLINGTON, D.W., P.F. SPRINGER, and D.R. YPARRAQUIRRE. 1979. Migration and wintering distribution of Aleutian Canada Geese, pp. 299-309. In R.L. Jarvis and J.C. Bartonek (eds.), Management and Biology of Pacific Flyway Geese: A Symposium. OSU Book Stores, Inc., Corvallis, Oregon.

The authors describe the migration patterns of the Aleutian Canada Goose in Alaska and California. They also discuss the effects of hunting closures on the population of this endangered subspecies. MRP

Aleutians - (Buldir Is.)
Geese
Canada Goose
Migration, status, distribution, management

366. YOCUM, C.F. 1965. Breeding record for Redhead in Alaska. Auk 82:103.

The author describes the capture of a downy young of this species near Ohtig Lake in August 1962. This represents the first "definitive" record of Redheads breeding in Alaska. REG

Interior - Upper Yukon (Ohtig L.)
Ducks
Redhead
Distribution

367. YOCOM, C.F. 1970. Weights of ten species of ducks captured at Ohtig Lake, Alaska - August 1962. Murrelet 51:21.

This note gives weights of 398 ducks, comprising 10 species, captured in August 1962 at Ohtig Lake. MRP

Interior - Upper Yukon (Ohtig L.)
Ducks
Pintail, Northern Shoveler, American Wigeon, Canvasback, Redhead, Greater Scaup, Lesser Scaup, Barrow's Goldeneye, Bufflehead, White-winged Scoter
Anatomy

WATERFOWL - AREA INDEX

WATERFOWL - SPECIES INDEX

WATERFOWL - SUBJECT INDEX

SHOREBIRDS - BIBLIOGRAPHY

1. ABBOTT, G.A. 1914. Red-backed Sandpiper eggs. Oologist 31:88-89.

This paper "mentions a set of eggs taken at Point Barrow in 1898." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Arctic - Chukchi (Barrow)
Sandpipers
Dunlin
Specimen record

2. ABBOTT, G.A. 1915. Interesting sets in my shorebird collection. Oologist 32:149-152.

Not reviewed.

Alaska
Shorebirds
Specimen record

3. AINLEY, D.G., and G.A. SANGER. 1979. Trophic relations of seabirds in the northeastern Pacific Ocean and Bering Sea. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:95-122.

This paper reviews the literature on the diets of seabirds found in the northeastern North Pacific Ocean and Bering Sea, and broadly characterizes the diet of each species. More research on seabird feeding relations is suggested so the ecological roles of marine birds can be defined and placed in perspective. MRP

North Pacific
Bering Sea
Phalaropes
Food, research

4. ALLEN, A.A., and H. KYLLINGSTAD. 1949. The eggs and young of the Bristle-thighed Curlew. Auk 66:343-350.

The first nest and eggs of this species known to science are described. REG

Bering Sea - Yukon Delta (Mountain Village)
Sandpipers
Bristle-thighed Curlew
Reproduction, habitat, distribution

5. ANONYMOUS. 1964. Curlew Sandpipers breeding in Alaska. Ool. Rec. 38:58-59.

Not reviewed.

Sandpipers
Curlew Sandpiper
Distribution

6. ASHKENAZIE, S., and U.N. SAFRIEL. 1979. Breeding cycle and behavior of the Semipalmated Sandpiper at Barrow, Alaska. Auk 96:56-67.

This paper presents extensive and detailed descriptions of the reproductive cycle of Semipalmated Sandpipers in Arctic Alaska. REG

Arctic - Chukchi (Barrow)
Sandpipers
Semipalmated Sandpiper
Breeding biology, behavior

7. ASHKENAZIE, S., and U.N. SAFRIEL. 1979. Time-energy budget of the Semipalmated Sandpiper Calidris pusilla at Barrow, Alaska. Ecology 60:783-799.

This comprehensive paper presents a time-energy budget of breeding Calidris pusilla at Barrow, Alaska. A time-activity budget was constructed from observations of marked birds and then converted to an estimate of energy requirements. The adaptive significance of the species' activity pattern is discussed. CMH

Arctic - Chukchi (Barrow)
Sandpipers
Semipalmated Sandpiper
Behavior, physiology, food, reproduction

8. BAILEY, A.M. 1924. Four species new to North America. Condor 26:195.

Specimen records of two Rufous-necked Sandpipers and a Great Knot are presented. REG

Arctic - Chukchi (Wainwright)
Bering Sea - Norton Sound (Wales)
Sandpipers
Rufous-necked Sandpiper, Great Knot
Specimen record, distribution

9. BAILEY, A.M. 1930. The Dotterel and other birds from Cape Prince of Wales, Alaska. Condor 32:161.

Within this note are specimen records of two species of shorebirds, one duck, and one loon collected in June 1929. REG

Bering Sea - Norton Sound (Cape Prince of Wales)
Plovers
American Golden Plover, Dotterel
Specimen record, distribution

10. BAILEY, A.M. 1932. Additional records from Cape Prince of Wales, Alaska. Condor 34:47.

Specimens of Arctic Loon (Gavia arctica viridigularis), Dotterel, and Red-throated Pipit are reported. REG

Bering Sea - Norton Sound (Cape Prince of Wales)
Plovers
Dotterel
Distribution, specimen record

11. BAILEY, A.M. 1933. The Hudsonian Curlew at Wales, Alaska. Condor 35:72.

This note documents the first specimen of Hudsonian Curlew (= Whimbrel) from the Wales area. REG

Bering Sea - Norton Sound (Cape Prince of Wales)
Sandpipers
Whimbrel
Distribution, specimen record

12. BAILEY, A.M. 1939. A curlew new to North America. Auk 56:333-334.

This note records the first specimen of the Siberian race of the Whimbrel collected in North America. CMH

Arctic - Chukchi (Barrow)
Sandpipers
Whimbrel
Distribution, specimen record

13. BAILEY, A.M., and L.B. BISHOP. 1934. Additional records for the Barrow region, Arctic Alaska. Condor 36:169.

This short note reports specimens of six species not previously recorded from the Barrow region, including the Ring-billed Gull, Parakeet Auklet, and Hudsonian Godwit. REG

Arctic - Beaufort (Colville R., Cape Halkett), Chukchi (Barrow)
Sandpipers
Hudsonian Godwit
Distribution, specimen record

14. BAIRD, P.A., and R.A. MOE. 1978. The breeding biology and feeding ecology of marine birds in the Sitkalidak Strait area, Kodiak Island, 1977, pp. 313-524. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

Detailed information on the abundance, habitat use, and reproductive and feeding ecology is presented for Glaucous-winged Gulls, Black-legged Kittiwakes, Arctic and Aleutian Terns, and Tufted Puffins. Sightings of eight species of shorebirds and two other species of seabirds are summarized. CMH

Gulf of Alaska - Kodiak (Sitkalidak Strait)
Oystercatchers, plovers, sandpipers, phalaropes
Black Oystercatcher, American Golden Plover, Lesser Yellowlegs, Wandering Tattler, Black Turnstone, Western Sandpiper, Dunlin, Northern Phalarope
Abundance

15. BARTELS, R.F. 1973. Bird survey techniques on Alaska's north coast. M.S. thesis. Iowa State Univ., Ames. 47 pp.

This paper evaluates aerial survey techniques for estimating bird populations, and reports on the distribution of postbreeding waterfowl in Alaska Arctic coastal waters. MRP

Arctic
Shorebirds
Techniques

16. BARTONEK, J.C. 1968. A Survey of Migratory Bird Problems in Alaska for the Purpose of Identifying Research Needs. Unpublished progress report. U.S. Fish and Wildlife Service, Northern Prairie Wildlife Research Center, Jamestown, N.D. 36 pp.

This paper identifies and discusses potential problems arising from resource development and hunting, describes responsibilities of various management agencies, and suggests specific research projects which should be conducted in the state. CMH

Alaska
Shorebirds
Management, research

17. BARTONEK, J.C., J.G. KING, and H.K. NELSON. 1971. Problems confronting migratory birds in Alaska. Trans. N. Am. Wildl. Conf. 36:343-361.

This paper provides a general review of the principal habitats of breeding waterfowl, shorebirds, and seabirds; identifies the state and federal agencies managing these habitats; and discusses the types of resource development which may adversely affect birds. Recommendations for research and for protection of avian habitats are made. MRP

Alaska
Shorebirds
Management, research

18. BARTONEK, J.C., and D.N. NETTLESHIP (eds.). 1979. Conservation of Marine Birds of North America. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11. 319 pp.

This research report contains papers presented during the International Symposium on the Conservation of Marine Birds of Northern North America, May 13 to 15, 1975. Topics include: marine environment of birds; status of marine bird populations; the biology and ecology of marine birds in the north; conflicts between the conservation of marine birds and uses of other resources; programs and authorities related to marine bird conservation; and conservation of marine birds in other lands. MRP

Alaska
Shorebirds
Abundance, distribution, fishing, food, habitat, management, mortality, pollution, population dynamics, predation, research, status, taxonomy, zoogeography

19. BEAN, T.H. 1881. Our unique Spoon-billed Sandpiper, Eurinorhynchus pygmaeus (Linn.). Chicago Field 16:225. (April 21, 1881.)

This gives a "'brief general history of the species, with record of its capture at Plover Bay, Eastern Siberia, and Point Barrow, Alaska.' (Bull. Nutt. Orn. Club, 1882, p. 116)." (From T.J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Arctic - Chukchi (Barrow)
Sandpipers
Spoon-bill Sandpiper
Specimen record, distribution, breeding biology

20. BENT, A.C. 1927. Life Histories of North American Shore Birds (Part 1). U.S. Natl. Mus. Bull. 142. 359 pp.

This is one part in the classic series on the life histories of North American birds. Species accounts include detailed observations of various aspects of each species' life history. MRP

Alaska
Sandpipers, phalaropes
Abundance, behavior, breeding biology, distribution, food, habitat, migration, plumage, status

21. BENT, A.C. 1929. Life Histories of North American Shore Birds (Part 2). U.S. Natl. Mus. Bull. 146. 340 pp.

This is one part in the classic series on the life histories of North American birds. Species accounts include detailed observations of various aspects of each species' life history. MRP

Alaska
Oystercatchers, plovers, sandpipers
Abundance, behavior, breeding biology, distribution, food, habitat, migration, plumage, status

22. BERRY, A.L. 1946. Golden Plover at sea. Condor 48:45.

This note documents the sighting of an American Golden Plover over the North Pacific Ocean in May 1941. CMH

North Pacific
Aleutians - (Unalaska Is.)
Plovers
American Golden Plover
Distribution

23. BIDERMAN, J.O., W.H. DRURY, F.B. FRENCH, JR., and S. HINCKLEY. 1978. Ecological studies in the northern Bering Sea: Birds of coastal habitats on the south shore of Seward Peninsula, Alaska, pp. 510-613. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Mention is made of concentrations of two species of shorebirds near Safety Lagoon in late August 1977. CMH

Bering Sea - Norton Sound
Sandpipers
Whimbrel, Long-billed Dowitcher
Abundance

24. BISHOP, L.B. 1906. The European Turnstone in Massachusetts. Auk 23:335.

Mention is made of an adult and two juvenile Ruddy Turnstones collected at Nome. REG

Bering Sea - Norton Sound (Nome)
Sandpipers
Ruddy Turnstone
Specimen record

25. BISHOP, L.B. 1938. Correct names for the Red-backed Sandpiper and Northern Long-billed Curlew. Condor 40:225-226.

This short note argues for the recognition of two races of the Dunlin, Calidris alpina pacifica and C. a. sakhalina, on the basis of measurements. CMH

Alaska
Sandpipers
Dunlin
Taxonomy, plumage

26. BRODKORB, P. 1933. Remarks on the genus Limnodromus, Wied. Proc. Biol. Soc. Wash. 46:123-128.

The author proposes the name L. griseus fasciatus (now considered an example of the Long-billed Dowitcher, L. scolopaceus) for the form of dowitcher breeding in Alaska. The type specimen was collected by H. B. Conover from Hooper Bay, and several other specimens were examined. REG

Bering Sea - Norton Sound (Nome), Yukon Delta (Hooper Bay, Kashunuk R.), Bristol Bay (Izembek Bay)
Sandpipers
Short-billed Dowitcher, Long-billed Dowitcher
Taxonomy, specimen record

27. BROOKS, J.W., J.C. BARTONEK, D.R. KLEIN, D.L. SPENCER, and A.S. THAYER. 1971. Environmental Influences of Oil and Gas Development in the Arctic Slope and Beaufort Sea. U.S. Fish and Wildl. Serv. Resour. Publ. 96. 24 pp.

This paper describes in general the physical and demographic characteristics, fish and wildlife resources, and anticipated developments of the region, and outlines conflicts which are likely to arise. Recommendations to mitigate environmental disturbance are presented. CMH

Arctic
Shorebirds
Management, disturbance, pollution, research

28. BROWN, R.G.B. 1961. The aggressive and distraction behaviour of the Western Sandpiper, Ereunetes mauri. Ibis 104:1-12.

The breeding biology and behavior of Western Sandpipers are described from observations near Hooper Bay in 1960. The function of distraction displays is discussed in relation to human and other predators. REG

Bering Sea - Yukon Delta
Sandpipers
Western Sandpiper
Behavior, breeding biology

29. BROWNING, M.R. 1977. Geographic variation in Dunlins, Calidris alpina, of North America. Can. Field-Nat. 91:391-393.

This paper evaluates the geographic variation in Dunlin to determine which races should be recognized. A race in northern Alaska, a race in western Alaska, and a race in northeastern Canada are proposed. MRP

Alaska
Sandpipers
Dunlin
Taxonomy, distribution

30. CAMPBELL, J.M. 1967. The Upland Plover in Arctic Alaska. Murrelet 48:28-33.

The author summarizes the early and more recent records of the Upland Plover (= Upland Sandpiper) north of the Arctic Circle, reviewing its status and distribution in the region. CMH

Arctic - Kotzebue Sound (Kobuk R.)
Interior - Upper Yukon, Koyukuk
Sandpipers
Upland Sandpiper
Distribution, status

31. CAMPBELL, R.W., and P.T. GREGORY. 1976. The Buff-breasted Sandpiper in British Columbia, with notes on its migration in North America. Syesis 9:123-130.

Records of Buff-breasted Sandpipers in British Columbia are summarized, and the range and migration of the species are outlined. Included are comments on the sandpiper's Alaska Arctic breeding range. Plumage and sexual dimorphism are discussed. NMH

Arctic - Beaufort
Sandpipers
Buff-breasted Sandpiper
Distribution, migration, plumage, anatomy

32. CHAPPELL, M.A. 1980. Thermal energetics of chicks of Arctic-breeding shorebirds. Comp. Biochem. Physiol. A Comp. Physiol. 65(3):311-317.

This paper reports on the heat-transfer characteristics of young and adult shorebirds. The author discusses heat transfer coefficients and body resistance to heat flow, energy budgets of adults and chicks in relation to body temperature of chicks, and the brooding-activity cycle. MRP

Arctic - Chukchi (Barrow)
Sandpipers, phalaropes
Semipalmated Sandpiper, Baird's Sandpiper, Pectoral Sandpiper, Red Phalarope
Physiology, behavior

33. COLE, L.J. 1943. Behavior of Northern Phalarope with young. Condor 45:39.

The behavior of an adult responding to its captured downy chick is described. REG

Bering Sea - Pribilof Islands (St. Paul Is.)
Phalaropes
Northern Phalarope
Behavior

34. CONNORS, P.G., K. HIRSCH, and C. HOHENBERGER. 1978. Effects of coastal oil development on shorebirds in arctic Alaska. Pac. Seabird Group Bull. 5(2):85. (Abstract)

This reports the effects on shorebirds from habitat alterations near Prudhoe Bay. The effects of loss of habitat due to construction, dust shadows, noise and disturbance, and artificial gravel piers are discussed. MRP

Arctic - Beaufort (Prudhoe Bay)
Shorebirds
Habitat, management, pollution, disturbance

35. CONNORS, P.G., J.P. MYERS, and F.A. PITELKA. 1979. Seasonal habitat use by Arctic Alaskan shorebirds. Stud. Avian Biol. 2:101-111.

This paper describes seasonal habitat use by shorebirds on the Arctic coastal plains. The susceptibility of shorebird species to disturbances related to outer continental shelf oil development is discussed. REG

Arctic - Chukchi (Barrow)
Shorebirds
Habitat, disturbance, pollution

36. CONNORS, P., and R. RISEBROUGH. 1976. Shorebird dependence on Arctic littoral habitats, pp. 401-456. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports from Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This preliminary report provides annotated accounts for the 19 species of shorebirds using littoral habitats near Barrow, and for 11 other species of water birds commonly occurring there. Results of censuses taken regularly from July to September 1975 are graphically presented for most species. Qualitative food habits information is provided for 11 species. CMH

Arctic - Chukchi (Barrow, Wainwright), Beaufort
Shorebirds
Habitat, abundance, food

37. CONNORS, P., and R.W. RISEBROUGH. 1977. Shorebird dependence on Arctic littoral habitats, pp. 402-524. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Included in this annual report are annotated accounts for the 19 species of shorebirds and 11 species of other birds commonly using littoral habitats of the Barrow region. Census data are reported for the most common species. Habitat use and foraging ecology are discussed in detail for shorebirds. CMH

Arctic - Chukchi (Barrow, Icy Cape), Beaufort (Elson Lagoon)
Shorebirds
Habitat, abundance, distribution, pollution, food

38. CONNORS, P., and R. RISEBROUGH. 1978. Shorebird dependence on Arctic littoral habitats, pp. 84-166. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes results of studies in summer 1977 on shorebird seasonal habitat use and trophic relationships in northwestern Alaska. Seasonal densities are also presented for a few other species. Susceptibility of shorebirds to impacts of oil development is addressed. Checklists present the status of bird species observed at Cape Krusenstern and at Wales in 1977. CMH

Arctic - Beaufort, Chukchi, Kotzebue Sound
Bering Sea - Norton Sound
Shorebirds
Abundance, habitat, migration, physiology, food, pollution, disturbance, checklist

39. CONNORS, P.G., and R.W. RISEBROUGH. 1979. Shorebird dependence on Arctic littoral habitats, pp. 271-329. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 1. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes information gathered at Prudhoe Bay and several sites in Kotzebue Sound and along the Chukchi Sea coast in summer 1978. Data are presented on seasonal habitat use of the littoral zone by shorebirds, on use of disturbed habitat by shorebirds and passerines, and on food habits of shorebirds. A checklist indicates the status of the 113 species of birds recorded at Cape Krusenstern in 1977 and 1978. Expansion of Aleutian Tern colonies is mentioned. CMH

Arctic - Beaufort, Chukchi, Kotzebue Sound
Shorebirds
Abundance, habitat, disturbance, food, checklist, pollution

40. CONOVER, H.B. 1941. A study of the dowitchers. Auk 58:376-380.

Following a comprehensive examination of specimens, the author discusses the distribution and identification of two species of dowitchers. CMH

Alaska
Sandpipers
Short-billed Dowitcher, Long-billed Dowitcher
Taxonomy, distribution, plumage

41. CONOVER, B. 1943. The races of the Knot (Calidris canutus). Condor 45:226-228.

The author suggests two races of Knot (= Red Knot) be recognized: Calidris canutus canutus, and C. c. rufus, with Alaska birds representing the former. REG

Alaska
Sandpipers
Red Knot
Taxonomy, distribution

42. CONOVER, H.B. 1944. The north Pacific allies of the Purple Sandpiper. Field Mus. Nat. Hist. Zool. Ser. 29:169-179.

This paper discusses differences in the distribution, plumage, and meristics of the four races of Rock Sandpiper breeding in the Bering Sea region. REG

Bering Sea
Sandpipers
Rock Sandpiper
Taxonomy, distribution, anatomy, plumage

43. CONOVER, B. 1944. The races of the Solitary Sandpiper. Auk 61:537-544.

From a study of a collection of specimens, the author discusses the differences in distribution and plumage of two races of the Solitary Sandpiper. CMH

Alaska
Sandpipers
Solitary Sandpiper
Distribution, plumage

44. CONOVER, B. 1945. The breeding Golden Plover of Alaska. Auk 62:568-574.

This paper discusses in detail the differences in distribution and plumage of two races of the American Golden Plover. CMH

Alaska
Plovers
American Golden Plover
Distribution, plumage

45. CONOVER, B. 1945. Notes on some American shorebirds. Condor 47:211-214.

The author discusses the validity of a number of races of North American shorebirds. Only those accounts for Ruddy Turnstone and Dunlin are pertinent to Alaska. REG

Alaska
Sandpipers
Ruddy Turnstone, Dunlin
Taxonomy, distribution

46. COUES, E. 1874. New species of North American birds. Am. Nat. 8:500.

This note describes a new species (= subspecies) of shorebird, collected on the Pribilof Islands. MRP

Bering Sea - Pribilof Is.
Sandpipers
Rock Sandpiper
Specimen record, taxonomy

47. DALL, W.H. 1873. Addition to the avi-fauna of America. Am. Nat. 7:634-635.

This note reports the collection of an adult and a partial set of eggs of Tringa crassirostris (= Calidris tenuirostris) from the Aleutian Islands. This record was subsequently invalidated by Bianchi (Yezhegodnik Zoologicheskogo muzeya Akademii Nauk 14:48-76, 1909). MRP

Aleutians
Sandpipers
Specimen record

48. DAY, R.H. 1980. The occurrence and characteristics of plastic pollution in Alaska's marine birds. M.S. thesis. Univ. Alaska, Fairbanks. 111 pp.

This reports on major aspects of the occurrence and variation of plastic particles found in the stomachs of 1,968 individuals comprising 37 species of marine birds. MRP

Alaska
Phalaropes
Pollution, food

49. DAY, R.H., E.P. KNUDTSON, D.W. WOOLINGTON, and R.P. SCHULMEISTER. 1979. Caprimulgus indicus, Eurynorhynchus pygmeus, Otus scops, and Limicola falcinellus in the Aleutian Islands, Alaska. Auk 96:189-190.

This note presents specimen data for several species of shorebirds, an owl, and a nightjar new to the Aleutian Islands. MRP

Aleutians - (Buldir Is., Adak Is.)
Plovers, sandpipers
Mongolian Plover, Ruddy Turnstone, Sanderling, Spoon-bill Sandpiper, Broad-billed Sandpiper, Ruff
Distribution, specimen record

50. DELONG, R.L. 1968. Bar-tailed Godwit from Alaska recovered in New Zealand. Wilson Bull. 80:490-491.

An adult banded on St. George Island on May 31, 1966 was found dead in New Zealand on October 28, 1967. REG

Bering Sea - Pribilof Is. (St. George Is.)
Sandpipers
Bar-tailed Godwit
Distribution, migration

51. DEMENT'EV, G.P., and N.A. GLADKOV (eds.). 1951. Birds of the Soviet Union, Vol. 3. [Transl. from Russian.] Israel Prog. Sci. Transl., Jerusalem. 756 pp.

This volume contains detailed natural history accounts of all Charadriiform species of the Soviet Union. Reference is made to Alaska for many species. REG

Alaska
Shorebirds
Abundance, distribution, behavior, breeding biology, food, habitat, migration, status, taxonomy, plumage

52. DENSLEY, M. 1979. Ross's Gulls in Alaska. Br. Birds 72:23-28.

This paper provides a description of the plumage of adult and immature Ross' Gulls at Barrow in autumn 1975, and describes their flight, feeding behavior, and molt. Feeding associations with Red Phalaropes and Sabine's Gulls are mentioned. CMH

Arctic - Chukchi (Barrow)
Phalaropes
Red Phalarope
Food

53. DIXON, J. 1917. Children of the midnight sun. Bird-Lore 19:185-192.

The author provides a popular, though useful, account of the nesting and young of the Semipalmated Sandpiper. REG

Arctic - Beaufort
Sandpipers
Semipalmated Sandpiper
Breeding biology, behavior

54. DIXON, J. 1917. The home life of the Baird Sandpiper. Condor 19:77-84.

This is a rather thorough account for this era of the nesting habits of this species. Several interesting photographs are included. REG

Arctic - Beaufort (Demarcation Point)
Sandpipers
Baird's Sandpiper
Breeding biology

55. DIXON, J. 1918. The nesting grounds and nesting habits of the Spoon-billed Sandpiper. Auk 35:387-404.

The author summarizes all specimen records of birds attributed to North America and presents a detailed account of the species' breeding distribution, nesting habits, plumage, and behavior, based on observations of a population of Siberian birds. REG

Arctic - Chukchi
Sandpipers
Spoon-bill Sandpiper
Behavior, breeding biology, distribution, habitat, plumage, specimen record, taxonomy

56. DIXON, J. 1927. The Surf-bird's secret. Condor 29:3-16.

A Surfbird nest was located in Mt. McKinley Park. Aspects of the breeding biology, food, habitat, and molt of this species are discussed. NMH

Interior - Tanana (Mt. McKinley National Park)
Sandpipers
Surfbird
Breeding biology, plumage, food

57. DIXON, J.S. 1933. Nesting of the Wandering Tattler. Condor 35:173-179.

This paper gives details on the breeding distribution, nesting habitat, and breeding behavior of this species. Observations of behavior are based on two nesting pairs and are supplemented by several good photographs. REG

Interior - Tanana (Savage R.)
Sandpipers
Wandering Tattler
Breeding biology, distribution, behavior

58. DODSON, S.I., and D.L. EGGER. 1980. Selective feeding of Red Phalaropes on zooplankton of Arctic ponds. Ecology 61:755-763.

The authors determined food preferences and feeding rate coefficients for a small sample of phalaropes eating zooplankton in a controlled environment. Predation preferences and intensity were calculated from the rate of disappearance of zooplankton from the holding cages. REG

Arctic - Chukchi (Barrow)
Phalaropes
Red Phalarope
Food

59. DRURY, W.H. 1979. Population dynamics of northern marine birds. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:123-139.

This paper discusses human activities and natural processes that have caused changes in numbers and distribution of marine birds, and presents a short discussion of theoretical models. Several goals for improving our understanding of the population dynamics and biology of marine birds are identified. MRP

Alaska
Shorebirds
Population dynamics, research, management

60. DWIGHT, J., JR. 1900. The moult of the North American shore birds (Limicolae). Auk 17:368-385.

The author describes the various molt patterns of shorebirds using four species as examples: Sanderling, Spotted Sandpiper, Dunlin, and Black-bellied Plover. The description of molt for Dunlin is based in part on specimens from Barrow, Alaska. REG

Alaska
Arctic - Chukchi (Barrow)
Plovers, sandpipers
Black-bellied Plover, Spotted Sandpiper, Sanderling, Dunlin
Plumage

61. EDGAR, A.T., H.R. MCKENZIE, and R.B. SIBSON. 1969. Arctic waders in northern New Zealand. Notornis 16:285-287.

Not reviewed.

Arctic
Shorebirds

62. EDWARDS, J.S., and P.C. BANKO. 1976. Arthropod fallout and nutrient transport: A quantitative study of Alaskan snow patches. Arct. Alp. Res. 8:237-245.

This paper describes arthropod fallout on snow patches. Eight species of birds which breed in the area used the insect fallout as a source of food. MRP

Interior - Upper Yukon (Eagle Summit)
Plovers
American Golden Plover
Food

63. ELEY, T.J., JR. 1976. Extension of the breeding range of the Black Oystercatcher in Alaska. Condor 78:115.

This note reports breeding Black Oystercatchers on Round Island, Bristol Bay. This observation extends the breeding range of this species to north of the Alaska Peninsula. MRP

Bering Sea - Bristol Bay (Round Is.)
Oystercatchers
Black Oystercatcher
Distribution

64. FLOCK, W.L. 1973. Radar observations of bird movements along the Arctic Coast of Alaska. Wilson Bull. 85:259-275.

Bird movements along the Arctic Coast were studied through the use of six DEW radars. King and Common Eiders are treated in detail, but other water-related birds are discussed. Some visual observations are included. CMH

Arctic - Beaufort (Lonely, Oliktok, Barter Is.), Chukchi (Point Lay, Wainwright, Barrow)
Plovers, sandpipers
American Golden Plover, Ruddy Turnstone, Semipalmated Sandpiper, Dunlin
Migration

65. FORD, E.R. 1934. Rufous-necked Sandpiper nesting in Alaska. Auk 51:232.

This note records the first collection of eggs of this species in North America. CMH

Bering Sea - Norton Sound (Cape Prince of Wales)
Sandpipers
Rufous-necked Sandpiper
Distribution, specimen record

66. FRIEDMANN, H. 1932. Additions to the avifauna of St. Lawrence Island, Bering Sea. Condor 34:257.

Reported are two specimens of Dotterel and one of a Whiskered Auklet collected in spring 1931. They constitute the first specimens of these species from St. Lawrence Island. REG

Bering Sea - St. Lawrence Is.
Plovers
Dotterel
Distribution, specimen record

67. FRIEDMANN, H. 1933. Notes on some birds of Goodnews Bay, Alaska. Condor 35:239-240.

This note provides information on specimens collected at Goodnews Bay by D.B. Bull in 1933. MRP

Bering Sea - Yukon Delta (Goodnews Bay)
Sandpipers
Pectoral Sandpiper
Specimen record, distribution, annotated list

68. FRIEDMANN, H. 1933. The Polynesian Tattler on St. Lawrence Island. Condor 35:78.

Information on the second North American specimen is presented. REG

Bering Sea - St. Lawrence Is.
Sandpipers
Polynesian Tattler
Specimen record, distribution

69. FRIEDMANN, H. 1934. The Mongolian Plover and other birds at Goodnews Bay, Alaska. Condor 36:89.

This note records the collection of a Mongolian Plover, a Surfbird, and a Kittlitz's Murrelet at Goodnews Bay in 1933. CMH

Bering Sea - Yukon Delta (Goodnews Bay)
Plovers, sandpipers
Mongolian Plover, Surfbird
Distribution, specimen record

70. FRIEDMANN, H. 1934. The Ruff on St. Lawrence Island. Condor 36:42.

This note describes the first occurrence of this species on St. Lawrence Island and summarizes records of its occurrence along the Pacific Coast. REG

Bering Sea - St. Lawrence Is.
Sandpipers
Ruff
Distribution, specimen record

71. FRIEDMANN, H. 1936. Notes on Alaskan Birds. Condor 38:173.

This note updates Friedmann's 1935 "Avifauna of Kodiak Island" with details of a Whimbrel collected on Afognak Island in 1916. A second part of the note details the collection of an adult male Mongolian Plover and egg set from Goodnews Bay in 1933, the first nesting record for this species in North America. The note concludes with a discussion of the range of Falco peregrinus pealei. REG

Gulf of Alaska - Kodiak (Afognak I.)
Bering Sea - Yukon Delta (Goodnews Bay)
Plovers, sandpipers
Mongolian Plover, Whimbrel
Distribution, specimen record

72. FRIEDMANN, H. 1938. Further records from St. Lawrence Island, Alaska. Condor 40:88.

This note reports on three species of birds new to the island and one new to North America. REG

Bering Sea - St. Lawrence Is.
Sandpipers
Long-billed Dowitcher
Specimen record, distribution

73. GABRIELSON, I.N. 1952. Notes on Bonasa and Numenius in Alaska. Condor 54:359.

A specimen of Siberian Whimbrel N. phaeopus variegatus is reported from St. Lawrence Island in 1938. REG

Bering Sea - St. Lawrence Is.
Sandpipers
Whimbrel
Specimen record, distribution

74. GIBSON, D.D. 1977. First North American nest and eggs of the Ruff. Western Birds 8:25-26.

This note describes the nest and eggs of a Ruff, and includes observations of the female at the nest. MRP

Arctic - Chukchi (Point Lay)
Sandpipers
Ruff
Distribution, behavior

75. GIBSON, D.D. 1978. Separation of tattlers and snipe. Elepaio 39:8.

The author provides techniques for distinguishing Heteroscelus incanus from H. brevipes, and Capella gallinago delicata from C. g. gallinago. Although he addresses his comments to birders in Hawaii, he does summarize the occurrence of these birds in the Aleutian Islands. CMH

Aleutians
Sandpipers
Polynesian Tattler, Wandering Tattler, Common Snipe
Plumage, distribution

76. GILL, R., JR. 1978. Dispersal of autumnal migrant Dunlin and Western Sandpipers from the Alaska Peninsula. Pac. Seabird Group Bull. 5(1):52-53. (Abstract)

This paper describes the use of Nelson Lagoon by Western Sandpipers and Dunlin during the fall and compares their migration strategies. The use of large cyclonic low pressure systems as an aid to migration is discussed. MRP

Bering Sea - Bristol Bay (Nelson Lagoon)
Sandpipers
Western Sandpiper, Dunlin
Migration

77. GILL, R., JR. 1979. Shorebird studies in western Alaska, 1976-1978. Wader Study Group. Bull. 25:38-40.

This article summarizes the preliminary results of shorebird studies conducted on the Yukon Delta and northcentral Alaska Peninsula. Migration and wintering areas of Dunlin and Western Sandpiper are discussed. REG

Bering Sea - Yukon Delta, Bristol Bay (Alaska Peninsula)
Sandpipers
Western Sandpiper, Rock Sandpiper, Dunlin
Migration, distribution

78. GILL, R., JR., C. HANDEL, and M. PETERSEN. 1979. Migration of birds in Alaska marine habitats, pp. 245-288. In Environmental Assessment of the Alaskan Continental Shelf, Final Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes published and unpublished information on spring and fall migration routes and staging areas. The species addressed are those thought to be highly vulnerable to oil contamination in Alaska marine waters. REG

Alaska
Sandpipers
Western Sandpiper, Dunlin
Migration, habitat, pollution, disturbance

79. GILL, R., JR., and P.D. JORGENSEN. 1979. A preliminary assessment of timing and migration of shorebirds along the northcentral Alaska Peninsula. Stud. Avian Biol. 2:113-123.

This paper describes post-breeding concentrations and fall migration of shorebirds in 1976 at Nelson Lagoon, an important staging area for several species. Temporal abundance and habitat use are quantified. MRP

Bering Sea - Bristol Bay (Nelson Lagoon)
Plovers, sandpipers, phalaropes
Distribution, migration, abundance, habitat

80. GILL, R., M. PETERSEN, C. HANDEL, J. NELSON, A. DEGANGE, A. FUKUYAMA, and G. SANGER. 1978. Avifaunal assessment of Nelson Lagoon, Port Moller, and Herendeen Bay, Alaska - 1977, pp. 69-131. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The distribution and abundance of waterfowl and shorebirds along the northcentral Alaska Peninsula are reported, with maps showing critical feeding and roosting areas. Information on the reproductive success of Common Eiders and Glaucous-winged Gulls is also included. Appended are three papers presented to the Pacific Seabird Group in 1977: "Autumn migration of Dunlin and Western Sandpipers from the Alaska Peninsula"; "Feeding ecology of Steller's Eider"; and "Unusual nest site selection by Tufted Puffins." CMH

Bering Sea - Bristol Bay (Nelson Lagoon, Herendeen Bay)
Shorebirds
Distribution, abundance, migration, habitat, food

81. GRIFFIN, D.R. 1951. Alaskan bird migrations, pp. 11-20. In Research Reviews. Office of Naval Research, Dept. Navy, Wash., D.C.

This paper, based primarily on the author's homing study of Semipalmated Plovers, discusses the possible mechanisms birds use in navigating during migration. CMH

Arctic - Beaufort (Umiat)
Plovers
Semipalmated Plover, American Golden Plover
Migration

82. GRINNELL, J. 1902. Corrections of errors in identification. Condor 4:17.

In an earlier paper (Auk 15:122-131, 1898), the author referred to a specimen of Spotted Sandpiper from Sitka as an example of Baird's Sandpiper. REG

Gulf of Alaska - Southeastern (Sitka)
Sandpipers
Spotted Sandpiper, Baird's Sandpiper
Specimen record, distribution

83. HANDEL, C.M. 1979. Preliminary Assessment of Impacts to Bird Resources from the Grounding of the F/V Ryuyo Maru No. 2 on St. Paul Island, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 17 pp.

This report presents observations of oil contamination in Salt Lagoon on St. Paul Island after the grounding of the F/V Ryuyo Maru No. 2 on November 8, 1979. The impact on the birds and other marine life is discussed. MRP

Bering Sea - Pribilof Is. (St. Paul Is.)
Sandpipers
Ruddy Turnstone
Pollution, checklist

84. HANNA, G.D. 1921. The Pribilof Sandpiper. Condor 23:50-57.

The author summarizes all information available on the race of the Rock Sandpiper which nests on the Bering Sea islands. Included are observations on breeding and winter distribution, dates of migration, habitat, nesting chronology and behavior, and foods. Dimensions of 72 eggs are also presented. CMH

Bering Sea - Pribilof Is., St. Matthew Is.
Sandpipers
Rock Sandpiper
Distribution, abundance, reproduction, behavior, habitat, subsistence, food

85. HANNA, W.C. 1930. Breeding record of Pacific Godwit. Condor 32:126.

This note details the collection of an egg set and accompanying pair of adult Bar-tailed Godwits in July 1928. REG

Arctic - Chukchi (Ashookto R.)
Sandpipers
Bar-tailed Godwit
Distribution, specimen record

86. HANNA, W.C. 1935. Long-billed Dowitcher breeding in Alaska. Condor 37:287.

Records of egg sets from Wales and the Meade River in 1929 and 1934, respectively, are reported. REG

Arctic - Beaufort (Meade R.)
Bering Sea - Norton Sound (Wales)
Sandpipers
Long-billed Dowitcher
Specimen record, distribution

87. HANNA, W.C. 1940. Rufous-necked Sandpiper nesting on Seward Peninsula, Alaska. Condor 42:122-123.

This note describes the eggs of this species. REG

Bering Sea - Norton Sound (Cape Prince of Wales)
Sandpipers
Rufous-necked Sandpiper
Distribution, specimen record

88. HARRIS, S.W. 1963. Hudsonian Godwit in the Yukon-Kuskokwim Delta of Alaska. Murrelet 44:8.

The author presents observations of postbreeding godwits on the Yukon Delta in summer 1962. REG

Bering Sea - Yukon Delta (Kashunuk R.)
Sandpipers
Hudsonian Godwit
Distribution, specimen record

89. HARRISON, B.A., and R.I.G. MORRISON. 1979. Semipalmated Sandpiper migration in North America. Stud. Avian Biol. 2:83-100.

From an analysis of morphometric data and banding returns, the authors outline the spring and fall migration routes of different populations of the Semipalmated Sandpiper, including those nesting in Alaska. CMH

Arctic
Sandpipers
Semipalmated Sandpiper
Migration, anatomy

90. HARRISON, C.S. 1978. The association of marine birds and feeding gray whales. Pac. Seabird Group Bull. 5(2):71. (Abstract)

This reports observations of marine birds associating with gray whales which were bringing benthic food items to the surface while feeding. The importance of this food source to birds is discussed. MRP

Arctic - Chukchi
Bering Sea
Phalaropes
Food

91. HARRISON, C.S. 1979. The association of marine birds and feeding gray whales. Condor 81:93-95.

This reports on a community of at least nine species of marine birds suspected of being partially supported by an association with feeding gray whales in the Bering and Chukchi Seas. REG

Arctic - Chukchi
Bering Sea
Phalaropes
Food, behavior

92. HARTING, J.C. 1869. On rare or little-known Limicolae. Ibis 1869:426-434.

The author summarizes all information available on the Spoon-bill Sandpiper, and includes a list of locations where specimens have been collected and a description of the summer plumage. A plate depicts a specimen collected at Bering Strait. CMH

Bering Sea - Norton Sound (Bering Strait)
Sandpipers
Spoon-bill Sandpiper
Specimen record, plumage, distribution

93. HARTING, J. 1874. A new species of Tringa from Alaska. Proc. Zool. Soc. London, 1874: 242-244.

The author, after an examination of specimens collected on St. Paul Island, describes a new species (now considered a subspecies of Dunlin). MRP

Bering Sea - Pribilof Is. (St. Paul Is.)
Sandpipers
Dunlin
Specimen record, taxonomy

94. HAVENS, P.D. 1970. Aberration in the clutch size of the Semipalmated Plover. Condor 72:481.

The author notes the finding of a Semipalmated Plover nest with five eggs. CMH

Bering Sea - Bristol Bay
Plovers
Semipalmated Plover
Reproduction

95. HENSHAW, H.W. 1910. Migration of the Pacific Golden Plover to and from the Hawaiian Islands. Auk 27:245-262.

The author speculates on the routes and timing of migration of plovers to and from Alaska. REG

Alaska
Plovers
American Golden Plover
Migration

96. HÖHN, E.O. 1965. Ornithological observations in the Askinuk Mountains and Scammon Bay area, Yukon Delta, Alaska. Arctic 18:260-261.

Eighty-seven species were recorded, but fewer than a dozen are treated in this short note. The Spotted Sandpiper and Red and Northern Phalaropes are the only shorebirds mentioned, and Bufflehead and Common Goldeneye, the only waterfowl. REG

Bering Sea - Yukon Delta (Scammon Bay)
Sandpipers, phalaropes
Spotted Sandpiper, Northern Phalarope, Red Phalarope
Distribution

97. HÖHN, E.O. 1965. The Phalaropes. The New Brehm Library, A. Ziemsen, Whittenbergh.

Not reviewed.

Alaska
Phalaropes

98. HÖHN, E.O. 1968. Some observations on the breeding of Northern Phalaropes at Scammon Bay, Alaska. Auk 85:316-317.

Breeding season, habitat, mating, and nesting are discussed. REG

Bering Sea - Yukon Delta (Scammon Bay)
Phalaropes
Northern Phalarope
Breeding biology

99. HOLMES, R.T. 1963. Food overlap in breeding sandpipers in northern Alaska. Proc. Alaska Sci. Conf. 14:66.

Not reviewed.

Arctic - Chukchi, Beaufort
Sandpipers
Food

100. HOLMES, R.T. 1964. Breeding ecology and annual cycle of the Red-backed Sandpiper Calidris alpina pacifica. Ph.D. thesis. Univ. Calif., Berkeley. 223 pp.

Not reviewed.

Sandpipers
Dunlin
Abundance, breeding biology

101. HOLMES, R.T. 1966. Breeding ecology and annual cycle adaptations of the Red-backed Sandpiper (Calidris alpina) in northern Alaska. Condor 68:3-46.

A detailed study of the breeding ecology and nonbreeding phases of the annual cycle of Calidris alpina is reported. The adaptiveness of different breeding systems of Calidris sandpipers and their ecological and behavioral correlates are discussed. MRP

Arctic - Chukchi (Barrow)
Sandpipers
Dunlin
Breeding biology, migration

102. HOLMES, R.T. 1966. Feeding ecology of the Red-backed Sandpiper (Calidris alpina) in Arctic Alaska. Ecology 47:32-45.

The author presents results of a five-year study of the feeding ecology of this species. Food and habitat selection are compared for adults and young. The timing of hatch of Red-backed Sandpipers as related to food availability and climatic conditions is discussed. REG

Arctic - Chukchi (Barrow)
Sandpipers
Dunlin
Food

103. HOLMES, R.T. 1966. Molt cycle of the Red-backed Sandpiper (Calidris alpina) in western North America. Auk 83:517-533.

The pterylography, molts, molt schedule, and criteria for age determination of Dunlin along the west coast of North America are described. The relationships of molt with breeding and migration are discussed. REG

Arctic - Chukchi (Barrow)
Bering Sea - Yukon Delta
Sandpipers
Dunlin
Plumage, migration

104. HOLMES, R.T. 1970. Differences in population density, territoriality, and food supply of Dunlin on Arctic and subarctic tundra. Symp. Brit. Ecol. Soc. 10:303-319.

This paper presents the results of a nine-year study and compares the densities, territorial activity, and food supplies of Dunlin at Barrow and on the Yukon Delta. REG

Arctic - Chukchi (Barrow)
Bering Sea - Yukon Delta
Sandpipers
Dunlin
Population dynamics, food, habitat, behavior

105. HOLMES, R.T. 1971. Density, habitat, and the mating system of the Western Sandpiper (Calidris mauri). Oecologia 7:191-208.

The results of a four-year study of Western Sandpipers on the western Yukon Delta are reported. Nesting and feeding territories, nesting densities, nest-site tenacity, and the mating system are described. REG

Bering Sea - Yukon Delta
Sandpipers
Western Sandpiper
Distribution, breeding biology, abundance

106. HOLMES, R.T. 1971. Latitudinal differences in the breeding and molt schedules of Alaskan Red-backed Sandpipers (Calidris alpina). Condor 73:93-99.

The influence of length of summer season and of climate on the timing of breeding and molt in the Yukon Delta population of Dunlin is contrasted with that in the more northerly population at Barrow. REG

Bering Sea - Yukon Delta
Arctic - Chukchi (Barrow)
Sandpipers
Dunlin
Breeding biology, plumage

107. HOLMES, R.T. 1972. Ecological factors influencing the breeding season schedule of Western Sandpipers (Calidris mauri) in subarctic Alaska. Am. Midl. Nat. 87:472-491.

This paper describes the breeding biology, distribution, habitat, molt, and foods of Western Sandpipers. The primary factors thought to influence the scheduling of the breeding season are discussed. MRP

Bering Sea - Yukon Delta (Kolomak R.)
Sandpipers
Western Sandpiper
Breeding biology, migration, plumage

108. HOLMES, R.T. 1973. Social behavior of breeding Western Sandpipers Calidris mauri. Ibis 115:107-123.

The author provides detailed descriptions of the behaviors observed in breeding Western Sandpipers, and interprets them in terms of their adaptive characteristics. CMH

Bering Sea - Yukon Delta (Kolomak R.)
Sandpipers
Western Sandpiper
Behavior

109. HOLMES, R.T., and F.A. PITELKA. 1961. Behavior and taxonomic position of the White-rumped Sandpiper. Proc. Alaska Sci. Conf. 12:19-20. (Abstract)

This abstract briefly describes courtship displays, patterns of vocalization, and expansion of the throat region of White-rumped Sandpipers, and compares these to behaviors of Pectoral Sandpipers. The taxonomic relationship of the two species is discussed. MRP

Arctic - Chukchi (Barrow)
Sandpipers
White-rumped Sandpiper, Pectoral Sandpiper
Behavior, taxonomy

110. HOLMES, R.T., and F.A. PITELKA. 1964. Breeding behavior and taxonomic relationships of the Curlew Sandpiper. Auk 81:362-379.

This paper describes the breeding of a small population of this normally Siberian-nesting species which settled at Barrow, Alaska, in 1962. Detailed descriptions of breeding behaviors are presented and contrasted with those of several congeners nesting in the Arctic. REG

Arctic - Chukchi (Barrow)
Sandpipers
Curlew Sandpiper
Breeding biology, taxonomy, behavior

111. HOLMES, R.T., and F.A. PITELKA. 1968. Food overlap among coexisting sandpipers on northern Alaska tundra. Syst. Zool. 17:305-318.

This paper focuses on the diets and food exploitation patterns of four widely sympatric sandpipers breeding near Barrow. Factors relieving competition among the four species are discussed. REG

Arctic - Chukchi (Barrow)
Sandpipers
Semipalmated Sandpiper, Baird's Sandpiper, Pectoral Sandpiper, Dunlin
Food

112. HOUT, J.L. and C.J. LENSINK. 1968. Survey of Waterfowl Populations and Habitat on Nelson Island, Alaska. Unpublished progress report. U.S. Fish and Wildl. Serv., Bethel, Alaska. 24 pp.

This report summarizes results of aerial surveys, and describes habitat use, reproductive performance, and production of waterfowl. Included are observations of other nesting species. MRP

Bering Sea - Yukon Delta (Nelson Is.)
Plovers, sandpipers, phalaropes
Semipalmated Plover, American Golden Plover, Black Turnstone, Western Sandpiper, Least Sandpiper, Northern Phalarope
Abundance, distribution, reproduction, habitat

113. HOWARD, R.L. 1974. Aquatic invertebrate-waterbird relationships on Alaska's Arctic Coastal Plain. M.S. thesis. Iowa State Univ., Ames. 49 pp.

The author relates seasonal abundance and availability of aquatic macroinvertebrates to use by water birds. He discusses possible consequences of industrial contamination of aquatic habitats, and makes several recommendations for mitigating ill effects. MRP

Arctic - Beaufort (Point Storkersen, Colville River, Sagavanirktok R., Kuparuk R.)
Sandpipers, phalaropes
Northern Phalarope, Red Phalarope
Habitat, food, pollution, research, management

114. HOWE, R.H., JR. 1901. Sexual difference in size of the Pectoral Sandpiper. Auk 18:107.

The author points out an early reference documenting the disparity in size between the sexes. CMH

Arctic - Chukchi (Barrow)
Sandpipers
Pectoral Sandpiper
Anatomy

115. HUDSON, G.E. 1954. Hudsonian Godwits on Cook Inlet, Alaska. Murrelet 35:51.

The author records the collection of several Hudsonian Godwits on the mudflats of Cook Inlet in July 1951. CMH

Gulf of Alaska - Cook Inlet
Sandpipers
Hudsonian Godwit
Distribution, specimen record

116. HUNT, G., JR., B. MAYER, W. RODSTROM, and R. SQUIBB. 1978. Reproductive ecology, foods and foraging areas of seabirds nesting on the Pribilof Islands, pp. 570-775. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 1. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes detailed information on the reproductive and feeding ecology of 11 species of seabirds studied from 1975 to 1977. Shearwaters, storm-petrels, Glaucous-winged Gulls, and Red Phalaropes are also mentioned. Potential impacts from oil development are discussed. CMH

Bering Sea - Pribilof Is.
Phalaropes
Red Phalarope
Abundance

117. HURD, P.D., JR., and F.A. PITELKA. 1952. The role of insects in the economy of certain Arctic Alaska birds. Proc. Alaska Sci. Conf. 3:136-137. (Abstract)

Nesting cycles of Lapland Longspurs, Snow Buntings, and Red Phalaropes are examined in relation to the availability of their insect prey. Factors influencing prey utilization are discussed briefly. NMH

Arctic
Phalaropes
Red Phalarope
Food

118. IRVING, L., and J. KROG. 1956. Temperature during the development of birds in Arctic nests. Physiol. Zool. 29:195-205.

This paper reports the incubation temperatures of eggs of seven species of birds, including Pintail and Semipalmated Sandpiper, nesting at Anaktuvuk. The behavior of incubating adults is discussed in relation to temperature of the embryo. MRP

Interior - Koyukuk (Anuktuvuk)
Sandpipers
Semipalmated Sandpiper
Physiology

119. ISLEIB, M.E. 1977. Migratory shorebird populations on the Copper River Delta and eastern Prince William Sound, Alaska. Unpublished summary. Cordova, Alaska. 9 pp.

This report summarizes dates of spring migration of shorebirds from 1963 to 1976 in the Copper River Delta area. MRP

Gulf of Alaska - Prince William Sound, Copper River
Shorebirds
Public interest, migration

120. ISLEIB, M.E. 1979. Migratory shorebird populations on the Copper River Delta and eastern Prince William Sound, Alaska. Stud. Avian Biol. 2:125-129.

The timing of migration and numbers of shorebirds passing through the Copper River Delta and eastern Prince William Sound are described. Spring and fall migration are compared. REG

Gulf of Alaska - Prince William Sound, Copper River
Shorebirds
Migration, habitat, abundance

121. JOHNSON, S.R. 1974. First specimen of a robin (Turdus migratorius) and three important sight records from St. Lawrence Island, Bering Sea, Alaska. Condor 76:108.

Sight records of the Whiskered Auklet, Lesser Yellowlegs, Upland Sandpiper, and American Robin on St. Lawrence Island are noted. NMH

Bering Sea - St. Lawrence Is.
Sandpipers
Upland Sandpiper, Lesser Yellowlegs
Annotated list, distribution

122. JOHNSON, S.R. 1978. Beaufort Sea barrier island - lagoon ecological process studies. Section 2. Avian ecology in Simpson Lagoon, 1977, pp. 467-586. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 7. NOAA, Environ. Res. Lab., Boulder, Colo.

This report addresses the migration, breeding, feeding, and staging/molting of birds at Simpson Lagoon in summer 1977. Information on migration, nesting densities, and reproductive success are summarized for all species. Detailed information on molt, staging, and feeding is presented for Oldsquaws, gulls, terns, and phalaropes. Possible effects of disturbance are briefly discussed. CMH

Arctic - Beaufort (Simpson Lagoon)
Shorebirds, phalaropes
Northern Phalarope, Red Phalarope
Habitat, physiology, food, abundance, migration, disturbance

123. JOHNSON, S.R. 1979. Beaufort Sea barrier island - lagoon ecological process studies. Part 1. Avian ecology in Simpson Lagoon, Beaufort Sea, Alaska, pp. 238-362. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 6. NOAA, Environ. Res. Lab., Boulder, Colo.

This report compares information gathered in 1977 and 1978. Timing of migration is summarized for 63 species, and nesting densities are presented. The majority of the report addresses habitat use by molting Oldsquaws, and premigratory staging of shorebirds, gulls, and terns. Results of feeding studies are presented for Oldsquaws, phalaropes, and Glaucous Gulls. CMH

Arctic - Beaufort (Simpson Lagoon)
Shorebirds, phalaropes
Northern Phalarope, Red Phalarope
Habitat, physiology, food, abundance, migration

124. JOHNSTON, D.W. 1964. Ecologic aspects of lipid deposition in some postbreeding Arctic birds. Ecology 45:848-852.

This paper discusses possible correlations among lipid levels, timing of migration, and migratory routes of five species of birds, including the America Golden Plover, Western Sandpiper, and Arctic Tern. CMH

Arctic - Kotzebue Sound (Cape Thompson)
Plovers, sandpipers
American Golden Plover, Western Sandpiper
Migration, physiology

125. JONES, R.D., JR., and D.D. GIBSON. 1975. Specimens of birds from Amchitka Island, Alaska. Auk 92:811.

This note reports on a specimen of Black-tailed Godwit from Amchitka Island. The bird was collected in 1961 and represented the second specimen from North America. REG

Aleutians - (Amchitka Is.)
Sandpipers
Black-tailed Godwit
Distribution, specimen record

126. JOURDAIN, F.C.R. 1907. On the eggs of some American Limicolae. Ibis, 9th series: 517-518.

The author presents weight and size data for single eggs of Pectoral and Baird's Sandpipers from Point Barrow in 1898. REG

Arctic - Chukchi (Barrow)
Sandpipers
Baird's Sandpiper, Pectoral Sandpiper
Specimen record

127. KEITH, S. 1967. New bird records from Alaska and the Alaska Highway. Can. Field-Nat. 81:196-200.

This paper presents new records for five species, including the Sharp-tailed Sandpiper and four passerines. CMH

Bering Sea - Yukon Delta (Hooper Bay)
Sandpipers
Sharp-tailed Sandpiper
Distribution, abundance, plumage

128. KENNARD, F.H. 1918. Ferruginous stains on waterfowl. Auk 35:123-132.

The source of ferruginous stains on waterfowl is examined. Discussions pertaining to Emperor Geese, Canada Geese, Red-throated Loons, and Northern Phalaropes refer to Alaska birds. REG

Gulf of Alaska - Prince William Sound (Cordova Bay)
Phalaropes
Northern Phalarope
Plumage, habitat

129. KING, J.G., and C.J. LENSINK. 1971. An Evaluation of Alaska Habitat for Migratory Birds. Unpublished report. U.S. Dept. Int., Bur. Sport Fish. Wildl., Washington, D.C. 72 pp.

This paper evaluates the importance of Alaskan habitats to migratory birds and identifies areas of the state where birds may be threatened by pollution and development. NMH

Alaska
Shorebirds
Distribution, abundance, habitat, migration, pollution

130. KING, J.G., and G.A. SANGER. 1979. Oil vulnerability index for marine oriented birds. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:227-239.

This paper presents a method to indicate the relative vulnerability of a marine bird species to oil pollution and related impacts of oil development. Each of 176 species of birds using marine habitats in Washington, Alaska, and British Columbia is ranked on the basis of 20 factors that affect its survival. The needs for such a system as a management tool are discussed. MRP

Alaska
Shorebirds
Management, pollution

131. KURY, C.R. 1972. Ring-necked Duck and Ruddy Turnstones wintering at Sitka. Murrelet 53:11.

This note reports the occurrence of a flock of Ruddy Turnstones at Sitka on January 18, 1971. MRP

Gulf of Alaska - Southeastern (Sitka)
Sandpipers
Ruddy Turnstones
Distribution

132. KYLLINGSTAD, H.C. 1948. The secret of the Bristle-thighed Curlew. Arctic 1:113-118.

This is a semi-popular account of the 1948 expedition to locate the nest of this species. The article describes previous attempts to locate a nest and details the finding of the first nest near Mt. Village on June 12, 1948. REG

Bering Sea - Yukon Delta
Sandpipers
Bristle-thighed Curlew
Distribution, habitat

133. LADD, W.N. 1978. The new migratory bird treaty between the United States and Union of Soviet Socialist Republics. Pac. Seabird Group Bull. 5(2):39-57.

This article summarizes the provisions that differ from those in previous treaties and discusses their significance to management of marine birds. Disturbance, subsistence use, and habitat protection are addressed. The full treaty is included. MRP

Alaska
Shorebirds
Management

134. LESCHNER, L.L., and G. BURRELL. 1977. Populations and ecology of marine birds on the Semidi Islands, pp. 13-109. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This paper discusses observations on the populations, breeding biology, and foods of 19 species of marine birds during summer 1976. A checklist presents the breeding status of the 54 species of birds observed. CMH

Gulf of Alaska - Kodiak (Semidi Is.)
Shorebirds, oystercatchers
Black Oystercatcher
Abundance, habitat, reproduction, food, checklist

135. LITTLEJOHN, C. 1904. The capture of Totanus glareola in Alaska. Condor 6:138.

The occurrence of Totanus glareola (= Tringa glareola) on Sanak Island is noted. NMH

Aleutians - (Sanak Is.)
Sandpipers
Wood Sandpiper
Distribution, specimen record

136. MACLEAN, S.F., JR. 1969. Ecological determinants of species diversity of Arctic sandpipers near Barrow, Alaska. Ph.D. thesis. Univ. Calif., Berkeley. 194 pp.

Not reviewed.

Arctic - Chukchi (Barrow)
Sandpipers

137. MACLEAN, S.F., JR. 1974. Lemming bones as a source of calcium for Arctic sandpipers (Calidris spp.). Ibis 116:552-557.

The significance of tooth and bone fragments in stomachs of Arctic nesting shorebirds is explored and related to calcium requirements in nesting female sandpipers. REG

Arctic - Chukchi (Barrow)
Sandpipers
Semipalmated Sandpiper, Baird's Sandpiper, Pectoral Sandpiper, Dunlin
Physiology, reproduction, food

138. MACLEAN, S.F., JR., and R.T. HOLMES. 1971. Bill lengths, wintering areas, and taxonomy of North American Dunlins, Calidris alpina. Auk 88:893-901.

The authors, using meristic and plumage criteria, recognize three distinct groups, two of which breed in Alaska. Geographic variations in the races are discussed. REG

Alaska
Sandpipers
Dunlin
Taxonomy, distribution, anatomy, plumage

139. MACLEAN, S.F., JR., and F.A. PITELKA. 1971. Seasonal patterns of abundance of tundra arthropods near Barrow. Arctic 24:19-40.

This paper reports on seasonal changes in abundance of arthropods, and examines them in relation to the peak of shorebird hatch. MRP

Arctic - Chukchi (Barrow)
Shorebirds
Food

140. MANUWAL, D.A. 1980. Breeding Biology of Seabirds on the Barren Islands, Alaska. Unpublished final report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 195 pp.

This report summarizes a study on the breeding biology of seabirds on the Barren Islands from 1976 to 1979. The report discusses local distribution, abundance, and nesting requirements of breeding seabirds; productivity; types and quantities of food consumed by selected species; and the effect of future oil development on their biology. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Oystercatchers
Black Oystercatcher
Abundance, distribution, breeding biology, pollution

141. MANUWAL, D.A., and R.W. CAMPBELL. 1979. Status and distribution of breeding seabirds of southeastern Alaska, British Columbia, and Washington. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:73-91.

This paper reviews current breeding seabird population estimates, nest site preferences, and population changes for southeastern Alaska, British Columbia, and Washington. Important research needs are identified. MRP

Gulf of Alaska - Southeastern
Oystercatchers
Black Oystercatcher
Status, abundance, distribution, habitat, research

142. MARTINEZ, E.F. 1974. Recovery of a Semipalmated Sandpiper at Prudhoe Bay, Alaska. Bird-Banding 45:364-365.

A Semipalmated Sandpiper which was banded in central Kansas was found breeding at Prudhoe Bay. NMH

Arctic - Beaufort (Prudhoe Bay)
Sandpipers
Semipalmated Sandpiper
Migration, distribution

143. MCKNIGHT, D.E., and C.E. KNODER. 1979. Resource development along coasts and on the ocean floor: Potential conflicts with marine bird conservation. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:183-194.

This paper discusses the potential for disastrous and irrecoverable losses to northern marine bird populations and identifies research needs. MRP

Alaska
Shorebirds
Pollution, research

144. MEINERTZHAGEN, R. 1925. The distribution of the phalaropes. Ibis 1925:325-344.

"Reference is made to specimens of Phalaropus fulicarius and lobatus from Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Phalaropes
Northern Phalarope, Red Phalarope
Distribution, specimen record

145. MICKELSON, P.G., J.S. HAWKINS, D.R. HERTER, and S.M. MURPHY. 1980. Habitat Use by Birds and other Wildlife on the Eastern Copper River Delta, Alaska. Unpublished report. Alaska Coop. Wildl. Res. Unit, Univ. Alaska, Fairbanks. 189 pp.

During a study of nesting and migrating birds on the eastern Copper River Delta in 1978 and 1979 the authors determined habitat preferences, distribution, abundance, and phenology for the avifauna of the area. Critical habitats were identified and recommendations made for future surveillance and management of populations. Detailed information is presented for Dusky Canada Geese, Sandhill Cranes, and shorebirds. REG

Gulf of Alaska - Copper River (Eastern Copper R. Delta)
Plovers, sandpipers, phalaropes
Semipalmated Plover, Common Snipe, Short-billed Dowitcher, Least Sandpiper, Dunlin, Northern Phalarope
Abundance, breeding biology, checklist, distribution, food, habitat, management, migration, predation, reproduction, status

146. MOE, R.A., and R.H. DAY. 1979. Populations and ecology of seabirds of the Koniuji Group, Shumagin Islands, Alaska, pp. 395-491. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

The distribution and abundance of 20 species of marine birds nesting in this group of islands are summarized and mapped. Information on the breeding biology and feeding ecology is presented for 17 and 11 species, respectively. CMH

North Pacific - (Shumagin Is.)
Oystercatchers
Black Oystercatcher
Abundance, distribution, reproduction, habitat, food

147. MURIE, O.J. 1923. Nest and eggs of the Wandering Tattler found in Alaska. Murrelet 4:17.

Not reviewed.

Sandpipers
Wandering Tattler
Distribution

148. MURIE, O.J. 1924. Nesting records of the Wandering Tattler and Surf-bird in Alaska. Auk 41:231-237.

The author presents records of the Wandering Tattler and Surfbird nesting in Interior Alaska, and describes nesting habitat, adult behavior, and plumage of the downy young. CMH

Interior - Tanana (Alaska Range)
Sandpipers
Wandering Tattler, Surfbird
Habitat, distribution, plumage, behavior

149. MURPHY, R.C. 1925. Notes on certain species and races of oyster-catchers. Am. Mus. Novit. 194:1-15.

"Reference is made to specimens of Haematopus bachmani from Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Oystercatchers
Black Oystercatcher
Distribution, specimen record

150. MUSACCHIA, X.J. 1949. Lipid metabolism in Arctic Alaskan birds. Proc. Fed. Amer. Soc. Exper. Biol. 8:116.

This paper discusses "fat analysis of livers and kidneys from Old Squaw and Red Phalarope." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Arctic - Chukchi (Barrow)
Phalaropes
Red Phalarope
Physiology

151. MUSACCHIA, X.J. 1953. A study of the lipids in Arctic migratory birds. Condor 55:305-312.

This paper presents data on fatty acids, lipid phosphorus, and cholesterol levels in tissues of four species of Arctic migratory birds. The significance of variations in lipid patterns among the species is discussed. REG

Arctic - Chukchi (Barrow)
Plovers, sandpipers, phalaropes
American Golden Plover, Dunlin, Red Phalarope
Physiology, migration

152. MYERS, J.P. 1979. Leks, sex, and Buff-breasted Sandpipers. Am. Birds 33:823-825.

This article presents a brief description of displays and copulatory behavior of Buff-breasted Sandpipers, and includes color photographs of the displays. MRP

Arctic
Sandpipers
Buff-breasted Sandpiper
Behavior

153. MYERS, J.P., and F.A. PITELKA. 1979. Variations in summer temperature patterns near Barrow, Alaska: Analysis and ecological interpretation. Arct. Alp. Res. 11:131-144.

This paper analyzes daily mean temperature and wind direction information for 26 summers (1950-1975) at Barrow. Annual differences in densities of breeding shorebirds are discussed in relation to variations in early season environmental conditions on the breeding grounds. MRP

Arctic - Chukchi (Barrow)
Sandpipers, phalaropes
Pectoral Sandpiper, Red Phalarope
Habitat

154. MYERS, J.P., and F.A. PITELKA. 1980. Seasonal abundance and habitat use patterns of shorebirds at two sites in northern Alaska. Wader Study Group Bull. 29:28-30.

This paper briefly describes results of a five-year study comparing seasonal habitat use and abundance of shorebirds at a coastal and an inland site in northern Alaska. Overall densities are analyzed in relation to time, degree of polygonization of the tundra, and degree of pond development of the habitat. A checklist presents the status of the shorebird species observed at each site. CMH

Arctic - Chukchi (Barrow, Atkasook)
Shorebirds
Habitat, abundance, checklist

155. NELSON, E.W. 1881. Habits of the Black Brant in the vicinity of St. Michael's, Alaska. Bull. Nutt. Ornithol. Club. 6:131-138.

This paper presents observations of spring migration of Black Brant and several other early migrants. Flight behavior, body condition during spring migration, and possible migration routes of Black Brant are described. MRP

Bering Sea - Norton Sound (St. Michael)
Phalaropes
Northern Phalarope
Migration

156. NELSON, E.W. 1884. The breeding habits of the Pectoral Sandpiper (Actodromus maculata). Auk 1:218-221.

The author details his observations of displaying Pectoral Sandpipers during late May 1879. REG

Bering Sea - Norton Sound (St. Michael)
Sandpipers
Pectoral Sandpiper
Behavior

157. NOBLE, H. 1901. Exhibition of eggs. Bull. Brit. Ornithol. Club 11:54-55.

This list includes sets of eggs of five species from Alaska. (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Plovers, sandpipers
American Golden Plover, Spotted Sandpiper
Specimen record

158. NORTON, D.W. 1970. Thermal regime of nests and bioenergetics of chick growth in the Dunlin (Calidris alpina) at Barrow, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 78 pp.

Not reviewed.

Arctic - Chukchi (Barrow)
Sandpipers
Dunlin

159. NORTON, D.W. 1971. Growth rates and bioenergetics of calidridine sandpiper chicks of northern Alaska. Proc. Alaska Sci. Conf. 22:16. (Abstract)

A laboratory investigation of energetics and growth in Dunlin chicks is reported. In this abstract the author only alludes to bioenergetic and thermoregulatory problems faced by the chicks in their natural tundra habitat. NMH

Arctic
Sandpipers
Dunlin
Growth, physiology, techniques

160. NORTON, D.W. 1971. Physical and biological determination of incubation performance among Arctic sandpipers. Proc. Alaska Sci. Conf. 22:34. (Abstract)

Incubation performance of calidridine sandpipers nesting along the Alaska Arctic coast is briefly discussed. Adaptations to compensate for characteristicly low ambient temperatures are described. NMH

Arctic
Sandpipers
Behavior

161. NORTON, D.W. 1971. Two Soviet recoveries of Dunlins banded at Point Barrow, Alaska. Auk 88:927.

Two adult Dunlin banded at Barrow in early summer were recovered in the Soviet Union in October, supporting the idea of an Asiatic wintering ground for the race of Dunlin breeding in Arctic Alaska. REG

Arctic - Chukchi (Barrow)
Sandpipers
Dunlin
Migration

162. NORTON, D.W. 1972. Incubation schedules of four species of calidridine sandpipers at Barrow, Alaska. Condor 74:164-176.

This paper examines incubation regimes of four Arctic nesting sandpipers, and relates incubation schedules to the influence of nesting stage, diurnal rhythms, and prevailing weather conditions. REG

Arctic - Chukchi (Barrow)
Sandpipers
Semipalmated Sandpiper, Baird's Sandpiper, Pectoral Sandpiper, Dunlin
Breeding biology

163. NORTON, D.W. 1972. Metabolism of Arctic sandpipers: Modeling in relation to the overall shorebird model, pp. 156-159. In Proc. 1972 Tundra Biome Symp., Univ. Washington, Seattle.

Aspects of the metabolic rates of four species of Calidris sandpiper were investigated. The energetic impact of these species on the tundra ecosystem, and their evolutionary relationships are discussed. A simple energy budget model is presented. NMH

Arctic - Chukchi (Barrow)
Sandpipers
Semipalmated Sandpiper, Baird's Sandpiper, Pectoral Sandpiper, Dunlin
Physiology, behavior, habitat, taxonomy

164. NORTON, D.W. 1973. Ecological energetics of calidridine sandpipers breeding in northern Alaska. Ph.D. thesis. Univ. Alaska, Fairbanks. 193 pp.

Not reviewed.

Arctic - Chukchi (Barrow)
Sandpipers
Semipalmated Sandpiper

165. NORTON, D.W., and U.N. SAFRIEL. 1971. Homing by nesting Semipalmated Sandpipers displaced from Barrow, Alaska. Bird-Banding 42:295-297.

Results are reported of a homing experiment in which four pairs of nesting sandpipers were displaced via airplane from Barrow to interior Alaska. REG

Arctic - Chukchi (Barrow)
Interior - Tanana (Bettles, Fairbanks)
Sandpipers
Semipalmated Sandpiper
Migration

166. NYSEWANDER, D.R., and D.B. BARBOUR. 1979. The breeding biology of marine birds associated with Chiniak Bay, Kodiak Island, 1975-1978, pp. 21-106. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Abundance, nesting habitat, breeding phenology, and productivity of 10 species are discussed. Data collected in 1978 are compared with those of 1975 and 1977. Chick growth and feeding rates are presented for Black-legged Kittiwakes and Tufted Puffins. An annotated list of the 75 species observed in summer 1978 is appended. REG

Gulf of Alaska - Kodiak (Chiniak Bay)
Shorebirds, oystercatchers
Black Oystercatcher
Reproduction, abundance, annotated list

167. NYSEWANDER, D., and E. HOBERG. 1978. The breeding biology of marine birds associated with Chiniak Bay, Kodiak Island, 1977, pp. 525-574. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The 1977 breeding season phenology and productivity are reported for eight major species nesting over inner Chiniak Bay and on mainland Kodiak. Population estimates and densities of major breeding populations are presented. Incidental notes are summarized for six other species breeding in the area. A list of the prey items taken by nine species of seabirds is presented. CMH

Gulf of Alaska - Kodiak (Kodiak Is., Chiniak Bay)
Oystercatchers, plovers
Black Oystercatcher, Semipalmated Plover
Reproduction

168. NYSEWANDER, D., and P. KNUDTSON. 1977. The population ecology and migration of seabirds, shorebirds, and waterfowl associated with Constantine Harbor, Hinchinbrook Island, Prince William Sound, 1976, pp. 500-575. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

The results of seabird colony censuses are reported and compared with 1972 censuses. Reproductive phenology and success are discussed for major breeding species and results from "sea watch" and shoreline transects are reported. An annotated list of the 90 species observed in summer 1976 is appended. REG

Gulf of Alaska - Prince William Sound (Hinchinbrook Is.)
Shorebirds, oystercatchers, plovers
Black Oystercatcher, Semipalmated Plover
Abundance, reproduction, annotated list

169. OBERHOLSER, H.C. 1919. Notes on North American birds, IX. Auk 36:556-559.

Records of occurrence of Little Ringed Plovers in North America are reviewed, including two from Alaska. Both records were subsequently challenged (cf. Gabrielson and Lincoln, Birds of Alaska, 1959; Kessel and Gibson, Stud. Avian Biol. 1, 1978). REG

Gulf of Alaska - Kodiak (Kodiak Is.)
Plovers
Little Ringed Plover
Specimen record, distribution

170. ORR, R.T. 1940. An analysis of the subspecific status of dowitchers in California. Condor 42:61-63.

This paper briefly mentions a specimen from the Yukon Delta. At the time, Long- and Short-billed Dowitchers were not yet recognized as separate species. REG

Bering Sea - Yukon Delta
Sandpipers
Short-billed Dowitcher, Long-billed Dowitcher
Taxonomy, distribution

171. OSGOOD, W.H. 1907. Probable breeding of the Wandering Tattler in the interior of Alaska. Auk 24:340.

The author records the collection of a Wandering Tattler, which he surmised may have been breeding there. CMH

Interior - Tanana (Mt. McKinley)
Wandering Tattler
Distribution

172. PALMER, W. 1894. Do wading birds swim? Nidologist 1:175.

This brief note describes a Rock Sandpiper swimming to a rock perch in the middle of a pond. MRP

Bering Sea - Pribilof Is. (St. Paul Is.)
Sandpipers
Rock Sandpiper
Behavior

173. PITELKA, F.A. 1948. The problematical relationships of the Asiatic shorebird Limnodromus semipalmatus. Condor 50:259-269.

This paper deals largely with taxonomy, and questions the relationships among the Asiatic shorebird Limnodromus semipalmatus and American dowitchers (L. griseus and L. scolopaceus). REG

Alaska
Sandpipers
Short-billed Dowitcher, Long-billed Dowitcher
Distribution, taxonomy

174. PITELKA, F.A. 1950. Geographic variation and the species problem in the shorebird genus Limnodromus. Univ. Calif. Publ. Zool. 50:1-108.

The author presents a critical and detailed analysis of the distribution and taxonomic history of Limnodromus. A new form, L. griseus caurinus, is proposed from southern Alaska. REG

Alaska
Sandpipers
Short-billed Dowitcher, Long-billed Dowitcher
Anatomy, distribution, migration, plumage, taxonomy

175. PITELKA, F.A. 1959. Numbers, breeding schedule, and territoriality in Pectoral Sandpipers of northern Alaska. Condor 61:233-264.

This major paper discusses critical population characteristics of this common north Alaska shorebird. Information on displays, calls, and foods is also presented. REG

Arctic - Chukchi (Barrow)
Sandpipers
Pectoral Sandpiper
Population dynamics, breeding biology, food, behavior

176. PITELKA, F.A. 1979. Introduction: The Pacific Coast shorebird scene. Stud. Avian Biol. 2:1-13.

Dr. Pitelka, in these opening remarks at the 1977 shorebird symposium at Asilomar, California, summarizes shorebird distribution along the entire Pacific coast of North America and relates this to the world shorebird fauna. Also discussed are several biological and geographic factors influencing such things as shorebird distribution, migrational timing and movements, winter philopatry, and variation in sex and age ratios among populations of a species over different latitudinal sections of the Pacific coast. REG

Alaska
Shorebirds
Habitat, distribution, migration, age and sex composition

177. PITELKA, F.A., R.T. HOLMES, and S.F. MACLEAN, JR. 1974. Ecology and evolution of social organization in Arctic sandpipers. Amer. Zool. 14:185-204.

This paper presents a comparative analysis of sandpiper social systems on Arctic and subarctic breeding grounds (24 species in the family Scolopacidae). Four major patterns are recognized and their evolutionary development is discussed. REG

Arctic
Sandpipers
Taxonomy, behavior

178. PLÖEGER, P.L. 1968. Geographical differentiation in Arctic Anatidae as a result of isolation during the last glaciation. Ardea 56:1-159.

This paper discusses geographical, phytogeographical, and zoogeographical evidence for differentiation in Anatidae during the last glaciation. It also compares geographical differentiation in the families Anatidae and Gaviidae,and in the genera Calidris and Tringa. NMH

Arctic
Bering Sea
Sandpipers
Zoogeography

179. PORTENKO, L. 1936. The Bar-tailed Godwit and its races. Auk 53:194-197.

The author proposes and describes a new race of godwit and compares it with the already known forms. Mention is made of several Alaska specimens. REG

Alaska
Bering Sea - Norton Sound, Pribilof Is.
Sandpipers
Bar-tailed Godwit
Taxonomy, plumage, distribution

180. PROCTOR, F.W. 1907. Exhibition of rare eggs from North America. Bull. Brit. Ornithol. Club 19:37.

A single egg of Baird's Sandpiper from Barrow is mentioned. (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Arctic - Chukchi (Barrow)
Sandpipers
Baird's Sandpiper
Distribution, specimen record

181. RIDGWAY, R. 1874. Birds new to the fauna of North America. Am. Nat. 8:434-435.

This paper "records Falco gyrfalco and Numenius femoralis." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Sandpipers
Specimen record

182. RIDGWAY, R. 1880. On a new Alaskan sandpiper. Bull. Nutt. Ornithol. Club 5:160-163.

This paper presents detailed descriptions of Rock Sandpipers from specimens collected throughout the Aleutians and coastal Alaska north to St. Michael. Included is a description of the Pribilof Island subspecies. MRP

Aleutians
Bering Sea
Sandpipers
Rock Sandpiper
Taxonomy, plumage

183. RIDGWAY, R. 1886. Tringa damacensis (Horsf.) in Alaska; a sandpiper new to North America. Auk 3:275.

This is a short note on the collection of a specimen of this species (= Calidris subminuta) during the trip of the U.S. Revenue Cutter Corwin in 1885. REG

Bering Sea - Pribilof Is. (Otter Is.)
Sandpipers
Long-toed Stint
Distribution, specimen record

184. ROUDYBUSH, T., and C.R. GRAU. 1977. Yolk formation in some Pacific seabirds and shorebirds. Pac. Seabird Group Bull. 4(1):17-18. (Abstract)

The estimated number of days required for rapid yolk formation is reported for 14 species of birds. MRP

Bering Sea - Yukon Delta (Clarence Rhode NWR)
Sandpipers, phalaropes
Bar-tailed Godwit, Ruddy Turnstone, Western Sandpiper, Northern Phalarope, Red Phalarope
Physiology

185. ROUDYBUSH, T.E., C.R. GRAU, M.R. PETERSEN, D.G. AINLEY, K.V. HIRSCH, A.P. GILMAN, and S.M. PATTEN. 1979. Yolk formation in some Charadriiform birds. Condor 81:293-298.

The estimated number of days required for rapid yolk development is reported for 20 species. MRP

Bering Sea - Yukon Delta (Old Chevak)
Sandpipers, phalaropes
Bar-tailed Godwit, Ruddy Turnstone, Western Sandpiper, Northern Phalarope, Red Phalarope
Physiology

186. ROWAN, W. 1932. The status of the dowitchers with a description of a new subspecies from Alberta and Manitoba. Auk 49:14-35.

This paper addresses the subspecific status of North American dowitchers, primarily those forms from Canada, but including numerous specimens from Alaska. REG

Alaska
Sandpipers
Short-billed Dowitcher, Long-billed Dowitcher
Taxonomy, distribution, plumage

187. RYDER, R.A. 1957. Avian-pinniped feeding associations. Condor 59:68-69.

This note, based on observations during winter and summer 1953, describes the feeding association of nine species of marine birds with four species of pinnipeds. REG

Arctic
Bering Sea
Phalaropes
Red Phalarope
Food

188. SAFRIEL, U.N. 1971. Population study of the Semipalmated Sandpiper (Calidris pusilla) in Barrow, Alaska. Proc. Alaska Sci. Conf. 22:33. (Abstract)

This abstract briefly describes a four-year investigation of a breeding population of Semipalmated Sandpipers near Barrow. Aspects of the breeding biology are summarized. NMH

Arctic - Chukchi (Barrow)
Sandpipers
Semipalmated Sandpiper
Breeding biology, population dynamics, predation

189. SAFRIEL, U.N. 1975. On the significance of clutch size in nidifugous birds. Ecology 56:703-708.

This paper proposes and tests a model to determine factors governing clutch size in nidifugous birds. REG

Arctic - Chukchi (Barrow)
Sandpipers
Semipalmated Sandpiper
Reproduction, predation

190. SANGER, G.A. 1972. Preliminary standing stock and biomass estimates of seabirds in the subarctic Pacific region, pp. 581-611. In A. Yositada Takenouti (chief ed.), Biological Oceanography of the Northern North Pacific Ocean. Idemitsu Shoten, Tokyo.

Based upon observations at sea, the standing stock and biomass of seabirds are calculated and summarized by season and oceanographic domain for each ecological group of birds. Annual food consumption and nutrient transfer are estimated, and how seabirds fit into a simple, hypothetical food chain is discussed. CMH

Gulf of Alaska
North Pacific
Bering Sea
Phalaropes
Abundance, distribution, food

191. SAUER, E.G.F. 1962. Ethology and ecology of Golden Plovers on St. Lawrence Island, Bering Sea. Psychol. Forschung. 26:399-470.

Not reviewed.

Bering Sea - St. Lawrence Is.
Plovers
American Golden Plover

192. SAUER, E.G.F. 1963. Migration habits of Golden Plovers. Proc. Inter. Ornithol. Congr. 13:454-467.

The author hand-raised 10 Pluvialis dominica fulva from St. Lawrence Island to experimentally investigate migratory patterns and orientation abilities in the species. REG

Alaska
Bering Sea - St. Lawrence Is.
Plovers
American Golden Plover
Migration, physiology

193. SCHAMEL, D., and D. TRACY. 1977. Polyandry, replacement clutches, and site tenacity in the Red Phalarope (Phalaropus fulicarius) at Barrow, Alaska. Bird-Banding 48:314-324.

Data on multiple clutches and site tenacity in Red Phalaropes are discussed in relationship to the species' social system. REG

Arctic - Chukchi (Barrow)
Phalaropes
Red Phalarope
Breeding biology

194. SCHMIDT, G.D. 1969. Polymorphus petrochenkoi sp. n. (Acanthocephala) from the Red Phalarope, Phalaropus fulicarius L., in Alaska. J. Parasitol. 55:335-336.

This paper describes Polymorphus petrochenkoi sp. n. (a new species) from a Red Phalarope collected at St. Lawrence Island. MRP

Bering Sea - St. Lawrence Is.
Phalaropes
Red Phalarope
Disease and parasites

195. SCHMIDT, G.D., and K.A. NEILAND. 1968. Hyemolepia deblocki sp. n., and records of other helminths from Charadriiform birds. Can. J. Zool. 46:1037-1040.

The authors describe the occurrence of cestodes and trematodes found in five species of shorebirds collected in Bristol Bay in 1960. CMH

Bering Sea - Bristol Bay (Kvichak Bay)
Sandpipers
Greater Yellowlegs, Black Turnstone, Short-billed Dowitcher, Semipalmated Sandpiper, Dunlin
Disease and parasites

196. SENNER, S.E. 1977. The ecology of Western Sandpipers and Dunlins during spring migration through the Copper-Bering River Delta system, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 108 pp.

This thesis presents information on the food habits, feeding ecology, and habitat use of Western Sandpipers and Dunlin during spring migration. MRP

Gulf of Alaska - Copper River (Copper R. Delta)
Sandpipers
Western Sandpiper, Dunlin
Food, habitat, migration

197. SENNER, S. 1977. Food habits of migrant Dunlins and Western Sandpipers on the Copper River Delta, Alaska, pp. 576-592. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This presents a preliminary analysis of stomach contents of spring migrant Dunlin and Western Sandpipers. Live-trapping techniques are described and evaluated. Included in an appendix are selected observations of spring and fall migration for 45 species of birds. CMH

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds
Western Sandpiper, Dunlin
Food, migration, techniques, annotated list

198. SENNER, S.E. 1979. An evaluation of the Copper River Delta as critical habitat for migrating shorebirds. Stud. Avian Biol. 2:131-145.

Migration strategies of Dunlin and Western Sandpipers are compared with reference to their use of the Copper River Delta as a stopover and staging area in spring. REG

Gulf of Alaska - Copper River (Copper R. Delta)
Sandpipers
Western Sandpiper, Dunlin
Migration, food, habitat

199. SENNER, S.E., and P.G. MICKELSON. 1979. Fall foods of Common Snipe on the Copper River Delta, Alaska. Can. Field-Nat. 93:171-172.

This paper reports the foods eaten by 22 Common Snipe collected on the Copper River Delta. MRP

Gulf of Alaska - Copper River (Copper R. Delta)
Sandpipers
Common Snipe
Food

200. SENNER, S., and D.W. NORTON. 1976. Shorebird migration and oil development in the Copper River Delta area. Proc. Alaska Sci. Conf. 27:179. (Abstract)

The importance of the Copper River Delta to migrant shorebirds is outlined, and the impact oil exploration will have on the region is discussed. An investigation of the physiological conditions of migrant Western Sandpipers and Dunlin is mentioned. NMH

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, sandpipers
Western Sandpiper, Dunlin
Pollution, migration, food, physiology, habitat

201. SENNER, S.E., and D.W. NORTON. 1979. Shorebirds and oil development in the Copper River Delta area, Alaska, pp. 288-295. In D.W. Norton (ed.), Science in Alaska, Proc. 27th Alaska Sci. Conf., Fairbanks, August 4-7, 1976. Vol. 2.

Not reviewed.

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds
Pollution

202. SENNER, S.E., and G.C. WEST. 1978. Nutritional significance of Copper-Bering intertidal system to spring-migrating shorebirds breeding in western Alaska. Unpublished final report. Institute of Arctic Biology, Univ. Alaska, Fairbanks. 63 pp.

This report compares the strategies of Dunlin and Western Sandpipers during spring migration through the Copper-Bering River Delta, with emphasis on the nutritional and physiological aspects. Potential effects of petroleum development are discussed. CMH

Gulf of Alaska - Copper River (Copper-Bering R. Delta), Cook Inlet (Kachemak Bay)
Sandpipers
Western Sandpipers, Dunlin
Migration, food, physiology, habitat, pollution

203. SPRINGER, A.M. 1975. Observations on the summer diet of Rough-legged Hawks from Alaska. Condor 77:338-339.

This presents an analysis of pellets and remains found near nests of Rough-legged Hawks on the Seward Peninsula. Six species of birds were identified as prey, including the American Golden Plover. CMH

Arctic - Kotzebue Sound
Plovers
American Golden Plover
Predation

204. STEELE, B.B., and W.H. DRURY. 1977. Birds of coastal habitats on the south shore of the Seward Peninsula, Alaska, pp. 1-178. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

Detailed information is provided on distribution, abundance, and reproductive and feeding ecology of seabirds in the Norton Sound region. Maps depicting waterfowl densities along the coast in fall are presented, along with some brood counts. Shorebirds are discussed in general terms. CMH

Bering Sea - Norton Sound
Shorebirds
Habitat, management

205. STEPHENSON, R.O. 1970. A study of the summer food habits of the arctic fox on St. Lawrence Island, Alaska. M.S. thesis. Univ. Alaska, College. 75 pp.

This presents results of a study of the food habits of arctic foxes denning in lowland tundra and sea cliff habitats. Over 1,500 scats were analyzed from 24 dens. The composition of the diet is discussed in relation to availability of prey species. CMH

Bering Sea - St. Lawrence Is.
Shorebirds
Predation

206. STONE, W. 1897. On the annual molt of the Sanderling. Proc. Acad. Nat. Sci. Phila. 1897:368-372.

The author refers to four specimens from Alaska. REG

Alaska
Sandpipers
Sanderling
Specimen record, plumage

207. SWARTH, H.S. 1927. The Rufous-necked Sandpiper in Alaska. Condor 29: 274.

This note is an explanation of the author's exclusion of pertinent references from a previously published paper (Condor 29:200, 1927). REG

Bering Sea
Sandpipers
Rufous-necked Sandpiper
Distribution

208. SWARTH, H.S. 1927. The Rufous-necked Sandpiper on St. Paul, Pribilof Islands. Condor 29:200-201.

A specimen of Rufous-necked Sandpiper taken on St. Paul Island is noted. NMH

Bering Sea - Pribilof Is. (St. Paul Is.)
Sandpipers
Rufous-necked Sandpiper
Distribution, specimen record

209. SWARTH, H.S. 1928. Occurrence of some Asiatic birds in Alaska. Proc. Calif. Acad. Sci. 57:247-251.

This brief note lists five species of Asiatic birds collected on Nunivak Island. Included are Mongolian Plover, Bullfinch, Japanese Water Pipit, Middendorff's Grasshopper Warbler, and Siberian Accentor. MRP

Bering Sea - Nunivak Is.
Plovers
Mongolian Plover
Distribution, specimen record

210. SWARTH, H.S. 1935. Systematic status of some northwestern birds. Condor 37:199-204.

Addressing plumage, measurements, distribution, and migratory routes, the author examines the systematic status of four species of birds, including the Solitary Sandpiper. CMH

Gulf of Alaska
Sandpipers
Solitary Sandpiper
Taxonomy, plumage, anatomy, distribution, migration

211. SWENK, M.H. 1916. The Eskimo Curlew and its disappearance. Smithson. Ann. Rep. 1915:325-340.

This provides an "account of breeding grounds including Alaska; its migration southward; its excessive slaughter and need for protection in the United States." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Sandpipers
Eskimo Curlew
Distribution, management, migration

212. TAVERNER, P.A. 1940. The distribution of the western Solitary Sandpiper. Condor 42:215-217.

This paper discusses breeding distribution and includes specimen data from three sites in Alaska. Characteristics distinguishing Tringa solitaria solitaria and T. s. cinnamomea are discussed. REG

Arctic
Interior
Sandpipers
Solitary Sandpiper
Distribution, taxonomy, specimen record

213. TAYLOR, J.W. 1969. Sharp-tailed Sandpiper and Palm Warbler in Alaska. Wilson Bull. 81:337-338.

The author provides details of a sighting of four adult sandpipers near Kivalina in late June 1967. REG

Arctic - Kotzebue Sound (Kivalina)
Sandpipers
Sharp-tailed Sandpiper
Distribution

214. THAYER, J.E. 1909. Limonites ruficollis in Alaska. Condor 11:173.

Details of the first specimen of this species from Alaska are given. REG

Bering Sea - Norton Sound (Nome)
Sandpipers
Rufous-necked Sandpiper
Distribution, specimen record

215. THOMPSON, M.C. 1970. Band wear in Ruddy Turnstones. Bird-Banding 41:241-242.

Because of band wear observed on Ruddy Turnstones, the author suggests incoloy bands be used on shorebirds in place of aluminum or monel bands. REG

Bering Sea - Pribilof Is.
Sandpipers
Ruddy Turnstone
Techniques

216. THOMPSON, M.C. 1973. Migratory patterns of Ruddy Turnstones in the central Pacific region. Living Bird 12:5-23.

This paper, based largely on band returns, discusses the migration and wintering areas of this species. Considerable mention is made of feeding habits and habitat use. REG

Bering Sea - Pribilof Is.
Sandpipers
Ruddy Turnstone
Migration, food, behavior, habitat

217. THOMPSON, M.C., and R.L. DELONG. 1967. The use of cannon and rocket-projected nets for trapping shorebirds. Bird-Banding 38:214-218.

The authors describe how they set up and successfully used projected nets for trapping Ruddy Turnstones on the Pribilof Islands. Over 17,000 birds were trapped, including birds of 10 other species captured incidentally. Suggestions are provided for reducing mortality. CMH

Bering Sea - Pribilof Is.
Plovers, sandpipers, phalaropes
Ruddy Turnstone
Techniques

218. THOMPSON, M.C., and R.L. DELONG. 1969. Birds new to North America and the Pribilof Islands, Alaska. Auk 86:747-749.

Four species new to North America and 11 new to the Pribilof Islands were recorded during summer field seasons from 1964 to 1968. Dates of observations and specimen data are presented. MRP

Bering Sea - Pribilof Is.
Plovers, sandpipers
Mongolian Plover, Black-bellied Plover, Far Eastern Curlew, Common Sandpiper, Red Knot, Temminck's Stint, Stilt Sandpiper, Buff-breasted Sandpiper
Annotated list, specimen record, distribution

219. TODD, W.E.C. 1953. A taxonomic study of the American Dunlin. J. Wash. Acad. Sci. 43:85-88.

This paper summarizes the taxonomic history of the American Dunlin, and proposes recognition of three races in North America: Calidris alpina arcticola, C. a. pacifica, and C. a. hudsonia. CMH

Alaska
Sandpipers
Dunlin
Taxonomy, plumage

220. VAN CLEAVE, H.J., and R.L. RAUSCH. 1950. A new species of the Acanthocephalan genus Arhythmorhynchus from sandpipers of Alaska. J. Parasitol. 36:278-283.

This paper describes the occurrence of Arhythmorhynchus in 16 species of shorebirds from North America, including 14 species collected in Alaska. MRP

Alaska
Plovers, sandpipers
Disease and parasites

221. VAN VELZEN, W.T. 1963. Sight records of Willets in Alaska. Condor 65:167.

The author describes the sightings of two birds in early August 1961. REG

Interior - Tanana (Minto Lakes)
Sandpipers
Willet
Distribution

222. WALKER, W. 1977. Chlorinated hydrocarbon pollutants in Alaskan Gyrfalcons and their prey. Auk 94:442-447.

As part of a study on chlorinated hydrocarbon pollutants in Gyrfalcons, whole body DDE residues of Long-tailed Jaegers, American Golden Plovers, and Whimbrels are presented. MRP

Norton Sound
Plovers, sandpipers
American Golden Plover, Whimbrel
Pollution

223. WALKINSHAW, L.H. 1948. Nestings of some shorebirds in western Alaska. Condor 50:220-223.

Notes on five species of shorebirds nesting near Johnson River are presented. REG

Bering sea - Yukon Delta (Bethel)
Plovers, sandpipers, phalaropes
American Golden Plover, Black-bellied Plover, Hudsonian Godwit, Western Sandpiper, Northern Phalarope
Distribution

224. WARBURTON, S., JR. 1930. Nesting of the Pacific Godwit. Murrelet 11:3-6.

During the summer of 1929, the author followed three nesting pairs of godwits. His observations appear here in narrative form. REG

Bering Sea - Yukon Delta (Kwiguk Pass)
Sandpipers
Bar-tailed Godwit
Breeding biology, habitat, behavior

225. WEBSTER, J.D. 1941. The breeding of the Black Oystercatcher. Wilson Bull. 53:141-156.

The author presents a detailed account of the breeding biology of this species from the Sitka region. Observations are primarily of five pairs of birds studied during 1940. REG

Gulf of Alaska - Southeastern (Sitka, Kayak Is.)
Oystercatchers
Black Oystercatcher
Breeding biology

226. WEBSTER, J.D. 1941. Feeding habits of the Black Oystercatcher. Condor 43:175-180.

The prey items, their distribution, and the feeding methods of this species are described. Data on stomach contents were obtained from 12 individuals collected between March and September 1940. REG

Gulf of Alaska - Southeastern (Sitka Sound)
Oystercatchers
Black Oystercatcher
Food

227. WEBSTER, J.D. 1942. Notes on the growth and plumages of the Black Oyster-catcher. Condor 44:205-211.

The plumages of the species, from downy to adult, are described. Some morphometric data are presented. REG

Gulf of Alaska - Southeastern (Sitka)
Oystercatchers
Black Oystercatcher
Growth, plumage

228. WEBSTER, J.D. 1943. The downy young of oyster-catchers. Wilson Bull. 55:40-45.

The taxonomy of the oystercatcher clan is examined by comparing the plumage patterns and colors of the downy young of several species. NMH

Alaska
Oystercatchers
Black Oystercatcher
Taxonomy, plumage

229. WEBSTER, J.D. 1951. Corrections concerning data on Alaskan birds. Condor 53:54.

This note offers corrections and additions to seashore invertebrates listed in the author's previous papers (Condor 43:175-180; and Wilson Bull. 53:141-156) on the Black Oystercatcher in Alaska. REG

Gulf of Alaska - Southeastern
Oystercatchers
Black Oystercatcher
Food

230. WEEDEN, R.B. 1959. A new breeding record of the Wandering Tattler in Alaska. Auk 76:230-232.

The author presents observations on nesting tattlers near Eagle Creek, Alaska. REG

Interior - Upper Yukon (Eagle Creek)
Sandpipers
Wandering Tattler
Distribution, breeding biology

231. WEEDEN, R.B. 1965. Further notes on Wandering Tattlers in central Alaska. Condor 67:87-89.

This note provides observations on the nesting of this shorebird. REG

Interior - Upper Yukon (Eagle Creek)
Sandpipers
Wandering Tattler
Breeding biology, habitat

232. WEEDEN, R.B. 1965. Killdeer nests at Mansfield Lake. Bull. Alaska Ornithol. Soc. 5:10. (Mimeo)

Not reviewed.

Interior - Tanana (Mansfield L.)
Plovers
Killdeer
Distribution

233. WEHLE, D.H.S. 1978. Studies of marine birds on Ugaiushak Island, pp. 208-312. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes results of studies conducted in 1977 on the marine birds of Ugaiushak Island. Abundance, phenology, and production are addressed for each of 15 species. Information on foods and foraging areas, chick growth, relaying and twinning experiments, and colony attendance is presented for some. CMH

Gulf of Alaska - Kodiak (Ugaiushak Is.)
Oystercatchers
Black Oystercatcher
Reproduction, abundance, habitat

234. WEHLE, H., E. HOBERG, and K. POWERS. 1977. Studies of marine birds on Ugaiushak Island, pp. 155-277. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This reports on the populations, breeding biology, food habits, and foraging areas of 21 species in summer 1976. A daily checklist of the 50 species observed on the island is appended. CMH

Gulf of Alaska - Kodiak (Ugaiushak Is.)
Shorebirds, oystercatchers
Black Oystercatcher
Abundance, reproduction, checklist

235. WHITE, C.M. 1974. Tringa glareola - a new breeding species for North America. Auk 91:175-177.

Three downy Wood Sandpipers found on Amchitka Island on July 2, 1969, establish the breeding status of this species in North America. REG

Aleutians - (Amchitka Is.)
Sandpipers
Wood Sandpiper
Distribution

236. WIENS, J.A., D. HEINEMANN, and W. HOFFMAN. 1978. Community structure, distribution and interrelationships of marine birds in the Gulf of Alaska, pp. 1-178. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

The first part of this report discusses in detail the problems associated with censusing marine birds at sea. Current techniques are compared by computer simulations. A new survey technique is described and the results of pelagic surveys using the new technique are presented. The second part discusses the formation and characteristics of feeding flocks, particularly those which contain more than one species. Phalaropes are mentioned only secondarily. PJG

Gulf of Alaska
Phalaropes
Red Phalarope
Techniques, behavior, food, abundance

237. WILKE, F. 1944. Three new bird records for St. Paul Island, Alaska. Auk 61:655-656.

This note provides the first records of the Whooper Swan, Black Scoter, and Sanderling for the Pribilof Islands. Other species are mentioned. CMH

Bering Sea - Pribilof Is.
Plovers, sandpipers, phalaropes
American Golden Plover, Wandering Tattler, Black Turnstone, Sanderling, Rock Sandpiper, Red Phalarope
Distribution, specimen record

238. WILLIAMS, R.B. 1950. Sharp-tailed Sandpiper in Alexander Archipelago, southeastern Alaska. Condor 52:164.

The first specimen of this species from southeastern Alaska is described. REG

Gulf of Alaska - Southeastern (Douglas Is.)
Sandpipers
Sharp-tailed Sandpiper
Distribution, specimen record

239. WILLIAMSON, F.S.L., and M.A. SMITH. 1964. The distribution and breeding status of the Hudsonian Godwit in Alaska. Condor 66:41-50.

All records of the Hudsonian Godwit in Alaska are summarized. The breeding distribution and timing and routes of migration are discussed. REG

Alaska
Sandpipers
Hudsonian Godwit
Distribution, migration

SHOREBIRDS - AREA INDEX

SHOREBIRDS - SPECIES INDEX

SHOREBIRDS - SUBJECT INDEX

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AVIFAUNA - BIBLIOGRAPHY

1. ABRAHAM, K.F. 1975. Waterbirds and oil-contaminated ponds at Point Storkersen, Alaska. M.S. thesis. Iowa State Univ., Ames. 39 pp.

   This thesis provides information on bird populations and habitat use, and evaluates the immediate effects of crude oil contamination on aquatic macroinvertebrate and bird activity. MRP

   Arctic - Beaufort (Pt. Storkersen)
   Shorebirds, seabirds, waterfowl
   Abundance, distribution, pollution, management

2. ABRAHAM, K.F., and D.V. DERKSEN. 1975. Investigations of Arctic Coastal Plain Avifauna. Trans-Alaska Pipeline Investigations. Unpublished progress report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 9 pp.

   The authors report possible problems confronting birds from petroleum development on Alaska's North Slope. Densities of birds using the area are presented, and the effects on birds of oil on coastal ponds are discussed. MRP

   Arctic - Beaufort (Storkersen Pt.)
   Shorebirds, seabirds, waterfowl
   Abundance, distribution, pollution

3. ADAMS, E. 1878. Notes on the birds of Michalaski, Norton Sound. Ibis 1878:420-442.

   This paper presents annotated accounts of 43 species of birds observed in the area of St. Michael. Included are 7 species of seabirds, 15 species of waterfowl, and 8 species of shorebirds. MRP

   Bering Sea - Norton Sound (St. Michael)
   Shorebirds, seabirds, waterfowl, other
   Annotated list

4. ALASKA DEPARTMENT OF FISH AND GAME. 1973. Alaska's Wildlife and Habitat, Vol. 1. Van Cleve Printing, Anchorage, Alaska. 144 pp. + 564 maps.

This volume summarizes data on the distribution and habitat use of game mammals, marine mammals, waterfowl, and seabirds. Very general species accounts are presented for seabirds and waterfowl. Maps show breeding, molting, and wintering areas and broad migration routes for the two bird groups combined. CMH

Alaska
Seabirds, waterfowl
Public interest, management, distribution

5. ALASKA DEPARTMENT OF FISH AND GAME. 1978. Alaska's Wildlife and Habitat, Vol. 2. Print Northwest, Tacoma, Washington. 69 pp + maps 1A - 153C.

This volume describes the distribution of the furbearers, small game birds and mammals, raptors, and seabirds within each game management unit. Maps show locations of seabird colonies; lists of the species at each site are presented and cross-referenced to the "Catalog of Alaskan Seabird Colonies" (Sowls et al. 1978). CMH

Alaska
Seabirds, other
Public interest, management, distribution

6. ALLEN, A.A. 1950. The bird fauna of Alaska. Proc. Alaskan Sci. Conf. Bull. Nat. Res. Council 122:102-103. (Summary)

This is a summary of a paper giving an account and the importance of "invasion of Old World species in Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Zoogeography

7. ANCHORAGE AUDUBON SOCIETY, INC. 1979. Birds of Anchorage, Alaska. A Checklist. 7 pp.

This is a checklist of 177 species identified from the greater Anchorage area. The status, relative abundance, and seasonal occurrence of each species are given and seven of the best areas in which to look for the birds are described. REG

Gulf of Alaska - Cook Inlet (Anchorage)
Shorebirds, seabirds, waterfowl, other
Checklist

8. ANDERSON, R.M. 1913. Report on the natural history collections of the expedition, pp. 436-527. In V. Stefansson, My Life with the Eskimos. MacMillan Co., New York.

A complete annotated list of birds encountered and collected on the Arctic expedition is presented. NMH

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Annotated list

9. ANDERSON, R.M. 1915. Canadian Arctic Expedition, 1913-14. Can. Dept. Mines, Summ. Rept. Geol. Survey 1914, Sess. Paper 26 (1503):163-166.

The specimens collected during the Canadian Arctic Expedition of 1913-14 are listed. NMH

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Specimen record, checklist

10. ANDERSON, R.M. 1917. Canadian Arctic Expedition, 1916 - Zoology. Can. Dept. Mines, Summ. Rept. Geol. Survey 1916, Sess. Paper 226 (1684):374-384.

A note outlining the route travelled on the Arctic expedition of 1915-1916 is followed by a list of specimens collected. NMH

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Specimen record, checklist

11. ANDERSON, R.M., and P.A. TAVERNER. 1919. Birds of Western Arctic America. Can. Arctic Expedition, 1913 - 1918, Rep., Vol. 2, Part B, Ottawa.

Not reviewed.

Arctic - Chukchi, Beaufort

12. ANDERSSON, M. 1973. Birds of Nuvagapak Point, northeastern Alaska. Arctic 26:186-197.

This paper reports on 52 species of birds observed between June 12 and July 4, 1970, near Nuvagapak Point, in the Arctic National Wildlife Range. An annotated species list includes information on habitat use, breeding biology, and density. MRP

Arctic - Beaufort (Nuvagapak Pt.)
Shorebirds, seabirds, waterfowl, other
Annotated list, abundance, breeding biology, predation

13. ANTHONY, A.W. 1906. Stray notes from Alaska. Auk 23:179-184.

This note gives an account of spring migration of birds to the Seward Peninsula in 1905. First dates of observations are presented for 13 species of water birds. MRP

Bering Sea - Norton Sound
Shorebirds, seabirds, waterfowl, other
Migration

14. ARCTIC INSTITUTE OF NORTH AMERICA. 1974. The Alaskan Arctic Coast: A Background Study of Available Knowledge. U.S. Dept. Army, Corps Eng., Anchorage, Alaska. 551 pp.

This report includes a chapter on birds, which summarizes available information on their seasonal occurrence, habitat use, population densities, and migration. Most of the discussion is general, but a checklist synthesized from various sources provides information on general areas of occurrence and nesting area affinities for 163 species. CMH

Arctic - Chukchi, Beaufort
Shorebirds, seabirds, waterfowl, other
Habitat, abundance, migration, checklist

15. ARNESON, P.D. 1976. Identification, documentation and delineation of coastal migratory bird habitat in Alaska, pp. 1-54. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports from Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report provides preliminary results of a study evaluating the importance of coastal habitats of Bristol Bay and the Gulf of Alaska to birds. Included are a summary of the total numbers of birds censused on several aerial surveys, plus a breakdown of the amount of each habitat type available along the north side of the Alaska Peninsula. CMH

Bering Sea - Bristol Bay
Gulf of Alaska
Shorebirds, seabirds, waterfowl, other
Habitat, distribution, abundance, pollution

16. ARNESON, P.D. 1977. Identification, documentation, and delineation of coastal migratory bird habitat in Alaska, pp. 1-95. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This reports on aerial surveys conducted in 1975 and 1976 in Bristol Bay and the Gulf of Alaska to determine the seasonal distribution and abundance of birds in littoral and estuarine habitats. Important breeding, staging, and wintering areas are mapped. For each major geographic region, numbers of birds are summarized by water type, physiographic feature, and substrate type. CMH

Bering Sea - Bristol Bay
Gulf of Alaska
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, habitat

17. ARNESON, P.D. 1978. Identification, documentation, and delineation of coastal migratory bird habitat in Alaska, pp. 431-481. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes and discusses results of aerial surveys of Bristol Bay in May 1978 and of Cook Inlet in winter 1977-78 and spring 1978. Included in separate appendices is information on seabirds inhabiting the Walrus Islands during summer 1977; spring migration past Kayak Island; and birds of Tugidak Island. CMH

Bering Sea - Bristol Bay
Gulf of Alaska - Cook Inlet, Kodiak (Tugidak Is.), Prince William Sound (Kayak Is.)
Shorebirds, seabirds, waterfowl, other
Distribution, habitat, checklist, migration

*18. BAILEY, A.M. 1923. The haunts of the Emperor Goose. Nat. Hist. 23:172-181.

This narrative account describes collecting adult Emperor Geese and their eggs during the spring. Briefly mentioned are other common species of birds. MRP

Bering Sea - Norton Sound (Cape Prince of Wales)
Shorebirds, seabirds, waterfowl, other
Distribution, migration

19. BAILEY, A.M. 1924. Collecting at Cape Prince of Wales. Murrelet 5:3-4.

This paper presents "informal notes on various species nesting locally." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Bering Sea - Norton Sound (Cape Prince of Wales)
Distribution

20. BAILEY, A.M. 1925. A report on the birds of northwestern Alaska and regions adjacent to the Bering Strait. Parts 1 - 6. Condor 27:20-32; 62-67; 101-109; 164-171; 197-207; 232-238.

BAILEY, A.M. 1926. A report on the birds of northwestern Alaska and regions adjacent to the Bering Strait. Parts 7 - 10. Condor 28:31-36; 84-86; 121-126; 165-170.

This 10-part paper provides a summary of the Colorado Museum of Natural History expedition to northwestern Alaska in 1921-1922 and includes much of the information found in Bailey's 1943 "Birds of Cape Prince of Wales, Alaska." The text gives an extensive description of the itinerary and often lengthy annotated species accounts with much anecdotal information. REG

Bering Sea - Norton Sound
Arctic - Chukchi (Wainwright)
Shorebirds, seabirds, waterfowl, other
Annotated list

21. BAILEY, A.M. 1927. Notes on the birds of southeastern Alaska. Auk 44:1-23; 184-205; 351-367.

The author investigated the avifauna of this region between 1919 and 1921 and presents annotated accounts of over 150 forms of which 80 are water-associated. An itinerary and description of localities precedes the species accounts. REG

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Annotated list

22. BAILEY, A.M. 1933. A cruise of the Bear. Nat. Hist. 33:497-510.

This narrative account presents a few observations of birds seen on a cruise of the Bear from Nome north along the Arctic Coast. Of particular interest are the descriptions of the local inhabitants and the general area. MRP

Bering Sea - Norton Sound
Arctic - Kotzebue Sound, Chukchi, Beaufort
Shorebirds, seabirds, waterfowl, other
Distribution

23. BAILEY, A.M. 1943. The Birds of Cape Prince of Wales, Alaska. Proc. Colorado Mus. Nat. Hist. 18. 113 pp.

This is a major work on the avifauna of the region. It includes a lengthy discussion of the area, the itinerary of the expedition, descriptions of avian habitats, and generally thorough annotated accounts of over 100 species, over half marine-associated. Information was collected during a sixteen-month period in 1921-1922. REG

Bering Sea - Norton Sound (Cape Prince of Wales)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record, habitat, distribution

24. BAILEY, A.M. 1948. Birds of Arctic Alaska. Colorado Mus. Nat. Hist. Popular Sci. 8. 317 pp.

This is an account of a museum collecting expedition to the Arctic Slope of Alaska in 1921-22. It includes a description and history of the region and a narrative of the trip. Species accounts are presented for birds collected on the expedition and those subsequently collected through 1944. NMH

Arctic - Chukchi, Beaufort
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

25. BAILEY, A.M., C.D. BROWER, and L.D. BISHOP. 1933. Birds of the region of Point Barrow, Alaska. Progr. Activities Chicago Acad. Sci. 4:15-40.

The authors have compiled all records of the Pt. Barrow avifauna up to 1933. Annotated accounts are presented for 126 species, including 77 water-associated forms. Numerous specimens are reported. REG

Arctic - Chukchi (Barrow)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record, distribution

26. BAILEY, E. 1975. Resource Synopsis of the Copper River Delta Region. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 40 pp.

This report provides a general description of the area and its climate, a brief review of fishes and mammals in the area, and a description of bird resources. MRP

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, seabirds, waterfowl, other
Abundance, habitat

27. BAILEY, E.P. 1975. Seabird Surveys Cape Lisburne to the Barren Islands. Unpublished progress report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 17 pp.

Aerial surveys were conducted in summer 1974 over waters adjacent to proposed refuges to determine species composition, distribution, and abundance of marine birds. Results are summarized by region, season, and distance from shore for each species or species group. All species observed on the surveys are included. Briefly summarized are results of shoreline surveys of the Arctic Coast. CMH

Arctic
Bering Sea
Gulf of Alaska
Shorebirds, seabirds, waterfowl
Distribution, abundance

28. BAILEY, E. 1976. Breeding avifauna at the Barren Islands, Alaska. Pac. Seabird Group Bull. 3(1):33. (Abstract)

This paper presents information on the distribution and abundance of seabirds in the Barren Islands. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Shorebirds, seabirds
Abundance, distribution

29. BAILEY, E.P. 1976. Breeding bird distribution and abundance in the Barren Islands, Alaska. Murrelet 57:2-12.

The species composition, distribution, and abundance of 53 species of birds, including 33 marine species, encountered on the Barren Islands in July 1974 and 1975 are presented. MRP

Gulf of Alaska - Kodiak (Barren Is.)
Shorebirds, seabirds, waterfowl, other
Abundance, checklist

30. BAILEY, E.P. 1977. Distribution and abundance of marine birds and mammals along the south side of the Kenai Peninsula, Alaska. Murrelet 58:58-72.

A reconnaissance survey was conducted along 600 miles of coast during summer 1976. Total numbers of each species observed are summarized for 14 segments of the coast. Estimates of numbers of breeding pairs are given for all seabird colonies located. Of the 31 species of marine birds addressed, there are 19 seabirds, 2 raptors, 1 shorebird, 7 seaducks, and 2 loons. CMH

Gulf of Alaska - Prince William Sound (Kenai Peninsula)
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, habitat

*31. BAILEY, E.P. 1978. Breeding seabird distribution and abundance in the Shumagin Islands, Alaska. Murrelet 59:82-91.

This paper provides population estimates, by island, for the 18 species of seabirds found breeding on the Shumagin Islands. Most of the information was gathered on reconnaissance surveys during three summers, but data from historical and recent studies are also summarized. The presence of red foxes is discussed in relation to the distribution of seabirds on the islands. The presence of other species of birds is briefly noted. CMH

North Pacific - (Shumagin Is.)
Shorebirds, seabirds, waterfowl, other
Distribution, abundance

32. BAILEY, E. P., and N.H. FAUST. 1980. Summer distribution and abundance of marine birds and mammals in the Sandman Reefs, Alaska. Murrelet 61:6-19.

A reconnaissance survey was conducted in the Sandman Reefs in 1978. Total numbers of each species are summarized for each island visited and estimates of numbers of breeding pairs are given for each colony. Of the 47 species of birds observed, 35 were water-oriented. MRP

North Pacific (Sandman Reefs)
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, habitat

*33. BAIRD, P.A., and M.A. HATCH. 1979. Breeding biology and feeding habits of seabirds of Sitkalidak Strait 1977-1978, pp. 107-186. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes results of a two-year study of the comparative breeding and feeding ecology of five species of seabirds nesting on Kodiak Island. Differences in productivity are discussed in relation to prey availability. Appended is an annotated list of all birds and mammals observed in 1978. Of the 36 species of birds noted, 24 are water-associated. CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

34. BAIRD, S.F. 1858. Explorations and Surveys for a Railroad Route from the Mississippi River to the Pacific Ocean. Part II. Birds. Vol. 9. B. Tucker, Washington. 1005 pp.

Not reviewed.

Alaska

35. BAIRD, S.F., T.M. BREWER, and R. RIDGWAY. 1884. The Water Birds of North America. Little, Brown and Co., Boston. Vol. 1, 537 pp. Vol. 2, 552 pp.

This comprehensive work summarizes observations from Alaska for several species, and includes the original description of Rissa tridactyla pollicaris. CMH

Alaska
Shorebirds, seabirds, waterfowl
Black-legged Kittiwake
Behavior, distribution, habitat, plumage, specimen record

36. BANGS, O. 1930. Types of birds now in the Museum of Comparative Zoology. Bull. Mus. Comp. Zool. Harv. Coll. 70:147-426.

Alaska
Specimen record

37. BANKS, R.C., M.H. CLENCH, and J.C. BARLOW. 1973. Bird collections in the United States and Canada. Auk 90:136-170.

This paper presents a list, by state and province, of bird collections in the U.S. and Canada. The number and types of specimens, the species groups represented, and the geographic areas of origin are listed for each collection. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Specimen record

38. BARNES, R.M. 1916. Some rare things. Oologist 31:201-203.

Not reviewed.

Arctic
Specimen record

39. BARTONEK, J.C. 1969. Arctic Slope and Trans-Alaska Pipeline Task Force Report: The Bird Resources of Alaska's Arctic Slope and Petroleum Development. Unpublished report. U.S. Fish and Wildl. Serv., Northern Prairie Wildl. Res. Center, Jamestown, N.D. 39 pp.

This report assesses the bird resources of the Arctic Slope and examines potential threats from oil development and other sources of pollution. Information is summarized from published and unpublished sources and from reconnaissance surveys conducted in 1969. A checklist of the 171 species recorded north of the Brooks Range indicates their occurrence within three physiographic provinces and along the coast of the Chukchi Sea. Waterfowl species are discussed in greatest detail. Subsistence use is briefly addressed. CMH

Arctic - Chukchi, Beaufort
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, distribution, habitat, subsistence, pollution

*40. BARTONEK, J.C., and D.D. GIBSON. 1972. Summer distribution of pelagic birds in Bristol Bay, Alaska. Condor 74:416-422.

Observations on the distribution and abundance of 32 species of pelagic birds in a portion of Bristol Bay were made during July and August 1969. Distribution and relative abundance data are presented. MRP

Bering Sea - Bristol Bay
Shorebirds, seabirds, waterfowl
Distribution, annotated list, abundance

41. BARTONEK, J.C., and C.J. LENSINK. 1978. A Review of the Literature and a Selected Bibliography of Published and Unpublished Literature on Marine Birds of Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 95 pp.

The authors have compiled a bibliography, referenced by geographic area, of some 500 published and unpublished citations dealing with birds of coastal Alaska. A narrative summary of the pertinent literature is presented for each of four major geographic areas. Included in a separate section are references on hazards to marine birds. REG

Alaska
Shorebirds, seabirds, waterfowl, other
Bibliography

42. BARTONEK, J., C.J. LENSINK, P.J. GOULD, R.E. GILL, and G.A. SANGER. 1977. Population dynamics and trophic relationships of marine birds in the Gulf of Alaska and southern Bering Sea, pp. 1-12. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This is a brief introduction to 11 studies conducted in 1976. CMH

Bering Sea
Gulf of Alaska
Shorebirds, seabirds, waterfowl
Habitat, reproduction

43. BEAN, T.H. 1882. Notes on birds collected during the summer of 1880 in Alaska and Siberia. Proc. U.S. Natl. Mus. 5:144-173.

This paper provides often detailed accounts of specimens collected in Alaska during a cruise from Sitka to Icy Cape between May and October 1880. Seventy-seven species are addressed, 39 of them water-associated. REG

Arctic
Bering Sea
Gulf of Alaska
North Pacific
Shorebirds, seabirds, waterfowl, other
Specimen record, annotated list, distribution

44. BEE, J.A. 1958. Birds found on the Arctic Slope of northern Alaska. Univ. Kansas Publ., Mus. Nat. Hist. 10:163-211.

This paper details the avifauna collected and observed during a trip along the Arctic Slope in summers 1951 and 1952. Within the annotated accounts are discussions of behavior and chronology as well as meristic data from specimens. REG

Arctic
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record, anatomy

45. BEECHEY, F.M. 1831. Narrative of a Voyage to the Pacific and Bering's Strait. Colburn and Bentley, London. Vol. 1, 472 pp. Vol. 2, 452 pp.

This book addresses "Alaska matters with some mention of birds." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

46. BENDIRE, C.E. 1895. Life Histories of North American Birds. U.S. Natl. Mus. Spec. Bull. 3.

Not reviewed.

Alaska
Shorebirds, seabirds, waterfowl, other

47. BENT, A.C. 1912. Notes on birds observed during a brief visit to the Aleutian Islands and Bering Sea in 1911. Smithson. Inst. Misc. Collect. 56:1-29.

This paper resulted from ornithological investigations conducted throughout the Aleutian Islands and on Bogoslof, St. Paul, Walrus, St. Matthew and Hall Islands during the spring and summer of 1911. Some 50 species of marine or water-associated birds are treated in annotated accounts. REG

Bering Sea - Pribilof Is., St. Matthew Is., Hall Is.
Aleutians - (Bogoslof Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

48. BERGMAN, R.D. 1974. Wetlands and water birds at Point Storkersen, Alaska. Ph.D. diss. Iowa State Univ., Ames. 58 pp.

This study assesses the importance of aquatic habitats to birds of the area, and develops a wetland classification system. Recommendations to reduce deleterious effects to wetland communities from petroleum development are presented. MRP

Arctic - Beaufort (Pt. Storkersen)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, management, pollution, abundance, distribution

49. BERGMAN, R.D., R.L. HOWARD, K.F. ABRAHAM, and M.W. WELLER. 1977. Water Birds and their Wetland Resources in Relation to Oil Development at Storkersen Point, Alaska. U.S. Fish and Wildl. Serv. Resour. Publ. 129. 39 pp.

This paper presents information from a five-year study of birds at Storkersen Point. Eight classes of wetlands are defined on the basis of size, depth, vegetation, and water chemistry, and related to bird use. Invertebrate populations are examined in relation to peak hatch of shorebirds and ducks. Recommendations for preservation of wetlands during oil development activities are included. MRP

Arctic - Beaufort (Storkersen Pt.)
Shorebirds, seabirds, waterfowl, other
Habitat, food, management, reproduction, checklist, pollution, migration, abundance

50. BERLIOZ, J. 1951. Étude d'une collection d'Oiseaux des Iles Pribilof. [Study of a collection of birds from the Pribilof Islands.] Bull. Nat. Hist. Mus. Paris, Ser. 2, Vol. 23:610-615.

Not reviewed.

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Specimen record

51. BISHOP, L.B. 1944. Ornithological notes from Point Barrow, Alaska. Field Mus. Nat. Hist. Zool. Ser. 29:181-190.

Birds collected in the Point Barrow region from 1933 through 1940 are listed. REG

Arctic - Chukchi (Pt. Barrow)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record, distribution

52. BLACKWELDER, E. 1919. Notes on the summer birds of the Upper Yukon Region, Alaska. Auk 36:57-64.

Brief annotated accounts are presented for 60 species observed during summer 1915. Included among the birds are 13 water-associated forms. REG

Interior - Upper Yukon
Shorebirds, seabirds, waterfowl, other
Annotated list

53. BLASCHKE, E. 1842. Topographia medica portus Novi-Archangelscensis, sedis principalis coloniarium Rossicarum in Septentrionali America. Petropili. Typis K. Wienhoberi et Filii. 82 pp.

Pages 22-24 treat the 51 species of birds enumerated. (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

54. BRANDT, H. 1943. Alaska Bird Trails. Bird Research Foundation, Cleveland, Ohio. 464 pp.

This is a very interesting account of the birds recorded during an expedition to the Yukon Delta and coast of western Alaska in 1924. The narrative species accounts are preceded by several chapters which discuss the itinerary of the trip, the native peoples of the area, and the natural features of western Alaska. The book is replete with drawings, paintings, and photographs of the birds, people, and habitats encountered on the expedition. REG

Bering Sea - Yukon Delta
Shorebirds, seabirds, waterfowl, other
Distribution, behavior, breeding biology

55. BRECKENRIDGE, W.J., and D. CLINE. 1967. Sandhill Cranes and other birds from Bering Strait, Alaska. Auk 84:277-278.

The authors spent from May 14 to June 4, 1964, observing and collecting birds at Wales, Alaska. Fifty-seven species were observed, 25 collected, and 32 photographed. Arrival dates are given for 32 species. Over half of this note is devoted to a description of the passage of Sandhill Cranes westward across the Bering Strait. REG

Bering Sea - Norton Sound (Wales)
Shorebirds, seabirds, waterfowl
Sandhill Crane
Migration, specimen record

56. BRETHERTON, B.J. 1896. Kodiak Island: A contribution to the avifauna of Alaska. Oreg. Nat. 3:45-49; 61-64; 77-79; 100-102.

This series of papers presents an annotated list of some 60 species observed at Kodiak Island. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

57. BROOKS, W.S. 1915. Notes on birds from East Siberia and Arctic Alaska. Bull. Mus. Comp. Zool. Harv. Coll. 59(5):361-413.

This paper reports on the birds observed and collected in Arctic Alaska and Siberia during an expedition from spring 1913 through summer 1914. NMH

Arctic
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

58. BRUEGGEMAN, J.J. 1980. Coastal occurrence of birds at Point Barrow, Alaska, in spring. Murrelet 61:31-34.

This paper presents spring migration dates of Snowy Owls and 15 species of water-oriented birds along the coast past Point Barrow. Environmental factors influencing the timing of arrival of birds are discussed. MRP

Arctic - Chukchi (Barrow)
Seabirds, waterfowl, other
Migration

59. BUCARIA, G.P. 1979. Copper River Delta Area Wildlife Resource Review. Unpublished report. U.S. Forest Service, Chugach National Forest, Cordova, Alaska. 158 pp.

This report presents a description of the area and annotated accounts of selected species. Harvest information of game species and the potential for habitat improvement are discussed. MRP

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, seabirds, waterfowl, other
Management, annotated list

60. BURROUGHS, J. 1902. Narrative of the expedition, pp. 1-118. In C.H. Merriam (ed.), Harriman Alaska Expedition, Doubleday, Page and Co., New York. (Reprinted 1972, Klaus Reprint. Co., New York.)

This narrative account of the itinerary of the expedition includes many anecdotal references to birds encountered at various stops. CMH

Aleutians, Bering Sea, Gulf of Alaska
Shorebirds, seabirds, waterfowl, other
Public interest

61. BYRD, G.V., D.D. GIBSON, and D.L. JOHNSON. 1974. The birds of Adak Island, Alaska. Condor 76:288-300.

This paper presents annotated accounts of 124 species, including some 90 water-associated forms. Data from several specimens are included. REG

Aleutians - (Adak Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record, distribution

62. BYRD, G.V., J.L. TRAPP, and D.D. GIBSON. 1978. New information on Asiatic birds in the Aleutian Islands, Alaska. Condor 80:309-315.

This paper discusses 35 species new to the Aleutians or on which significant new information is available. Five species and two subspecies new to North America are included. The majority of the species discussed are water-associated. MRP

Aleutians
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, specimen record

63. CADE, T. 1951. Food of the Peregrine Falcon, Falco peregrinus, in interior Alaska. Auk 68:373-374.

Pellets and remains of prey beneath an aerie of a Peregrine Falcon were collected and analyzed. A table presents the number of items and number of individuals represented for each bird species. The author briefly describes the relative abundance of each prey species, including six water-related forms, in the surrounding areas. CMH

Interior - Tanana (Fairbanks)
Shorebirds, seabirds, waterfowl, other
Red-necked Grebe, Green-winged Teal, Bufflehead, Lesser Yellowlegs, Herring Gull, Mew Gull
Food, predation

64. CADE, T. 1952. Notes on the birds of Sledge Island, Bering Sea, Alaska. Condor 54:51-54.

Notes on 35 species, including 25 marine forms, observed between June 7 and 15, 1950, are presented. Many of them are new records. REG

Bering Sea - Norton Sound (Sledge Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

65. CADE, T.J. 1953. A Synoptic Bibliography of Alaskan Ornithology. Univ. Calif. Dept. Zool., Los Angeles. 76 pp. (Mimeo)

The author has included all "primary" references to Alaska ornithology from 1785 through 1953. Citations number over 700 with nearly all being annotated, some having detailed summaries. REG

Alaska
Shorebirds, seabirds, waterfowl, other
Bibliography

66. CAHALANE, V.H. 1943. Notes on birds of the Kodiak - Afognak Island group. Auk 60:536-541.

This paper presents an annotated list of the 29 species observed in late fall 1940 in the Kodiak-Afognak Island area. Of these, 21 species are water birds. CMH

Gulf of Alaska - Kodiak (Kodiak-Afognak Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

67. CAHALANE, V.H. 1944. Birds of the Katmai Region, Alaska. Auk 61:351-375.

The author provides an annotated list of the birds observed during September 1940 in the Katmai region and summarizes earlier records for the area. Ninety-four species are discussed, including 59 species of water birds. A checklist of 118 species is appended. CMH

Gulf of Alaska - Kodiak (Katmai, Shelikof Strait)
Shorebirds, seabirds, waterfowl, other
Annotated list, checklist

68. CAHALANE, V.H. 1959. A biological survey of Katmai National Monument. Smithson. Misc. Coll. 138:83-155.

The author presents annotated species accounts of birds observed in the monument in 1953 and 1954. Information on habitat use is included. NMH

Gulf of Alaska - Kodiak (Katmai National Monument)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

69. CAHN, A.R. 1947. Notes on the birds of the Dutch Harbor area of the Aleutian Islands. Condor 49:78-82.

This paper presents an annotated species list of birds observed at Dutch Harbor over a 47-month period during World War II. Observations of 62 species are presented. MRP

Aleutians - (Dutch Harbor)
Shorebirds, seabirds, waterfowl, other
Annotated list

70. CAIRNES, D.D. 1912. Geology of a portion of the Yukon-Alaska boundary between Porcupine and Yukon Rivers. Geol. Surv., Canada, Summ. Rep. 1911:17-40.

This paper "includes list of birds observed and a few that were collected." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Interior - Upper Yukon
Shorebirds, seabirds, waterfowl, other
Checklist, specimen record

71. CAMPBELL, J.M. 1968. Birds of Chandler Lake, Brooks Range, Alaska. Murrelet 49:15-24.

This paper provides an annotated list of the 53 species of birds observed in a high valley of the Brooks Range during four summers. Thirty of the species are water-associated birds. CMH

Arctic - Beaufort (Brooks Range)
Shorebirds, seabirds, waterfowl, other
Annotated list

72. CANTWELL, G.G. 1897. From a collection in Alaska. Osprey 1:97-98.

The author informally mentions the species which are common in the area in winter and some which he has collected. CMH

Gulf of Alaska - Southeastern (Long Is.)
Seabirds, waterfowl, other
Distribution

73. CANTWELL, G.G. 1897. Notes from Alaska. Nidologist 4:59.

In this letter the author notes informally several species of birds which he has observed or collected near Juneau. Included are Red-legged Kittiwake, Western, Mew, and Glaucous-winged Gulls, and Marbled and Ancient Murrelets. CMH

Gulf of Alaska - Southeastern (Juneau)
Seabirds, other
Distribution

74. CANTWELL, R.C.S. 1902. Report of the Operations of the U.S. Revenue Steamer Nunivak on the Yukon River Station. Treasury Dept. Doc. No. 2276. Govt. Printing Office, Washington, D.C. 325 pp.

A list of 96 taxa of birds observed "along the Yukon River" between 1899 and 1901 is appended. REG

Bering Sea - Norton Sound (St. Michael)
Shorebirds, seabirds, waterfowl, other
Checklist

75. CARVER, W.H. 1928. Notes from St. George's Island, Alaska. Murrelet 9:63-65.

These notes, selected from a personal letter of a visitor to St. George Island, provide an anecdotal description of the island's seabird life. A few comments on seabird hunting by natives are included. NMH

Bering Sea - Pribilof Is. (St. George Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, subsistence

76. CASSIN, J. 1858. United States Exploring Expedition, Vol. 8, Mammalogy and Ornithology. C. Sherman and Son or Lippincott, Philadelphia.

Not reviewed.

77. CASSIN, J. 1862. Catalogue of birds collected by the United States North Pacific Surveying and Exploring Expedition in command of Captain John Rodgers, United States Navy, with notes and descriptions of new species. Proc. Acad. Nat. Sci. Phila. 1862:312-328.

This paper "includes some specimens from Alaska and Bering Strait." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Specimen record

78. CHAPMAN, F. 1888. List of additions to the North American avifauna and of eliminations and changes in nomenclature proposed since the publication of the A.O.U. Check-list. Auk 5:393-402.

This update to the A.O.U. Checklist includes the addition of six species which were recorded from Alaska, including Larus barrovianus (= L. hyperboreus) and Tringa damacensis (= Calidris subminuta). CMH

Alaska
Shorebirds, seabirds, other
Glaucous Gull, Long-toed Stint
Distribution

79. CHAPMAN, F.M. 1902. List of birds collected in Alaska by the Andrew J. Stone Expedition of 1901. Bull. Am. Mus. Nat. Hist. 16:231-247.

The author lists the dates and locations of collections of the 302 specimens obtained by the Stone Expedition of 1901. Sixty-eight species and subspecies are treated, including 26 water-associated forms. REG

Alaska
Shorebirds, seabirds, waterfowl, other
Specimen record, annotated list

80. CHAPMAN, F.M. 1904. List of birds collected in Alaska by the Andrew J. Stone expedition of 1903. Bull. Am. Mus. Nat. Hist. 20:399-406.

An annotated summary of 317 bird specimens and 35 egg sets collected in 1903 is presented. Sixty-two species are discussed, of which 20 are marine-associated. REG

Gulf of Alaska - Cook Inlet (Kenai Peninsula)
Bering Sea - Bristol Bay (Port Moller)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

81. CHAPMAN, J.W. 1932. Bird-neighbors at Anvik, Alaska. Bird-Lore 34:373-379.

Not reviewed.

Bering Sea - Yukon Delta (Anvik)

82. CHESEMORE, D.L. 1968. Notes on the food habits of Arctic foxes in northern Alaska. Can. J. Zool. 46:1127-1130.

The author summarizes the summer and winter food habits of Arctic foxes near Teshekpuk Lake. Birds and eggs were found to form a large part of the summer diet; however, avian prey were not identified to species. CMH

Arctic - Beaufort (Teshekpuk L.)
Shorebirds, seabirds, waterfowl, other
Predation

83. CHILDS, H.E., JR. 1969. Birds and Mammals of the Pitmegea River Region, Cape Sabine, Northwestern Alaska. Biol. Pap. Univ. Alaska 10. 76 pp.

The author presents annotated accounts for 90 species, including 59 water-associated forms. Species accounts are preceded by a discussion of the geology, climate, soils, and vegetation of the area. Data were collected between 1957 and 1960. REG

Arctic - Chukchi (Pitmegea R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

84. CLARK, A.H. 1910. The birds collected and observed during the cruise of the United States fisheries steamer Albatross in the North Pacific Ocean, and in the Bering, Okhotsk, Japan, and Eastern Seas, from April to December, 1906. Proc. U.S. Natl. Mus. 38:25-74.

This is a very extensive treatise providing annotated accounts of 176 species. Unfortunately, the accounts are not presented by geographic region, but instead include all observations from San Francisco, Alaska, and the Far East. Numerous specimen records are cited, usually accompanied by complete meristic data. REG

Bering Sea
Gulf of Alaska
Aleutians
North Pacific
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record, anatomy

85. CLENCH, M.H., R.C. BANKS, and J.C. BARLOW. 1976. Bird collections in the United States and Canada: Addenda and corrigenda. Auk 93:126-129.

This paper updates the authors' earlier paper (Banks et al., Auk 90:136-170, 1973). This paper records more accurate counts, additions of specimens and collections, and the transfer of several collections. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Specimen record

86. COINDE, J.P. 1860. Notice sur la faune ornithologique de l'ile de Saint-Paul suivie delenumeration de quelques especes d'insectes (Coleopteres) des Aleoutinnes et du Kamtschatka. Revue et Magazin de Zool. 2nd ser., 12:396-405.

"Mention is made of nine species of birds collected on St. Paul by Mr. Warneck. One described as new - Larus warnecki = Rissa brevirostris." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Bering Sea - Pribilof Is. (St. Paul Is.)
Red-legged Kittiwake
Specimen record, taxonomy

87. COLLINS, H.B., JR., A.H. CLARK, and E.H. WALKER. 1945. The Aleutian Islands: Their People and Natural History. Smithsonian Institution War Background Studies No. 21. 131 pp.

Included in this paper is a checklist of all birds known to occur on the islands plus a brief account summarizing their relative abundance and distribution. Of the 131 species and subspecies listed, 97 are water-associated. Subsistence use is mentioned. CMH

Aleutians
Shorebirds, seabirds, waterfowl, other
Checklist, distribution, abundance, subsistence

*88. CONNORS, P., and R. RISEBROUGH. 1976. Shorebird dependence on Arctic littoral habitats, pp. 401-456. In Environmental Assessment from the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This preliminary report provides annotated accounts for the 19 species of shorebirds using littoral habitats near Barrow, and for 11 other species of water birds commonly occurring there. Results of censuses taken regularly from July to September 1975 are graphically presented for most species. Qualitative food habits information is provided for 11 species. CMH

Arctic - Chukchi (Barrow, Wainwright), Beaufort
Shorebirds, seabirds, waterfowl
Habitat, abundance, food, annotated list

*89. CONNORS, P., and R.W. RISEBROUGH. 1977. Shorebird dependence on Arctic and littoral habitats, pp. 402-524. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Included in this annual report are annotated accounts for the 19 species of shorebirds and 11 other species commonly using littoral habitats of the Barrow region. Census data are reported for the most common species. Habitat use and foraging ecology are discussed in detail for shorebirds. CMH

Arctic - Chukchi (Barrow, Icy Cape), Beaufort (Elson Lagoon)
Shorebirds, seabirds, waterfowl, other
Abundance, habitat, food

*90. CONNORS, P., and R. RISEBROUGH. 1978. Shorebird dependence on Arctic littoral habitats, pp. 84-166. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes results of studies in summer 1977 on shorebird seasonal habitat use and trophic relationships in northwestern Alaska. Seasonal densities are also presented for a few other species. Susceptibility of shorebirds to impacts of oil development is addressed. Checklists present the status of bird species observed at Cape Krusenstern and Wales in 1977. CMH

Arctic - Beaufort, Chukchi, Kotzebue Sound
Bering Sea - Norton Sound
Shorebirds, seabirds, waterfowl, other
Abundance, checklist, pollution, habitat

*91. CONNORS, P.G., and R.W. RISEBROUGH. 1979. Shorebird dependence on Arctic littoral habitats, pp. 271-329. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 1. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes information gathered at Prudhoe Bay and several other sites in summer 1978. Data are presented on seasonal habitat use of the littoral zone by shorebirds, on use of disturbed habitat by shorebirds and passerines, and on food habits of shorebirds. A checklist indicates the status of the 113 species of birds recorded at Cape Krusenstern in 1977 and 1978. Expansion of Aleutian Tern colonies is mentioned. CMH

Arctic
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, disturbance, food, habitat

92. CONOVER, H.B. 1926. Game birds of the Hooper Bay Region, Alaska. Auk 43:162-180, 303-318.

This is an annotated list of the gamebirds observed in the Hooper Bay vicinity during spring and summer 1924. Included is information on chronology, relative abundance, breeding status, habitat, predation, behavior, plumage, migration, and meristics. Of the 46 species and subspecies discussed, 44 are water-related. The role of the Glaucous Gull as a predator is addressed. CMH

Bering Sea - Yukon Delta (Hooper Bay)
Shorebirds, seabirds, waterfowl
Annotated list, abundance, habitat, reproduction, predation, migration, behavior, plumage

93. COOK, J. 1784. A Voyage to the Pacific Ocean, Undertaken by the Command of His Majesty, for Making Discoveries in the Northern Hemisphere (etc.); Performed Under the Direction of Captains Cook, Clarke and Gore, in His Majesty's Ships the "Resolution" and the "Discovery" (etc.). 3 Vols., London.

Not reviewed.

94. COUES, E. 1874. Ornithology of the Prybilov Islands, pp. 168-212. In H.W. Elliott, Report on the Prybilov Group, or Seal Islands of Alaska. U.S. Treas. Dept., Washington, D.C.

Not reviewed.

Bering Sea - Pribilof Is.

95. DALL, W.H. 1870. Alaska and Its Resources. Lee and Shepard Publishers, Boston. 627 pp.

Within the text appear numerous references to birds. A list of 209 species collected by the Scientific Corps during the expedition is appended. Most of the specimens came from Norton Sound, the Yukon Delta, and Yukon Valley. REG

Alaska
Shorebirds, seabirds, waterfowl, other
Checklist, subsistence, specimen record

96. DALL, W.H. 1873. Notes on the avi-fauna of the Aleutian Islands, from Unalashka eastward. Proc. Calif. Acad. Sci. 5:25-35.

This paper reports on specimens collected from October 1871 to August 1872 during a geographical reconnaissance from the Shumagin Islands to Unalaska Island. A total of 54 species was collected, of which 37 are water-oriented species. MRP

Aleutians
North Pacific
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

97. DALL, W.H. 1874. Notes on the avifauna of the Aleutian Islands, especially those west of Unalashka. Proc. Calif. Acad. Sci. 5:270-281.

Presented here is an annotated list of the 45 species of birds observed during a cruise in 1873 among the western Aleutian Islands. Included is information on habitat, relative abundance, seasonal occurrence, and breeding status. Thirty-two of the species addressed are water-associated. CMH

Aleutians
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, food, behavior

98. DALL, W.H., and H.M. BANNISTER. 1869. List of the birds of Alaska, with biographical notes. Trans. Chicago Acad. Sci. 1:267-310.

This paper reports on the species observed and collected from 1865 to 1867 by members of the Russo-American Telegraph Expedition. Annotated accounts of 212 species, including 116 water birds, are presented. MRP

Gulf of Alaska
Aleutians
Bering Sea
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

99. DAU, C. 1972. Observations on the Spring Migration of Birds at Old Kashunuk Village, Alaska, 1972. Unpublished report. Univ. Alaska, Dept. Wildl. Fish., Fairbanks. 54 pp.

This report presents an annotated species list of birds observed between May 8 and June 16, 1972, in the vicinity of Old Kashunuk Village. Included are arrival dates and general notes on each species. MRP

Bering Sea - Yukon Delta (Old Kashunuk Village)
Shorebirds, seabirds, waterfowl, other
Annotated list, migration

100. DEAN, F.C., and D.L. CHESEMORE. 1974. Studies of Birds and Mammals in the Baird and Schwatka Mountains, Alaska. Biol. Pap. Univ. Alaska 15. 80 pp.

This monograph presents information on an ecological reconnaissance of the Baird and Schwatka Mountains. An annotated species list is included. MRP

Arctic - Kotzebue Sound
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

101. DEARBORN, J.H. 1957. Notes on the birds of Kitoi Bay, Afognak Island, Alaska. Proc. Alaska Sci. Conf. 8:83-88.

A total of 47 species of birds was observed at the Kitoi Bay Research Station during the summer of 1957. General notes on their status are provided. MRP

Gulf of Alaska - Kodiak (Kitoi Bay)
Shorebirds, seabirds, waterfowl, other
Checklist, predation

*102. DEGANGE, A.R., E.E. POSSARDT, and D.A. FRAZER. 1977. The Breeding Biology of Seabirds on the Forrester Island National Wildlife Refuge 15 May to 1 September 1976. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 62 pp.

This report presents information on the abundance, distribution, and reproductive success of seabirds nesting on Forrester and Petrel Islands. An annotated list of 98 species of birds is included. MRP

Gulf of Alaska - Southeastern (Forrester Island NWR)
Shorebirds, seabirds, waterfowl, other
Annotated list

103. DEGANGE, A.R., and A.L. SOWLS. 1978. A Faunal Reconnaissance of the Bering Sea National Wildlife Refuge. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 74 pp.

This field report presents information on the birds, foxes, marine mammals, and reindeer observed between June 26 and July 27, 1977, on the Bering Sea NWR. Census information is provided for the nesting seabirds, and habitat use by shorebirds and passerines is described. Arctic fox dens and foods are discussed. A list of plants, an annotated species list, and a discussion of logistics are appended. MRP

Bering Sea - St. Matthew Is., Hall Is., Pinnacle Is.
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, food, predation, mortality, annotated list

104. DEGANGE, A.R., and A.L. SOWLS. 1978. A Survey of the Chamisso Island National Wildlife Refuge. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 17 pp.

This report presents information gathered during a survey of Chamisso Island from August 11-14, 1974. Breeding populations of seabirds are estimated, and annotated accounts of 37 species of birds are included. MRP

Arctic - Kotzebue Sound (Chamisso Island NWR)
Shorebirds, seabirds, waterfowl, other
Subsistence, abundance, annotated list

105. DENES, J. 1975. Some new data on faunistical exchanges through the Bering-Bridge. [In English with Hungarian summary.] Aquila 80-81:81-89.

Not reviewed.

Bering Sea
Zoogeography

106. DERKSEN, D.V., W.D. ELDRIDGE, and T.C. ROTHE. 1979. Waterbird and wetland habitat studies, pp. 229-312. In P.C. Lent (ed.), Studies of Selected Wildlife and Fish and their Use of Habitats on and Adjacent to NPR-A 1977-1978. Field Study 3, Vol. 2. U.S. Dept. Int., National Petroleum in Alaska, Anchorage.

A detailed study of avian use of wetland habitats on the Arctic Coastal Plain was conducted at five sites in 1977 and 1978. Wetland habitats are identified and mapped, and macroinvertebrate populations are described and quantified. Species accounts describe the abundance and seasonal variations of bird populations in relation to their use of different wetland habitats. Of the 54 species treated, 41 are water birds. Use of Teshekpuk Lake by molting geese is also described in detail. CMH

Arctic - Beaufort (National Petroleum Reserve - Alaska)
Shorebirds, seabirds, waterfowl, other
Habitat, annotated list, abundance, distribution, food, plumage

107. DERKSEN, D.V., J.C. FRANSON, and T.C. ROTHE. 1976. Investigations of Arctic Coastal Plain Avifauna. Unpublished final report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska 40 pp.

The authors present information on bird populations, their associations with ponded areas, and the effects of oil on macroinvertebrates within ponds. MRP

Arctic - Beaufort (Storkensen Point)
Shorebirds, seabirds, waterfowl
Abundance, distribution, habitat, migration, pollution

108. DERKSEN, D.V., M.S. JENSEN, and M.W. WELLER. 1976. Evaluation of Techniques Used to Study Vegetation and Avifauna in National Petroleum Reserve of Alaska 1976. NPRA final report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 36 pp.

This report evaluates low-level 35mm aerial photo techniques for Arctic Slope vegetation mapping; reports on bird and plant species composition for ground-truthing; evaluates the feasibility of ground work at new study sites; and evaluates logistic support for aerial census and mapping operations. MRP

Arctic - Beaufort (National Petroleum Reserve - Alaska)
Shorebirds, seabirds, waterfowl, other
Techniques, abundance, checklist

109. DICE, L.R. 1920. The Land Vertebrate Associations of Interior Alaska. Univ. Mich. Mus. Zool. Occ. Pap. 85. 32 pp.

This paper describes habitats and lists representative birds and mammals associated with each. MRP

Interior - Tanana
Bering Sea - Yukon Delta
Shorebirds, seabirds, waterfowl, other
Habitat

110. DICE, L.R. 1920. Notes on some birds of interior Alaska. Condor 22:176-185.

The author presents annotated accounts of 86 species, including 27 water-associated forms, observed in 1911 and 1912. REG

Bering Sea - Yukon Delta (Kuskokwim R.)
Interior - Tanana (Tanana, Fairbanks), Upper Kuskokwim (Kuskokwim R.)
Shorebirds, seabirds, waterfowl, other
Specimen record, annotated list

*111. DICK, M. 1976. Notes on the Breeding and Other Seabirds in Chiniak and Southern Marmot Bays, Kodiak Island, Alaska, 1975. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 17 pp.

This identifies the locations of colonies and reports the number of "seabirds" breeding in the area. Notes on cormorants, shearwaters, eiders, oystercatchers, murres, puffins, guillemots, murrelets, auklets, gulls, and terns are included. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Shorebirds, seabirds, waterfowl
Abundance, distribution, breeding biology, annotated list

*112. DICK, M. 1979. Notes on the winter seabirds of Chiniak Bay, Kodiak Island, Alaska, pp. 492-516. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents an annotated list of the 42 species of marine birds observed in Chiniak Bay during the winter of 1976-1977. Information on food habits is presented for a few species. Methods for ageing Marbled Murrelets in winter are suggested. CMH

Gulf of Alaska - Kodiak (Chiniak Bay)
Shorebirds, seabirds, waterfowl, other
Annotated list, abundance, food

113. DICK, M.H., and L.S. DICK. 1971. The Natural History of Cape Peirce and Nanvak Bay, Cape Newenham National Wildlife Refuge, Alaska. Unpublished final report. U.S. Fish and Wildl. Serv., Bethel, Alaska. 78 pp.

This report provides data on weather, geology, habitat, flora, invertebrates, fish, birds, mammals, and archaeology of the Cape Peirce-Nanvak Bay region. MRP

Bering Sea - Bristol Bay (Cape Peirce, Nanvak Bay)
Shorebirds, seabirds, waterfowl, other
Annotated list, management, habitat

*114. DICK, M., I.M. WARNER, and R. MACINTOSH. 1976. Small Boat Census of Seabirds: Marmot and Chiniak Bays, Kodiak Island, Alaska, 28 June to 10 August 1975. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 11 pp.

The authors present transect data from small boat censuses and discuss the advantages and disadvantages of censusing by this method. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Shorebirds, seabirds, waterfowl, other
Abundance, techniques

*115. DIVOKY, G.J. 1972. The pelagic birds and mammals of the Chukchi Sea in fall. M.S. thesis. Michigan State Univ., East Lansing. 97 pp.

This thesis describes the distribution of birds and mammals observed from a vessel in the eastern Chukchi Sea between September 22 and October 27, 1970. Species accounts are presented; the relation of the ice edge to the distribution of birds and their foods is discussed. MRP

Arctic - Chukchi
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, food, migration

*116. DIVOKY, G.J. 1977. The distribution, abundance, and feeding ecology of birds associated with pack ice, pp. 525-573. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This reports preliminary results of a study of the distribution, abundance, and feeding ecology of birds associated with pack ice in the Bering, Chukchi, and Beaufort Seas. Information on distribution and abundance, obtained from shipboard cruises, is discussed. Potential impacts from oil spills are assessed. CMH

Arctic - Beaufort, Chukchi
Bering Sea
Shorebirds, seabirds, waterfowl
Distribution, abundance, pollution

*117. DIVOKY, G.J. 1978. The distribution, abundance, and feeding ecology of birds associated with pack ice, pp. 167-509. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report maps the distribution and abundance of each species of bird observed during 11 cruises in 1977 in the Bering, Chukchi, and Beaufort Seas. Stomach contents of Black-legged Kittiwakes and Common and Thick-billed Murres are tabulated. An appended report summarizes information on seasonal habitat use, reproductive phenology and success, and foods of birds on Cooper Island from 1975-77. Effects of human disturbance are also discussed. CMH

Arctic - Chukchi, Beaufort
Bering Sea
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, food, habitat, disturbance

118. DIVOKY, G.J. 1978. Identification, documentation, and delineation of coastal migratory bird habitat in Alaska, pp. 482-569. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 1. NOAA, Environ. Res. Lab., Boulder, Colo.

Part one of this report summarizes by species the numbers of nests found on each barrier island and spit between Cape Lisburne and Demarcation Point in 1977. Information on breeding phenology is included for seven species. In part two, stomach contents of 11 species of marine birds are tabulated. CMH

Arctic - Chukchi, Beaufort
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, reproduction, food

*119. DIVOKY, G.J. 1979. Sea ice as a factor in seabird distribution and ecology in the Beaufort, Chukchi, and Bering Seas. U.S. Fish and Wildl. Serv., Wildl. Res. Rep. 11:9-17.

This paper discusses the relationship of sea ice to seabirds. The amount of surface area available for feeding and roosting, the reduction of prey abundance due to ice scour, the decrease in productivity of water covered by ice, and the spring plankton bloom are addressed. MRP

Arctic - Beaufort, Chukchi
Bering Sea
Shorebirds, seabirds, waterfowl
Distribution, habitat, food

*120. DIVOKY, G.J., and A.E. GOOD. 1979. The distribution, abundance, and feeding ecology of birds associated with pack ice, pp. 330-599. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 1. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents data from two studies. First, pelagic distribution and abundance are mapped for each species observed during surveys of the Beaufort, Chukchi and Bering Seas. Densities are analyzed in relation to distance from land. In the second study, ground surveys were conducted at 12 coastal sites to determine seasonal use of habitats by birds. Tables indicate relative abundance in each habitat for all species recorded. Results of aerial surveys provide linear densities of birds along the coast. Age ratios of Glaucous Gulls are discussed. CMH

Arctic - Beaufort, Chukchi
Bering Sea
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, habitat

121. DIXON, J. 1907. Some experiences of a collector in Alaska. Condor 9:128-135.

The author details his experiences collecting birds in southeastern Alaska during the period May 2 - July 8, 1907. References to species collected appear within daily narrative accounts. REG

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Specimen record, public interest, distribution

122. DIXON, J. 1908. Field notes from Alaska. Condor 10:139-143.

These field notes from a member of the 1908 Alexander Alaska Expedition consist of several anecdotes about birds encountered in Prince William Sound. NMH

Gulf of Alaska - Prince William Sound
Seabirds, other
Horned Puffin, Tufted Puffin
Annotated list

123. DIXON, J.S. 1938. Birds and Mammals of Mt. McKinley Park, Alaska. Nat. Parks Fauna Ser. No. 3. 236 pp.

In the section on birds (pages 25-132), this paper includes a "checklist of 107 species and 5 hypothetical ones. Descriptive and distributional list follows." (From T.J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen). CMH

Interior - Tanana (Mt. McKinley National Park)
Shorebirds, seabirds, waterfowl, other
Checklist, annotated list, distribution

124. DIXON, J.S. 1943. Birds observed between Point Barrow and Herschel Island on the Arctic Coast of Alaska. Condor 45:49-57.

This narration of an Arctic expedition in 1913-1914 includes an annotated list of birds encountered and collected. NMH

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

*125. DRURY, W.H. 1976. Waterfowl and shorebirds of coastal habitats on the south shore of Seward Peninsula, Alaska, pp. 555-596. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports from Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report provides annotated accounts for the 58 species of water-associated birds observed on the south side of the Seward Peninsula during summer 1975. Included is information on occurrence and general habitat use. Management concerns are discussed. CMH

Bering Sea - Norton Sound (Seward Peninsula)
Shorebirds, seabirds, waterfowl
Annotated list, habitat, distribution, subsistence, management, pollution

126. DUFRESNE, F. 1942. Mammals and Birds of Alaska. U.S. Fish and Wildl. Serv., Circ. No. 3. 37 pp.

This contains "short sections headed: migratory birds; duck, geese, other migrants; sea birds; native upland game birds; birds of prey; song birds." (From T.J. Cade, 1953, Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Alaska
Shorebirds, seabirds, waterfowl, other

*127. DWYER, T.J., P. ISLEIB, D.A. DAVENPORT, and J.L. HADDOCK. Undated, ca. 1975. Marine Bird Populations in Prince William Sound, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 21 pp.

Data are presented on the species composition and abundance of marine birds in Prince William Sound. Shoreline and open water habitats were systematically censused from a fishing boat during the March-April and July-August periods of 1972 and 1973. Densities and population estimates are provided for the major species in the sound. Accuracy of the survey and potential impacts to avian populations from oil development are discussed. CMH

Gulf of Alaska - Prince William Sound
Seabirds, waterfowl, other
Abundance, techniques, pollution

128. EINARSEN, A.S. 1922. Alaska notes. Murrelet 3(3):4.

This paper lists "some species noted May 28, 1922, at Ugashik, Alaska Peninsula." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Bering Sea - Bristol Bay (Ugashik)
Distribution

129. ELLIOTT, H.W. 1880. Report on the Seal Islands of Alaska. U.S. Census Office, Washington, D.C. 188 pp.

A chapter is devoted to the birds observed during summers 1872-1876. An annotated list of 40 species, including 33 water birds, provides information on their status, relative abundance, behavior, habitat use, and use by natives for subsistence. CMH

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, subsistence, behavior, habitat

130. ELLIOTT, H.W. 1882. Report on the Seal Islands of Alaska. U.S. Comm. Fish and Fisheries, Spec. Bull. 176, Sect. 9, Monogr. A. 188 pp.

This is primarily a report on the pinnipeds of the Pribilof Islands, but an annotated list of avian species is included. NMH

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list

131. ELLIS, W.W. 1783. A Narrative of a Voyage Performed by Captains Cook and Clarke, of the Resolution and Discovery, in the Years 1776, 7,8,9, and 1780. 2 vols. London.

This narrative contains a "list of birds collected, including many type specimens." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Checklist, specimen record

132. EMISON, W.B., F.S.L. WILLIAMSON, and C.M. WHITE. 1971. Geographical affinities and migrations of the avifauna on Amchitka Island, Alaska. Bio. Sci. 21:627-630.

This paper discusses the geographical areas to which the Amchitka avifauna are most closely allied. REG

Aleutians - (Amchitka Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, migration, distribution, zoogeography

133. EVERMANN, B.W. 1913. Eighteen species of birds new to the Pribilof Islands, including four new to North America. Auk 30:15-18.

The author records 18 species new to the Pribilof Islands, including 11 species of water birds. CMH

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Distribution, annotated list

134. EYERDAM, W.J. 1936. Notes on birds collected or observed during the summer of 1932 in the eastern Aleutian Islands, Alaska. Murrelet 17:48-52.

The author provides dates, locales, and numbers of 43 species of birds collected or observed during the summer of 1932. Included are 30 species of water birds. REG

Aleutians - (Unimak Is., Unalaska Is., Umnak Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, abundance

135. FAY, F.H., and T.J. CADE. 1959. An ecological analysis of the avifauna of St. Lawrence Island, Alaska. Univ. Calif. Publ. Zool. 63:73-150.

This monograph includes sections on: the history of exploration of the island, physiography, climate, vegetation, vertebrate predator-prey relationships, numbers and biomass of birds, faunal associations, and annotated species accounts. Within the latter, 119 species are treated, of which some 80 are water-associated. Several photographs are appended. REG

Bering Sea - St. Lawrence Is.
Shorebirds, seabirds, waterfowl, other
Abundance, annotated list, distribution, habitat, predation

136. FIGGINS, J.D. 1904. Field notes on the birds and mammals of the Cook's Inlet Region of Alaska (Abstract). Proc. Linn. Soc. New York Nos. 15-16:15-39.

This paper "includes a list of 85 species." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Gulf of Alaska - Cook Inlet
Shorebirds, seabirds, waterfowl, other
Checklist

137. FLOCK, W.L. 1974. Radar studies of bird movements in Alaska and the Arctic, pp. 409-420. In S.A. Gouthreaux (ed.), A Conference of the Biological Aspects of the Bird/Aircraft Collision Problem. Clemson Univ., Dept. Zool., Clemson, S. Carolina.

This paper evaluates the capability of radar stations in Alaska and Canada to monitor migration of birds and ultimately reduce the hazard of bird/aircraft collisons. Areas of high concentrations of migrating birds are discussed. CMH

Alaska
Shorebirds, waterfowl
Migration, management, techniques

138. FLOCK, W.L. 1976. Bird migration at Cape Prince of Wales: Radar and visual observations, pp. 276-320. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports from Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes radar and visual observations of spring migration in 1975. Techniques are discussed. A checklist gives the dates of first observation for 39 species. CMH

Bering Sea - Norton Sound (Cape Prince of Wales)
Shorebirds, seabirds, waterfowl, other
Migration, techniques, checklist

139. FLOCK, W.L., and J.D. HUBBARD. 1979. Environmental studies at the Bering Strait, pp. 713-769. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

This report discusses visual and radar observations of birds during spring 1978 at Wales and Tin City, Alaska. Abundance, flock size and frequency, direction of movement, and radar techniques are addressed. An annotated list summarizes information for the 87 species observed. CMH

Bering Sea - Norton Sound (Cape Prince of Wales)
Shorebirds, seabirds, waterfowl, other
Annotated list, migration, techniques, abundance

*140. FORSELL, D.J., and P.J. GOULD. 1980. Distribution and Abundance of Seabirds Wintering in the Kodiak Area of Alaska. Unpublished final report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 83 pp.

This report presents results of aerial and shipboard surveys of coastal and offshore waters of the Kodiak Island archipelago. Annotated accounts are presented for the 58 species of birds observed during the study, which spanned from November 1979 through March 1980. Patterns of distribution are discussed. Data for each species are presented in detailed tables and maps. CMH

Gulf of Alaska - Kodiak
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, abundance, habitat

*141. FRAME, G.W. 1973. Occurrence of birds in the Beaufort Sea, summer 1969. Auk 90:552-563.

This report describes the numbers and distribution of the ten species of birds sighted along a 1,340 statute mile cruise track between August 3 and 15, 1969. The distribution and abundance of each species are mapped and correlated with water depth, distance from land, and ice cover. REG

Arctic - Beaufort
Shorebirds, seabirds
Abundance, distribution, habitat

142. FRIEDMANN, H. 1932. The birds of St. Lawrence Island, Bering Sea. Proc. U.S. Natl. Mus. 80(12):1-31.

This paper documents the avian species encountered and collected during an expedition to St. Lawrence Island in 1930. Included is a description of the habitat and a history of previous expeditions to the island. NMH

Bering Sea - St. Lawrence Is.
Shorebirds, seabirds, waterfowl, other
Annotated list

143. FRIEDMANN, H. 1934. Bird bones from Eskimo ruins on St. Lawrence Island, Bering Sea. J. Wash. Acad. Sci. 24:83-96.

This paper presents a list of 45 species of water-oriented birds found in Eskimo ruins on St. Lawrence Island. Ten species are new to the known avifauna of the island. MRP

Bering Sea - St. Lawrence Is.
Shorebirds, seabirds, waterfowl
Archaeology, distribution

144. FRIEDMANN, H. 1934. Bird bones from old Eskimo ruins in Alaska. J. Wash. Acad. Sci. 24:230-237.

This paper lists the species and the bone fragments found in four archeological sites along coastal Alaska. Twenty-one species of water birds were identified from Amaknak Island, 19 from Kodiak Island, 13 from Cape Denbeigh, and 3 from Kowieruk. MRP

Aleutians - (Amaknak Is.)
Gulf of Alaska - Kodiak (Kodiak Is.)
Bering Sea - Norton Sound (Cape Denbeigh, Imaruk Basin)
Seabirds, waterfowl, other
Archaeology

145. FRIEDMANN, H. 1935. Avian bones from prehistoric ruins on Kodiak Island, Alaska. J. Wash. Acad. Sci. 25:44-51.

This reports "material collected by Hrdlicka in 1934, containing bones of 40 species." (From T.J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Archaeology

146. FRIEDMANN, H. 1935. The birds of Kodiak Island, Alaska. Bull. Chicago Acad. Sci. 5:13-54.

This paper remains the classic work on the birds of Kodiak. Some 140 species, over half of them water birds, are treated in annotated accounts. The species accounts are preceded by an extensive review of the history of ornithological work on Kodiak. REG

Gulf of Alaska - Kodiak (Kodiak Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

147. FRIEDMANN, H. 1937. Bird bones from archaeological sites in Alaska. J. Wash. Acad. Sci. 27:431-438.

This paper presents information from collections of bird bones from archaeological excavations on Kodiak, Little Kiska, Ummak, Atka, and Attu Islands. The species and bones found are listed for each island. MRP

Gulf of Alaska - Kodiak (Kodiak Is.)
Aleutians - (Little Kiska Is., Umnak Is., Atka Is., Attu Is.)
Seabirds, waterfowl, other
Checklist, archaeology

148. FRIEDMANN, H. 1941. Bird bones from Eskimo ruins at Cape Prince of Wales, Alaska. J. Wash. Acad. Sci. 31:404-409.

This paper reports on bird bones found in Eskimo ruins as old as 1,500 years. All but three of the 47 species identified were water birds. MRP

Bering Sea - Norton Sound (Cape Prince of Wales)
Seabirds, waterfowl, other
Archaeology

149. GABRIELSON, I.N. 1940. America's greatest bird concentrations. Bird-Lore 42:497-506.

GABRIELSON, I.N. 1941. America's greatest bird concentrations. Audubon Mag. 43:15-23.

This article, presented in two installments, provides a narrative description of the breeding birds observed at seabird colonies on several National Wildlife Refuges in Alaska. Observations were conducted from the Brown Bear as it sailed along the coast from Juneau as far north as St. Matthew Island, throughout the Aleutians, and eastward to Nunivak Island. MRP

Gulf of Alaska
Aleutians
North Pacific
Bering Sea
Shorebirds, seabirds, waterfowl, other
Public interest, distribution

150. GABRIELSON, I.N. 1943. Wildlife Refuges. MacMillan Company, New York. 257 pp.

This book provides a history and the current status of refuges in North America. Chapters having information pertinent to Alaska include: "Alaska's Great Bird Cities," "Special Refuges," "The Fur-Seal Islands," "Big-Game Refuges," "General Wildlife Refuges," and "Migratory Waterfowl Refuges." MRP

Alaska
Shorebirds, seabirds, waterfowl, other
Public interest

151. GABRIELSON, I.N. 1944. Some Alaskan notes. Auk 61:270-287.

Information is presented in annotated format for 11 seabirds and 84 other species. MRP

Gulf of Alaska
Aleutians
North Pacific
Interior
Bering Sea
Seabirds, other
Annotated list

152. GABRIELSON, I.N., and F.C. LINCOLN. 1959. The Birds of Alaska. Wildlife Management Institute, Washington, D.C. 922 pp.

This book presents published and unpublished information on the distribution, migration, and habits of birds in Alaska. It is the classic reference book for the natural history of Alaska birds. MRP

Alaska
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, migration, annotated list, status, plumage, habitat, behavior, bibliography

153. GAVIN, A. 1970. Ecological Survey of Alaska's North Slope, Summer 1969 and 1970. Atlantic Richfield Co., Anchorage, Alaska. 14 pp.

Summarized in this report for public interest is very general information on composition of species observed during aerial water bird surveys, chronology, production, and habitat use. A briefly annotated list of the 54 species observed, including 40 water birds, is appended. CMH

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Public interest, abundance, reproduction, migration, annotated list

154. GAVIN, A. 1974. Wildlife of the North Slope/A Five Year Study, 1969-1973. Atlantic Richfield Company, Anchorage, Alaska. 63 pp.

In this colorful brochure, the author summarizes general results of studies of waterfowl and other wildlife in relation to oil development on the North Slope. Tables show estimates of waterfowl populations and production. A briefly annotated list provides information on timing of migration, nesting, and abundance for the 67 species of birds recorded on surveys. CMH

Arctic - Beaufort (Prudhoe Bay)
Shorebirds, seabirds, waterfowl, other
Public interest, annotated list, abundance, reproduction, migration

155. GAVIN, A. 1975. Wildlife of the North Slope: The Sixth Year of Study. Atlantic Richfield Company, Anchorage, Alaska. 16 pp.

This pamphlet includes a general summary of the breeding season at Prudhoe Bay in 1974, with estimates of waterfowl populations and production. CMH

Arctic - Beaufort (Prudhoe Bay)
Waterfowl
Public interest, abundance, disturbance

156. GAVIN, A. 1979. Wildife of the North Slope: The Islands Offshore Prudhoe Bay, The Snow Geese of Howe Island, the Seventh Year of Study. Atlantic Richfield Company, Anchorage, Alaska.

This brochure describes briefly the physical characteristics and avian use of each of the barrier islands of the Beaufort Sea. Tables show the number of nests of each species recorded per island from 1970-1975. General observations on Snow Geese nesting on Howe Island are summarized for the same period, and the overall production of ducks and geese near Prudhoe Bay in 1975 is briefly noted. CMH

Arctic - Beaufort (Barrier islands, Prudhoe Bay)
Shorebirds, seabirds, waterfowl, other
Public interest, abundance, reproduction, disturbance, habitat

157. GAVIN, A. 1980. Wildlife of the North Slope; A Ten-Year Study 1969-1978. Atlantic Richfield Company, Anchorage, Alaska.

This colorfully illustrated publication includes a broad summary of trends noted over a 10-year period in populations and production of birds in the vicinity of Prudhoe Bay oilfields. The effects of disturbance are discussed. CMH

Arctic - Beaufort (Prudhoe Bay)
Shorebirds, seabirds, waterfowl, other
Public interest, disturbance, abundance, reproduction

158. GIANINI, C.A. 1917. Some Alaska Peninsula bird notes. Auk 34:394-402.

This paper discusses the occurrence of some 50 species of birds, 27 of them water-associated, seen in the Stepovak Bay area from May 25 to July 17, 1917. REG

North Pacific - (Stepovak Bay)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

159. GIBSON, D.D. 1970. Recent observations at the base of the Alaska Peninsula. Condor 72:242-243.

This note gives annotated accounts for 17 species of birds, 10 of them water-associated forms, recorded at Katmai National Monument in 1968. Many of these represent first records for the area. REG

Gulf of Alaska - Kodiak (Katmai)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

160. GIBSON, D.D. 1976. Bird Species and Habitat Inventory, Alexander Archipelago, Alaska. Unpublished contract report to U.S. Forest Service. Univ. Alaska Mus., Fairbanks. 66 pp.

Not reviewed.

Gulf of Alaska - Southeastern (Alexander Archipelago)
Shorebirds, seabirds, waterfowl, other

161. GIBSON, D.D. 1977. Checklist, Birds of Alaska. University of Alaska Museum, Fairbanks. 2 pp.

This is a checklist of all birds that have been identified in Alaska. The list is updated at irregular intervals. Gibson and his colleague, B. Kessel, maintain close ties with ornithologists within the state and the checklist provides the most complete list of Alaska birds that is available. CJL

Alaska
Shorebirds, seabirds, waterfowl, other
Checklist

162. GIBSON, D.D., and S.O. MACDONALD. 1975. Bird Species and Habitat Inventory of Mainland Southeast Alaska, Summer 1974. Unpublished contract report to U.S. Forest Service. Univ. Alaska Mus., Fairbanks. 73 pp.

In tables and an annotated species list, the authors provide information on the occurrence, relative abundance, breeding status, and habitat use of the birds observed in the six major river drainages of southeastern Alaska. Of the 102 species recorded, 28 are water-associated. CMH

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, distribution, abundance

163. GILHAM, C.E. 1941. Report of Alaska Waterfowl Investigations, Lower Yukon River, Chevak, Hooper Bay. Unpublished report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 148 pp.

This report contains an annotated list of the birds and mammals observed during summer 1941, and includes information on their distribution, abundance, habitat, and breeding status. Most observations concentrated on waterfowl in the vicinity of Chevak and Hooper Bay, and subsistence and management considerations are discussed at length. Of the 64 species of birds noted, 47 are water birds. CMH

Bering Sea - Yukon Delta
Interior - Tanana
Shorebirds, seabirds, waterfowl, other
Annotated list, subsistence, management

164. GILL, R., P.D. JORGENSEN, A.R. DEGANGE, and P. KUST, SR. 1977. Avifaunal assessment of Nelson Lagoon, Port Moller and Herendeen Bay, Alaska, 594-632 pp. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

The avian ecology of this estuarine system is examined. Included is an annotated list of the 107 species of birds observed, including 77 water-associated forms. REG

Bering Sea - Bristol Bay (Nelson Lagoon, Port Moller, Herendeen Bay)
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, habitat, annotated list

165. GLENN, E.F., and W.R. ABERCROMBIE. 1899. Reports of Explorations in the Territory of Alaska (Cooks Inlet, Sushitna, Copper, and Tanana Rivers) 1898. War Dept. No. 25, Govt. Printing Office, Washington, D.C. 462 pp.

Included is a list of 57 species of birds observed in the Copper River Valley, 18 of which are water-associated forms. REG

Gulf of Alaska - Cook Inlet, Copper River
Shorebirds, seabirds, waterfowl, other
Checklist

166. GOLLOP, M.A., and W.J. RICHARDSON. 1974. Inventory and habitat evaluation of bird breeding and moulting areas along the Beaufort Sea coast from Prudhoe Bay, Alaska to Shingle Point, Yukon Territory, July, 1973. Arct. Gas Biol. Rep. Ser. 26:1-61.

This paper presents information on the location of breeding and molting areas along the Beaufort Sea coast and identifies specific habitat features characteristic of these areas. MRP

Arctic - Beaufort
Seabirds, waterfowl
Whistling Swan, Brant, Oldsquaw, Common Eider, Surf Scoter, Glaucous Gull, Arctic Tern
Abundance, distribution, habitat

167. GORDON, R.J. 1968. 1967 Summer resident birds in the Juneau, Alaska area. Bull. Alaska Ornithol. Soc. 6:3-5. (Mimeo)

Not reviewed.

Gulf of Alaska - Southeastern (Juneau)

*168. GOULD, P.J. 1977. Shipboard surveys of marine birds, pp. 193-284. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents a preliminary analysis of observations of birds during 43 shipboard cruises in Alaska waters in 1976 and 1977. Relative abundance is summarized for each species by region and month. Distribution and abundance are mapped by month for all species combined. Seasonal mean densities are compared for offshore regions. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Distribution, abundance

169. GRINNELL, J.G. 1898. Summer birds of Sitka, Alaska. Auk 15:122-131.

This paper provides brief annotated accounts for 66 species of birds observed in the region about Sitka between June 8 and August 24, 1896. Included are 32 species of water birds. REG

Gulf of Alaska - Southeastern (Sitka)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

170. GRINNELL, J. 1900. Birds of the Kotzebue Sound Region, Alaska. Pac. Coast Avifauna 1. 81 pp.

This paper reports observations and collections of birds and eggs from the Kotzebue Sound area during 1898 and 1899. MRP

Arctic - Kotzebue Sound
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, specimen record

171. GRINNELL, J. 1900. Notes on some birds of Cape Nome, Alaska. Condor 2:112-115.

This account lists the species observed in fall 1899 in the Nome vicinity, and provides general observations on relative abundance and habitat use. Fifteen of the 32 species are marine-associated. CMH

Bering Sea - Norton Sound (Cape Nome)
Shorebirds, seabirds, waterfowl, other
Annotated list

172. GRINNELL, J. 1901. Record of Alaskan birds in the collection of the Leland Stanford Junior University. Condor 3:19-23.

Avian specimens from Alaska in the collection of Stanford University are listed according to site of origin: Pribilof Islands, Amagnak Island, Belkovsky Bay, Unga Island, Kodiak Island, and Prince William Sound. NMH

Bering Sea - Pribilof Is.
North Pacific (Belkovsky Bay, Unga Is.)
Aleutians - (Amaknak Is.)
Gulf of Alaska - Kodiak, Prince William Sound
Shorebirds, seabirds, waterfowl, other
Specimen record

173. GRINNELL, J. 1910. Birds of the 1908 Alexander Alaska Expedition with a note on the avifauna relationships of the Prince William Sound district. Univ. Calif. Publ. Zool. 5(12):361-428.

This report consists of an annotated list of birds encountered and collected in Prince William Sound, together with notes on species composition and origin. There is a short discussion on the selection for melanism in species endemic to this humid region. NMH

Gulf of Alaska - Prince William Sound
Shorebirds, seabirds, waterfowl, other
Annotated list, zoogeography, plumage

174. GRINNELL, J.G. 1910. Miscellaneous records from Alaska. Condor 12:41-43.

This note enumerates specimen records of 35 species of birds collected at various locations in Alaska between 1894 and 1901. Only three species, totaling 12 individuals, are marine-associated. REG

Alaska
Shorebirds, other
Hudsonian Godwit, Bar-tailed Godwit, Greater Yellowlegs
Distribution, specimen record

175. GRINNELL, J., F. STEPHENS, J. DIXON, and E. HELLER. 1909. Birds and mammals of the 1907 Alexander Expedition to southeastern Alaska. Univ. Calif. Publ. Zool 5:171-264.

This report presents information on the habitats of the various localities visited by the expedition, and presents detailed annotated accounts of birds and mammals observed. Of the 104 taxa of birds recorded, 54 are water-oriented forms. MRP

Gulf of Alaska - Southeastern (Sitkan district)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record, habitat

176. GRISCOM, L. 1923. Description of apparently new birds from North America and the West Indies. Am. Mus. Novit. 71:1-8.

Not reviewed.

Alaska
Specimen record

177. GROMME, O.J. 1927. Some highlights on the faunal life of the Alaskan Peninsula. Milwaukee Publ. Mus. Yearbook 7:30-45.

This popular article provides very interesting reading, with much of the information supported by photographs. The author details his experience of camping and hunting in the vicinity of Port Moller, Nelson Lagoon, and Mt. Pavlof in 1927, and discusses many aspects of the avifauna of these areas. REG

Bering Sea - Bristol Bay (Nelson Lagoon, Port Moller, Mt. Pavlof)
Shorebirds, seabirds, waterfowl, other
Public interest, distribution

178. HADDOCK, J.L., and C.D. EVANS. 1975. Spring Bird Populations on Alaska's Arctic Slope. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 44 pp.

This report presents information on the number and distribution of birds using wetlands on the Arctic Slope, and discusses the relationships between birds and habitat. The use of aerial surveys to determine abundance of birds is discussed and recommendations are given for protecting bird populations. MRP

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, techniques, management, habitat

179. HALKETT, A. 1898. An Ottawa naturalist's journey westward. III. The Aleutian Islands and Behring Sea. Ottawa Nat. 12:81-85.

This brief narrative account describes the birds, mammals, and invertebrates seen by the author in the Aleutian Islands and Bering Sea. Observations of water birds include Canada Geese, Aleutian Terns, Fork-tailed Storm-Petrels, murres, and Tufted Puffins. MRP

Aleutians - (Unalaska Is.)
Bering Sea
Seabirds, waterfowl, other
Fork-tailed Storm-Petrel, Canada Goose, Aleutian Tern, Tufted Puffin
Public interest

180. HALL, G.E. 1971. A Summary of Observations of Birds at Oliktok Point - Summer 1971. Unpublished report. Univ. Alaska, Inst. Marine Sci., College, Alaska. 31 pp.

The author provides an annotated list of birds observed on the Colville River Delta during summer 1971. REG

Arctic - Beaufort (Colville R.)
Shorebirds, seabirds, waterfowl, other
Annotated list

181. HANNA, G.D. 1916. Records of birds new to the Pribilof Islands, including two new to North America. Auk 33:400-403.

Annotated accounts of 13 species new to either North America or the Pribilof Islands are presented. Seven of these are water-associated forms. REG

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

182. HANNA, G.D. 1917. The summer birds of the St. Matthew Island Bird Reservation. Auk 34:403-410.

This paper gives an annotated list of 36 species of birds observed on the refuge from July 8 to 14, 1916. Included are notes by A.K. Fisher recording his visit to the islands from July 14 to 15, 1899, as a member of the Harriman Expedition. MRP

Bering Sea - St. Matthew Is., Hall Is., Pinnacle Is.
Shorebirds, seabirds, waterfowl, other
Annotated list

183. HANNA, G.D. 1919. Additions to the avifauna of the Pribilof Islands, Alaska, including species new to North America. J. Wash. Acad. Sci. 9:176-177.

This is a summary of a paper presented at the 590th meeting of the Biological Society of Washington. The author presented accounts of 21 species, including 13 water-associated forms, new to North America or the Pribilof Islands. REG

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

184. HANNA, G.D. 1919. Birds, pp. 105-107. In W.T. Bower. Alaska Fisheries and Fur Industries in 1918. Bur. Fish. Doc. 872. Govt. Print. Off., Washington, D.C.

Hanna provides a checklist of the 129 species of birds recorded from the Pribilof Islands, and names the persons first recording each species there. He also indicates the species which breed regularly or are regular migrants. Eighty-seven of the species are water-related. CMH

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Checklist, specimen record

185. HANNA, G.D. 1920. Additions to the avifauna of the Pribilof Islands, Alaska, including four species new to North America. Auk 37:248-254.

Presented are annotated accounts of 21 species new to either North America or the Pribilof Islands. REG

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Short-tailed Shearwater, Snow Goose, Falcated Teal, Canvasback, Common Goldeneye, Spectacled Eider, White-winged Scoter, Bristle-thighed Curlew, Polynesian Tattler, Marbled Murrelet
Specimen record, distribution

186. HANNA, G.D. 1920. New and interesting records of Pribilof Island birds. Condor 22:173-175.

The author details accounts of three species new to the islands, including a European Jacksnipe and Long-billed Dowitcher. He also offers notes on six other species and presents a table of breeding species for each of the five main islands and rocks comprising the Pribilof group. REG

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list

187. HARRIS, S.W. 1966. Summer birds of the Lower Kashunuk River, Yukon-Kuskokwim Delta, Alaska. Murrelet 47:57-65.

Annotated accounts of 58 species are presented, including 44 marine forms. Observations were gathered during the summers of 1962 and 1963 and came mostly from areas of wet lowland tundra and coastal salt meadows. REG

Bering Sea - Yukon Delta (Kashunuk R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, abundance

*188. HARRISON, C.S. 1977. Aerial surveys of marine birds, pp. 285-593. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report analyzes results of aerial surveys over Alaska offshore waters between January and October 1976. Summaries of census data, by species, month, and oceanographic region, are presented in 34 tables. Monthly distribution and abundance data are mapped by species for the Beaufort, Chukchi, and Bering Seas in 171 figures. For the Gulf of Alaska, data are mapped by month for all species combined. Observations are briefly discussed. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Abundance, distribution

189. HARRISON, C.S., and S.A. HATCH. 1975. Field Observations on Unimak Island, Alaska, 11 to 25 August 1975. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 19 pp.

This report presents information from a reconnaissance of Unimak Island in 1975. Included are a description of seabird breeding areas and a checklist of 40 species, including 28 water-associated forms. MRP

Aleutians - (Unimak Is.)
Shorebirds, seabirds, waterfowl, other
Techniques, checklist, distribution

190. HARTING, J.E. 1871. Catalogue of an Arctic collection of birds presented by Mr. J. Barrow, F.R.S. to the University Museum of Oxford: With notes on the species. Proc. Zool. Soc. London 39:110-123.

This is a list of specimens collected from 1848 to 1855 by several British naval officers in northern North America. Forty-eight species, including 5 species of shorebirds, 14 species of seabirds, and 7 species of waterfowl, are listed. MRP

Alaska
Shorebirds, seabirds, waterfowl, other
Specimen record

191. HARTLAUB, G. 1883. Beitrag zur Ornithologie von Alaska. Nach den Sammlungen und Noten bon Dr. Arthur Krause and Dr. Aurel Krause. Journ. fur Ornith. 31:257-286.

This paper records an account of a collection of birds from the Chilkat district in 1882, and includes notes on 83 species and on the general character of the region. (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Gulf of Alaska - Southeastern (Chilkat)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

192. HASSELBORG, A.E. 1918. Bird notes from Admiralty Island, southeastern Alaska. Condor 20:191.

This short note records an abundance of owls during the harsh winter of 1917 and mentions predation by owls, eagles, and mammals on various birds. CMH

Gulf of Alaska - Southeastern (Admiralty Is.)
Seabirds, waterfowl, other
Abundance, predation

193. HEATH, H. 1915. Birds observed on Forrester Island, Alaska, during the summer of 1913. Condor 17:20-41.

This paper provides a detailed account of the 36 species observed one summer in the Forrester group of islands. Information on breeding status, food habits, nesting chronology and habitat, and relative abundance is presented. Fourteen of the species recorded are water birds. CMH

Gulf of Alaska - Southeastern (Forrester Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, food, reproduction

194. HEINZ, F.A., and M.D. KOOB. 1977. Investigations of Arctic Coastal Plain Avifauna. 1977 Storkersen Point Final Report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 43 pp.

This report provides information on the abundance and distribution of birds; aquatic macroinvertebrates on control and experimentally oiled ponds; vegetation types on plots used for aerial photo interpretation; and movements and activities of large mammals. MRP

Arctic - Beaufort (Storkersen Pt.)
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, habitat, migration, pollution

195. HEMMING, J.E. 1966. Notes on the status of some birds in south-central Alaska. Condor 68:163-166.

The author reports new records of occurrence or breeding for six species of birds, of which four are water birds. CMH

Gulf of Alaska - Cook Inlet
Shorebirds, waterfowl, other
European Wigeon, Canvasback, Hudsonian Godwit, Long-billed Dowitcher
Distribution, abundance

196. HERSEY, F.S. 1916. A list of the birds observed in Alaska and northeastern Siberia during the summer of 1914. Smithson. Misc. Coll. 66:1-33.

This paper presents an annotated list of birds observed during the summer of 1914 along the Alaska coast. Pelagic observations were conducted from the Revenue Cutter Bean from May 12 to June 5 and during July and August. Ground surveys in the vicinity of Kotlik were conducted in June. MRP

Alaska
Bering Sea - Yukon Delta (Kotlik)
Shorebirds, seabirds, waterfowl, other
Annotated list

197. HERSEY, F.S. 1917. The present abundance of birds in the vicinity of Fort St. Michael, Alaska. Auk 34:147-159.

This account summarizes the status of the avian populations in the vicinity of St. Michael in 1915. Information on relative seasonal abundance, reproductive chronology and success, and habitat use is reported. Forty-seven of the 67 species discussed are water birds. CMH

Bering Sea - Norton Sound (St. Michael)
Shorebirds, seabirds, waterfowl, other
Annotated list, reproduction, status, habitat

198. HINCKLEY, F.C. 1900. Notes on the animal and vegetable life of the region of the Sushitna and Kuskokwim Rivers, pp. 76-85. In J. E. Spurr, A reconnaissance in southwestern Alaska in 1898. U.S. Geol. Surv., 20th Ann. Rep., Part 7-B:31-264.

The author presents annotated accounts of 73 species, including 15 species of water birds. Preceding these is a section giving a narrative account of the birds, plants, and mammals of each region visited. REG

Bering Sea - Yukon Delta
Gulf of Alaska - Cook Inlet
Interior - Upper Kuskokwim
Shorebirds, seabirds, waterfowl, other
Annotated list

199. HINE, J.S. 1919. Scientific results of the Katmai Expedition of the national Geographic Society. X. Birds of the Region. Ohio J. Sci. 19:475-486.

The author presents annotated accounts of avian species collected in the Katmai area. Included are 7 species of seabirds, 5 species of waterfowl, 9 species of shorebirds, and 16 species of landbirds. MRP

Gulf of Alaska - Kodiak (Katmai district)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

200. HINES, J.Q. 1963. Birds of the Noatak River, Alaska. Condor 65:410-425.

This paper provides an annotated list of the species of birds recorded during the summers of 1960 and 1961, as well as those reported historically along the Kelly and Noatak Rivers. The major vegetation types and principal avian habitats are described. Of the 83 species addressed, 35 are water birds. CMH

Arctic - Kotzebue Sound (Noatak R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

*201. HOGAN, M.E., and W.A. COLGATE. 1980. Birds of Coastal Habitats in Port Valdez and Valdez Arm, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 58 pp.

This report presents data on the use of coastal and marine habitats by birds in Port Valdez and Valdez Arm in summer and winter. Results of systematic censuses conducted over various habitats are discussed. Information on reproductive phenology and success is presented for Glaucous-winged Gulls, Black-legged Kittiwakes, and Arctic Terns. Observations of waterfowl broods are tabulated and discussed. Recommendations are made for protecting critical habitats in the area from possible impacts of oil development. CMH

Gulf of Alaska - Prince William Sound (Port Valdez, Valdez Arm)
Shorebirds, seabirds, waterfowl, other
Checklist, habitat, abundance, pollution, reproduction

202. HOLMES, R.T., and C.P. BLACK. 1973. Ecological distribution of birds in the Kolomak River-Askinuk Mountain Region, Yukon-Kuskokwim Delta, Alaska. Condor 75:150-163.

This paper presents an analysis of the occurrence and ecological distribution of 88 species of birds inhabiting a 75 km^2 study area on the Yukon-Kuskokwim Delta. REG

Bering Sea - Yukon Delta (Kolomak R.)
Shorebirds, seabirds, waterfowl, other
Distribution, annotated list, habitat

203. HORRING, R. 1937. Report of the Fifth Thule Expedition, 1921-24, Zoology, II, Birds. The Danish Expedition to Arctic North America in Charge of Knud Rasmussen, Gyldendalske Boghandel, Nordisk Forlag Copenhagen, pp. 4, 74, 90, 93-96.

This paper "mentions small collection of birds from Sledge Island." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Bering Sea - Norton Sound (Sledge Is.)
Specimen record

204. HOWELL, J.C. 1948. Observations on certain birds of the region of Kodiak, Alaska. Auk 65:352-358.

This paper reports observations of 47 species, including 21 marine forms, seen between April 22 and July 9, 1944. REG

Gulf of Alaska - Kodiak (Kodiak Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

205. HUDSON, G.E. 1957. Birds observed in the Kotzebue Sound area of Alaska during the summer of 1956. Murrelet 38:26-29.

This annotated list provides information on the relative abundance and habitat use of the 70 species observed during the summer of 1956 in the Kotzebue area. Forty of the species are water birds. CMH

Arctic - Kotzebue Sound
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

206. HURLEY, J.B. 1931. Birds observed in the Bristol Bay region, Alaska (Parts 1-3). Murrelet 12:7-11, 35-42, 71-75.

HURLEY, J.B. 1932. Birds observed in the Bristol Bay region, Alaska (Parts 4-5). Murrelet 13:16-21, 38-40.

This is a five-part paper reporting bird observations from upper Bristol Bay between late May and late June 1930. Forty-six species are treated, including 34 marine forms. REG

Bering Sea - Bristol Bay
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, habitat

207. IRVING, L. 1953. The naming of birds by Nunamiut Eskimo. Arctic 6:35-43.

The author found that Eskimos had names for 89 of the 103 species of birds known from the Anaktuvuk Pass area. These names and their literal translations are provided. REG

Interior - Koyukuk (Anaktuvuk Pass)
Shorebirds, seabirds, waterfowl, other
Public interest

208. IRVING, L. 1953. On the various directions of bird migrations through Arctic Alaska. Proc. Alaska Sci. Conf. 4:178-179.

This is a short, general summary of the migration routes traversed by birds nesting in interior Arctic Alaska. CMH

Arctic
Shorebirds, seabirds, waterfowl, other
Migration

209. IRVING, L. 1960. Birds of Anaktuvuk Pass, Kobuk, and Old Crow: A Study in Arctic Adaptation. U.S. Natl. Mus. Bull. 217. 409 pp.

This comprehensive treatise of over 400 pages is based on field work from 1947-1959 at Kobuk and Anaktuvuk Pass, Alaska, and Old Crow, Yukon Territory, Canada. Extensive annotated species accounts are presented for each area with some 60, 125, and 100 species discussed for the respective areas. For most species, pertinent specimen data are included. In addition, major sections on status and distribution, migration, residence in the Arctic, and "Arctic metabolic economy" are included. REG

Interior - Koyukuk (Anaktuvuk)
Arctic - Kotzebue Sound (Kobuk)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, status, migration, reproduction, physiology, abundance, specimen record, anatomy

210. IRVING, L. 1972. Arctic Life of Birds and Mammals. Springer-Verlog, New York. 192 pp.

This book discusses the Arctic environment and how birds and mammals have adapted to its rigors. MRP

Arctic
Shorebirds, seabirds, waterfowl, other
Migration, distribution, physiology, habitat

211. IRVING, L., and J. KROG. 1954. Body temperatures of Arctic and subarctic birds and mammals. J. App. Physiol. 6:667-680.

Not reviewed.

Physiology

*212. IRVING, L., C.P. MCROY, and J.J. BURNS. 1970. Birds observed during a cruise in the ice-covered Bering Sea in March 1968. Condor 72:110-112.

Annotated accounts are presented for 12 species; brief comments on their distribution and foraging in relation to the ice margin are included. REG

Bering Sea
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, habitat

213. IRVING, L., and S. PANEAK. 1954. Biological reconnaissance along the Ahlasuruk River east of Howard Pass, Brooks Range, Alaska, with notes on the avifauna. J. Wash. Acad. Sci. 44:201-211.

The authors describe the area and present an annotated list of birds seen between 1943 and 1953. Forty-seven species are reported, of which 22 are water-associated. MRP

Arctic - Beaufort
Interior - Koyukuk
Shorebirds, seabirds, waterfowl, other
Annotated list

214. ISLEIB, M.E. 1973. Birds of the Chugach National Forest Alaska: A Checklist. National Forest Leaflet. U.S. Forest Service, Cordova Alaska. 14 pp.

This checklist presents the status, relative abundance, and distribution of 214 species of birds within the Chugach National Forest and its contiguous coastal and offshore waters. REG

Gulf of Alaska - Prince William Sound (Chugach National Forest)
Shorebirds, seabirds, waterfowl, other
Checklist

*215. ISLEIB, M.E., and T. EBERHARDT. 1975. Marine Bird Shipboard Survey in the Gulf of Alaska and along Ocean Route from Seattle, 27 January to 4 March 1975. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 24 pp.

This report presents census techniques and results from a cruise in the northeastern Gulf of Alaska. Primary groups of species observed include loons, gulls, alcids, fulmars, storm-petrels, cormorants, and scoters. MRP

Gulf of Alaska
Seabirds, waterfowl, other
Annotated list, abundance, distribution

216. ISLEIB, M.E., and B. KESSEL. 1973. Birds of the North Gulf Coast - Prince William Sound Region, Alaska. Biol. Pap. Univ. Alaska 14. 149 pp.

The authors present detailed information on the region, its avian habitats, and habitat use by birds. In addition, they provide annotated accounts for over 200 species. REG

Gulf of Alaska - Prince William Sound, Copper River, Northern Gulf
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

217. JACKSON, H.H.T., E.M. CHARTERS, and A.J. DUVALL. 1949. Literature on the Natural History of the Arctic Region with Special Reference to Alaska and Canada. Wildlife Leaflet 317. U.S. Fish and Wildl. Serv., Washington, D.C. 48 pp.

This bibliography lists 375 selected entries judged to be the more important publications on the subject. Most relate to vertebrates of the Arctic. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Bibliography

218. JACOT, F.H. 1962. A partial checklist and notes on birds of Glacier Bay National Monument, Alaska. U.S. Dept. Int., Nat. Park Serv. 57 pp. (Mimeo)

Not reviewed.

Gulf of Alaska - Southeastern (Glacier Bay)
Shorebirds, seabirds, waterfowl, other
Checklist

*219. JAQUES, F.L. 1930. Water birds observed on the Arctic Ocean and the Bering Sea in 1928. Auk 47:353-366.

This paper presents an annotated list of 76 species of birds observed during the Stoll-McCracken Expedition to the Arctic Ocean from May 4 to October 9, 1928. MRP

Gulf of Alaska
North Pacific
Arctic - Chukchi
Aleutians
Bering Sea - Bristol Bay, Norton Sound
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

220. JEWETT, S.G. 1942. Bird notes from southeastern Alaska. Murrelet 23:67-75.

The species of birds encountered and collected on a visit to southeastern Alaska from June 20 to July 25, 1941 are listed. Some 80 species are treated in an annotated format, including 37 water-associated forms. REG

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

221. JOHANSEN, H.C. 1960. The formation of the Arctic avifauna. Proc. Ornithol. Congr. 12:358-362.

Not reviewed.

Arctic

222. JOHANSEN, H. 1969. Nordamerikanische zugvogel inder sudhalfte Sudamerikes. Bonner Zool. Beitr. 20(1/3):182-190.

Not reviewed.

Alaska

223. JOHNSON, S.R. 1976. Spring movements and abundance of birds at Northeast Cape, St. Lawrence Island, Bering Sea, Alaska. Syesis 9:31-44.

This paper describes spring movements and numbers of birds seen near Northwest Cape, St. Lawrence Island from May 20 to June 7, 1973. Forty-nine species observed were water birds. MRP

Bering Sea - St. Lawrence Is.
Shorebirds, seabirds, waterfowl, other
Migration, distribution, annotated list

224. JOHNSON, S.R. 1977. Avian ecology in Simpson Lagoon, Beaufort Sea, Alaska, pp. 1-111. In Beaufort Sea Barrier Island-Lagoon Ecological Process Studies. Annual report. NOAA, Environ. Res. Lab., Boulder, Colo.

This report provides information from an intensive study of bird use of Simpson Lagoon and adjacent areas, and addresses migration, feeding, and molting for several groups of birds. MRP

Arctic - Beaufort (Simpson Lagoon)
Shorebirds, seabirds, waterfowl, other
Migration, reproduction, habitat, disturbance, abundance, distribution, food, plumage

*225. JOHNSON, S.R. 1978. Beaufort Sea barrier island - lagoon ecological process studies. Section 2. Avian ecology in Simpson Lagoon, 1977, pp. 467-586. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 7. NOAA, Environ. Res. Lab., Boulder, Colo.

This report addresses the migration, breeding, feeding, and staging/molting of birds at Simpson Lagoon in summer 1977. Tables summarize information on spring and fall migration for the 60 species of birds observed. Nesting densities and reproductive success are summarized for the 13 species breeding in the area. More detailed information on molt, staging, and feeding is presented for Oldsquaws, gulls, terns, and phalaropes. Possible effects of disturbance are briefly discussed. CMH

Arctic - Beaufort (Simpson Lagoon)
Shorebirds, seabirds, waterfowl, other
Migration, reproduction, abundance, anatomy, plumage, habitat, food, disturbance, checklist

*226. JOHNSON, S.R. 1979. Beaufort Sea barrier island - lagoon ecological process studies. Section 1. Avian ecology in Simpson Lagoon, Beaufort Sea, Alaska, pp. 238-362. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 6. NOAA, Environ. Res. Lab., Boulder, Colo.

This report compares information gathered in 1977 and 1978 to assess the importance to birds of barrier island/lagoon systems. Timing of migration is summarized for 63 species, and nesting densities are presented. The majority of the report addresses habitat use by molting Oldsquaws, and premigratory staging of shorebirds, gulls, and terns. Results of feeding studies are presented for Oldsquaws, phalaropes, and Glaucous Gulls. CMH

Arctic - Beaufort (Simpson Lagoon)
Shorebirds, seabirds, waterfowl, other
Migration, habitat, abundance, reproduction, food, plumage, physiology

227. JOHNSON, S.R., W.J. ADAMS, and M.R. MORRELL. 1975. Birds of the Beaufort Sea: I. A Literature Review. II. Spring Migration Observed during 1975. Unpublished report. Canadian Wildlife Service, Prairie and Northern Region, Edmonton.

Not reviewed.

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Bibliography, migration

228. JONES, E.H. 1929. Some nesting records from Alaska. Murrelet 10:55-57.

This paper gives "a list of 8 species noted from Eagle City to a hundred miles north." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Interior - Upper Yukon (Eagle)
Distribution

229. JONES, R.D., JR., and M. KIRCHHOFF. 1977. Waterfowl habitat on the Yukon Delta, pp. 419-446. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

The authors describe the fauna, physical characteristics, and vegetation of the Yukon Delta, and assess its value as avian habitat. Included are lists of birds and plants encountered during a reconnaissance in summer 1976. NMH

Bering Sea - Yukon Delta
Shorebirds, seabirds, waterfowl, other
Habitat, annotated list

*230. JONES, R.D., JR., and M.R. PETERSEN. 1979. The pelagic birds of Tuxedni Wilderness, Alaska, pp. 187-232. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Aspects of reproductive ecology are discussed for four species, particularly Black-legged Kittiwakes and Horned Puffins. Food, predation, disturbance, and ectoparasites are assessed as factors influencing production. An annotated list summarizes observations of the 119 species recorded on the islands in 1970, 1971, and 1978. CMH

Gulf of Alaska - Cook Inlet (Tuxedni Wilderness)
Shorebirds, seabirds, waterfowl, other
Annotated list

231. KEELER, C. 1902. Days among Alaska birds, pp. 205-234. In C. H. Merriam (ed.), Harriman Alaska Expedition, Vol. 2. Doubleday, Page and Co., New York. (Reprinted 1972, Klaus Reprint Co., New York.)

The author provides a general but interesting description of some of the birds encountered during the expedition. CMH

Aleutians
Bering Sea
Gulf of Alaska
Shorebirds, seabirds, waterfowl, other
Public interest

232. KENYON, K.W. 1961. Birds of Amchitka Island, Alaska. Auk 78:305-326.

This paper presents an annotated list of 70 species, including 43 water-associated forms, observed at Amchitka Island from 1955 to 1959. A detailed description of the island and a brief history of recent human impacts are included. MRP

Aleutians - (Amchitka Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, disturbance

233. KENYON, K.W. 1964. Wildlife and historical notes on Simeonof Island, Alaska. Murrelet 45:1-8.

This paper gives a brief history of Simeonof Island, and provides an annotated list of species observed there in 1955 and 1960. MRP

North Pacific - (Simeonof Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

234. KENYON, K.W., and J.W. BROOKS. 1960. Birds of Little Diomede Island, Alaska. Condor 62:457-463.

This paper details observations collected in spring 1953 and 1958. Annotated accounts are presented for 40 species, including 26 marine forms. Arrival dates of several species and estimated sizes of breeding populations of seabirds and two passerine species are given. REG

Bering Sea - Little Diomede Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, migration, behavior, specimen record, habitat

235. KENYON, K.W., and J.G. KING, JR. 1965. Aerial Survey of Sea Otters and other Marine Mammals, Alaska Peninsula and Aleutian Islands, and Bird Observations, Aleutian Islands Survey, April-May 1965. Unpublished report. U.S. Fish and Wildl. Serv., Sand Point Naval Air Station, Seattle, Wa. 61 pp.

Included in this report is an annotated list of the species of birds observed. A table lists, by island, the numbers of Bald Eagles, Common Eiders, and Emperor Geese seen, plus other significant sightings. CMH

Aleutians
Seabirds, waterfowl, other
Annotated list, distribution, abundance

*236. KENYON, K.W., and R.E. PHILLIPS. 1965. Birds from the Pribilof Islands and vicinity. Auk 82:624-635.

This paper annotates observations of 34 species recorded between 1947 and 1954. Included are one new record for North America, 9 first records for the Pribilofs, and records of 12 other species rarely seen on the islands. More detailed information is presented on the status of populations of Glaucous-winged Gulls, Red-legged and Black-legged Kittiwakes, and Common Murres. Nesting chronology, abundance, and behavior are compared for the two kittiwakes. A few notes from the Aleutians are included. CMH

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, specimen record

237. KERTELL, K. 1978. Birds of Mt. McKinley National Park, Alaska. 7 pp. (Mimeo)

The author has compiled a checklist of 152 species of birds of Mt. McKinley National Park, with seasonal status, relative abundance, and habitat distribution presented for each. REG

Interior - Tanana (Mt. McKinley National Park)
Shorebirds, seabirds, waterfowl, other
Checklist

238. KESSEL, B. 1953. Patterns of bird and mammal distribution in Alaska. Proc. Alaska Sci. Conf. 4:190-197.

Migration pathways and dispersal routes are discussed in general for birds and mammals in Alaska, and routes are postulated for species occurring seasonally in the Colville River area. NMH

Arctic - Beaufort (Colville R.)
Shorebirds, seabirds, waterfowl, other
Distribution, migration, zoogeography

239. KESSEL, B. 1960. Additional distribution records of some birds in interior Alaska. Condor 62:481-483.

This paper provides additional distribution records for 10 species, including five species of water birds. CMH

Gulf of Alaska - Copper River (Wrangell Mts.)
Interior - Tanana, Upper Yukon, Innoko
Shorebirds, waterfowl, other
Redhead, Ring-necked Duck, Killdeer, Hudsonian Godwit, Surfbird
Distribution, habitat, annotated list

240. KESSEL, B. 1963. West-east relationships of the birds of northern Alaska, pp. 79-84. In J.L. Gressitt (ed.), Pacific Basin Biogeography, a Symposium. Tenth Pacific Sci. Congr., Honolulu, Hawaii, 1961. Bishop Mus. Press, Honolulu. 563 pp.

This paper discusses the avifauna of northern Alaska in relation to the Bering Arc and the refugia hypothesized to exist during the past glacial periods. The 89 species which regularly occur in this region are grouped according to their east-west distribution and faunal affinities. The interchange with northeastern Siberia and eastern North America is examined. CMH

Arctic - Beaufort, Chukchi
Shorebirds, seabirds, waterfowl, other
Zoogeography

241. KESSEL, B. 1964. Field Checklist: Birds of Interior Alaska. Univ. Alaska, Fairbanks. 2 pp.

This is a checklist of 178 species known to occur within a 200-mile radius of Fairbanks. REG

Interior - Tanana (Fairbanks)
Shorebirds, seabirds, waterfowl, other
Checklist

242. KESSEL, B. 1968. Checklist of the Birds of the Seward Peninsula, Alaska. Univ. Alaska, Fairbanks. 1 p. (Mimeo)

The author has compiled a checklist of 167 species known from the Seward Peninsula. REG

Arctic - Chukchi, Kotzebue Sound
Shorebirds, seabirds, waterfowl, other
Checklist

243. KESSEL, B. 1979. Avian habitat classification for Alaska. Murrelet 60:86-94.

This paper recognizes and describes 29 basic habitats in Alaska used by birds. For each terrestrial habitat the dominant vegetative forms are given as well as the characteristic birds. Descriptions of marine habitats are based primarily on distance from shore and on water depth. Several characteristic birds are also given for these habitats. REG

Alaska
Shorebirds, seabirds, waterfowl, other
Habitat

244. KESSEL, B., and T.J. CADE. 1953. Habitat preferences of the birds of the Colville River. Proc. Alaska Sci. Conf. 4:179-181. (Abstract)

Avian-habitat associations along the Colville River are classified and discussed. NMH

Arctic - Beaufort (Colville R.)
Shorebirds, seabirds, waterfowl, other
Habitat

245. KESSEL, B., and T.J. CADE. 1958. Birds of the Colville River, Northern Alaska. Biol. Pap. Univ. Alaska 2. 83 pp.

Annotated species accounts of birds observed and collected on the Colville River over several seasons in the 1950's are presented. Avian habitats throughout the region are described, and apparent avian affinities for specific habitats are tabulated. NMH

Arctic - Beaufort (Colville R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, distribution, specimen record

246. KESSEL, B, and D.D. GIBSON. 1978. Status and Distribution of Alaska Birds. Stud. Avian Biol. 1. 100 pp.

The authors provide a major and much needed update of the status and distribution of Alaska birds. Some 200 species, for which substantial new information is available since the publication of Gabrielson's and Lincoln's work in 1959 ("Birds of Alaska"), are treated in detailed annotated accounts. Included are 75 species new to Alaska, of which 30 are new to North America. REG

Alaska
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, checklist, status, taxonomy

247. KESSEL, B., and G.B. SCHALLER. 1960. Birds of the Upper Sheenjek Valley, Northeastern Alaska. Biol. Pap. Univ. Alaska 4. 58 pp.

This paper describes habitats and provides an annotated species list of birds in the upper Sheenjek Valley, Brooks Range. MRP

Interior - Upper Yukon (Sheenjek R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

248. KESSEL, B., and H.K. SPRINGER. 1966. Recent data on status of some interior Alaska birds. Condor 68:185-195.

This annotated list provides an update on the status of 36 of the less common species recorded in interior Alaska. Major factors considered in analyzing the distribution records are a severe drought in the Canadian prairie provinces and a very late spring in Alaska. Of the species addressed, 24 are associated with water habitats. CMH

Interior - Tanana, Upper Yukon, Koyukuk
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, abundance, status

249. KESSEL, B., H.K. SPRINGER, and C.M. WHITE. 1964. June birds of the Kolomak River, Yukon-Kuskokwim Delta, Alaska. Murrelet 45:37-47.

This paper presents annotated accounts for some 80 taxa of birds observed and/or collected between June 7 and 25, 1963. Among them are 43 species of water birds. Observations from previous studies are compared and contrasted. REG

Bering Sea - Yukon Delta (Hooper Bay, Kolomak R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

250. KESSEL, B., R.B. WEEDEN, and G.C. WEST. 1967. Bird-finding in Interior and Southcentral Alaska. Alaska Ornithol. Soc., Fairbanks, Alaska. 42 pp. (Mimeo)

The authors present, by specific area and habitat, the birds most likely to be seen in each region. Addressed in an addendum are the birds likely to be seen in the Juneau, Barrow, Nome, and Kotzebue areas. JCG

Arctic - Chukchi (Barrow), Kotzebue Sound (Kotzebue)
Bering Sea - Norton Sound
Interior
Gulf of Alaska
Shorebirds, seabirds, waterfowl, other
Checklist, habitat, abundance

251. KING, J.G. 1966. Cape Newenham, Alaska, a Wildlife Metropolis. Unpublished report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 32 pp.

This report provides a general description of the Cape Newenham area. The physical, climatological, and geological characteristics and the use of the area by wildlife and humans are discussed. A list of the birds of the area is included. MRP

Bering Sea - Bristol Bay (Cape Newenham)
Shorebirds, seabirds, waterfowl, other
Annotated list, management, public interest

252. KING, J.G. 1978. Important Birds of Northern Southeast Alaska Marine Environment that Would Be Affected by Oil Pollution. Unpublished annual report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 5 pp.

This paper gives the status of 61 common species and lists 45 less common species vulnerable to oil contamination in marine habitats of the area. MRP

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Abundance, status, pollution

253. KING, J.G., C.P. DAU, R.E. GILL, and L.M. DRESCH. 1980. A Quantitative Catalogue of Intertidal and Near Shore Habitats of Eastern Bering Sea. Unpublished report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 39 pp.

This report quantifies the amount of habitats available for water birds along coastal western Alaska from Cape Prince of Wales to Cape Sarichef. From each USGS map (1:63,360 scale) the following were derived and are presented in appended tables: 1) area of ocean less than 10 fathoms; 2) length of beach; 3) number and area of lagoons; 4) number and area of large tidal river mouths; 5) areas of vegetated and unvegetated intertidal; and 6) the number of rivers and streams. REG

Bering Sea
Shorebirds, seabirds, waterfowl
Habitat

254. KING, J.G., and D.E. MCKNIGHT. 1969. A Water Bird Survey in Bristol Bay and Proposals for Future Studies. Unpublished report. U.S. Fish and Wildl. Serv. and Alaska Dept. of Fish and Game, Juneau, Alaska. 14 pp.

This paper presents information from a preliminary attempt to census water bird populations along the Bristol Bay coast in fall, and discusses sampling techniques. MRP

Bering Sea - Bristol Bay
Shorebirds, seabirds, waterfowl
Abundance, distribution, techniques

255. KING, J.G., and M.A. MONSON. 1968. Report of Field Inspection Trip of Bird Resources of Bristol Bay, April 22-23, 1968. Unpublished report. U.S. Bur. Sport Fish. Wildl., Juneau, Alaska. 5 pp.

In this report the authors describe concentrations of birds, including colonies of nesting seabirds and rafts of waterfowl, observed along the coast from Cape Newenham to Cold Bay. MRP

Bering Sea - Bristol Bay
Seabirds, waterfowl
Distribution

256. KING, R. 1979. Results of aerial surveys of migratory birds on NPR-A in 1977 and 1978, pp. 187-226. In P.C. Lent (ed.), Studies of Selected Wildlife and Fish and their Use of Habitats on and Adjacent to NPR-A 1977-1978, Vol. 1. U.S. Dept. Int., National Petroleum Reserve in Alaska 105(c) Land Use Study, Anchorage, Alaska.

This paper presents information from aerial surveys of migratory birds on the North Slope of Alaska. Population estimates, critical habitats, and densities and distributions of species are presented. Methods for comparing results of ground and aerial surveys are examined. MRP

Arctic - Beaufort (National Petroleum Reserve-Alaska)
Shorebirds, seabirds, waterfowl
Abundance, distribution, habitat, techniques

257. KIRBY, W.W. 1864 (1872). A journey to the Youcan, Russian America, pp. 416-420. In Annual Report of Regents of the Smithsonian Institution.

This paper provides "an account of observations of eggs and parent birds of a number of Alaskan species collected by Robert Kennicott." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Specimen record, distribution

258. KITTLITZ, F.H. VON. 1858. Denkwurdigkeiten einer Reise nach dem russischen Amerika nach Mikronesien und durch kamtschatka. Gotha. Verlag von Justus Perthes. 2 vols.

This work "includes important notes on specimens taken and birds observed by the writer in the vicinity of Sitka, June 23 to July 31, 1827." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Gulf of Alaska - Southeastern (Sitka)
Specimen record, distribution

259. KLEIN, D.R. 1959. Saint Matthew Island reindeer-range study. U.S. Fish and Wildl. Serv., Spec. Sci. Rep. Wildl. 43:1-48.

A checklist is appended listing the numerical and breeding status of 28 species observed between July 15 and August 9, 1957. REG

Bering Sea - St. Matthew Is.
Shorebirds, seabirds, waterfowl, other
Checklist

260. KOSKI, W. 1975. Continuing surveys of terrestrial bird populations on the Yukon-Alaskan North Slope: June and July, 1974. Arct. Gas Biol. Rep. Ser. 30:1-100.

The author discusses habitat preferences of species on the North Slope of Alaska and calculates an index of species density for each habitat. MRP

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, habitat

261. KROG, J. 1953. Notes on the birds of Amchitka Island, Alaska. Condor 55:299-304.

The author presents brief accounts of the 27 species observed on Amchitka Island in early summer 1952, and includes information on habitat use, breeding status, and relative abundance. Twenty-one water-associated species are addressed. A list of food items found at a Bald Eagle nest is given. CMH

Aleutians - (Amchitka Is.)
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, annotated list, habitat, predation

262. KROHN, W.B. 1966. A Brief Survey of the Tuxedni National Wildlife Refuge. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 13 pp.

This report contains survey and general information from a two day trip to Chisik and Duck Islands to locate and photograph the major seabird colonies. General information on all seabirds and landbirds seen is presented in narrative form, and information gained from conversations with people at Snug Harbor is included. MRP

Gulf of Alaska - Cook Inlet (Tuxedni NWR)
Shorebirds, seabirds, waterfowl, other
Abundance, annotated list

*263. KURODA, N. 1955. Observations on pelagic birds of the northwest Pacific. Condor 57:290-300.

This paper presents an annotated list of the 44 species of birds observed during a summer cruise between Japan and the western Bering Sea and North Pacific. Population densities are estimated by the number of birds observed per hour, and bird distribution is correlated with air and water temperatures. Forty-one of the species observed are water-associated. CMH

North Pacific
Bering Sea
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, habitat, abundance

*264. KURODA, N. 1960. Analysis of sea bird distribution in the northwest Pacific Ocean. Pac. Sci. 14:55-67.

This paper analyzes the distribution of seabirds encountered on a cruise in summer 1954 between the western Bering Sea and Japan. Ocean currents, water and air temperatures, zoogeography, and food supplies are considered. Maps showing the distribution and abundance of each species observed are included. CMH

Aleutians
Bering Sea
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, habitat, food

*265. LAING, H.M. 1925. Birds collected and observed during the cruise of the Thiepval in the North Pacific, 1924. Can. Dept. Mines Mus. Bull. 40:1-46.

This paper provides an annotated list of the 112 species or subspecies collected and observed on a cruise in the North Pacific. The ship travelled from Vancouver, B.C., to Japan via the Alaska coast and Aleutians in spring, and returned via a more offshore route through the Bering Sea and North Pacific in late summer. Sixty of those species recorded are water-related forms. CMH

Gulf of Alaska
Aleutians
North Pacific
Bering Sea
Shorebirds, seabirds, waterfowl, other
Annotated list

266. LAING, H.M., P.A. TAVERNER, and R.M. ANDERSON. 1929. Birds and mammals of the Mt. Logan Expedition, 1925. Annual Report for 1927. Natl. Mus. Can. Bull. 56:69-107.

This paper reports on the birds and mammals observed during the Mount Logan Expedition from May 9 to August 21, 1925. Included are 84 species of birds, of which 18 are water-oriented. MRP

Gulf of Alaska - Copper River
Shorebirds, seabirds, waterfowl, other
Annotated list

267. LANGSDORFF, G.H. VON. 1803. Voyages and Travels in Various Parts of the World during the Years 1803-1807. Vol. 2:63,75.

This work "contains a few notes on the avifauna of Kodiak." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Gulf of Alaska - Kodiak (Kodiak Is.)

268. LATHAM, J. 1781-1785. A General Synopsis of Birds. 3 vols. (in 6 parts), London.

This work "contains references to many Alaskan species collected on Cook's voyages." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Distribution

269. LEFFINGWELL, E. 1919. The Canning River Region, Northern Alaska. U.S. Geol. Surv. Prof. Pap. 109. 251 pp.

This paper deals largely with geology, but does include a brief account of the region's avifauna. REG

Arctic - Beaufort (Canning R.)
Waterfowl, other
Habitat, distribution

*270. LEHNHAUSEN, W.A. 1980. Nesting habitat relationships of four species of alcids at Fish Island, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 134 pp.

This thesis investigates the nesting habitat relationships of four species of alcids to determine if competition exists for nest sites on Fish Island. The study examines in detail habitat characteristics, breeding chronology, seasonal and diurnal activity patterns, body size and flight capabilities, and interspecific behavioral interactions. A checklist giving the status of the 118 species of birds observed during summers 1976 and 1977 is appended. CMH

Gulf of Alaska - Prince William Sound (Fish Is.)
Shorebirds, seabirds, waterfowl, other
Checklist

271. LENSINK, C.J. Censuses of birds on the Clarence Rhode National Wildlife Range - Yukon-Kuskokwim Delta. Presented at the 86th Annual Meeting of the American Ornithologists' Union. College, Alaska. June 18-23, 1968. 7 pp.

This paper describes several types of censuses used to determine distribution, abundance, and productivity of birds nesting on the refuge. CMH

Bering Sea - Yukon Delta
Shorebirds, seabirds, waterfowl, other
Techniques

272. LENSINK, C.J. 1959. Annotated Checklist of Birds in the Kvichak River Area, Bristol Bay. Unpublished report. Alaska Dept. Fish and Game, Juneau, Alaska. 6 pp.

The author presents information on birds observed and collected in the Kvichak River area of Bristol Bay between May 17 and June 20, 1959. MRP

Bering Sea - Bristol Bay (Kvichak R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

273. LENSINK, C.J. 1960. Supplemental Checklist of Birds in the Kvichak River Area, Bristol Bay. Unpublished report. Alaska Dept. Fish and Game, Juneau, Alaska. 5 pp.

The author presents information on birds observed in the region between September 4 and October 3, 1959, and May 15 to June 19, 1960. MRP

Bering Sea - Bristol Bay (Kvichak R.)
Shorebirds, seabirds, waterfowl, other
Checklist, annotated list

274. LENSINK, C.J., and J.C. BARTONEK. 1976. Migration of birds in coastal and marine habitats subject to influence by OCS development, pp. 249-320. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports from Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report consists of three parts. First, reported recoveries of over 20,000 birds that were either banded or recovered in Alaska are summarized and briefly discussed. Observations on fall migration at Unimak Pass from August 11-25, 1975, are presented and discussed. Finally, in an appended paper (Flock 1976), radar and visual observations of spring migration at Cape Prince of Wales are discussed. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Migration

275. LENSINK, C.J., and J.C. BARTONEK. 1976. Seasonal distribution and abundance of marine birds: Part 1. Shipboard surveys, pp. 107-644. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports from Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes observations of marine birds in Alaska offshore waters during 21 cruises in 1975. Data are summarized by species, month, and oceanographic region in 165 tables. Monthly summaries of relative densities of all birds are depicted on 12 maps. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Abundance, distribution

*276. LENSINK, C.J., J.C. BARTONEK, and C.S. HARRISON. 1976. Seasonal distribution and abundance of marine birds: Part 2. Aerial surveys, pp. 1-98. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports from Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report summarizes census data obtained from 11 offshore surveys conducted in 1972, 1973, and 1975. Summaries are presented by species, 3-month interval, and oceanographic region in 23 tables. Quarterly summaries of total bird densities are presented in 4 maps. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Distribution, abundance

277. LENSINK, C.J., and R.D. JONES, JR. 1977. Characterization of coastal habitat for migratory birds, pp. 413-451. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

This paper consists primarily of two appended reports, which briefly describe the habitat and avifauna of the Yukon Delta. Observations were made from June 17 to July 23, 1976, and from January 26 to 31, 1977. Fifty-two species were recorded. CMH

Bering Sea - Yukon Delta
Shorebirds, seabirds, waterfowl, other
Habitat, checklist, abundance

*278. LESCHNER, L.L., and G. BURRELL. 1977. Populations and ecology of marine birds on the Semidi Islands, pp. 13-109. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This paper discusses observations on the populations, breeding biology, and foods of 19 species of marine birds during summer 1976. A checklist presents the breeding status of the 54 species of birds observed. CMH

Gulf of Alaska - Kodiak (Semidi Is.)
Shorebirds, seabirds, waterfowl, other
Checklist

279. LINCOLN, F.C. 1924. Returns from banded birds, 1920 to 1923, U.S. Dept. Agric. Bull. 1268. 96 pp.

This volume "contains banding and recovery records from Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Distribution

280. LINCOLN, F.C. 1927. Returns from banded birds, 1923 to 1926. U.S. Dept. Agric. Tech. Bull. 32. 95 pp.

This volume "contains banding and recovery records from Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Distribution

281. LORING, J.A. 1902. Notes on mammals and birds observed in southern Alaska in 1901. Sixth Annual Report. New York Zool. Soc. 1901:145-159.

This paper presents notes on birds and mammals seen in the areas of Cook Inlet and Knik Arm. Forty-seven species of birds are addressed, including 23 species of water birds. CMH

Gulf of Alaska - Cook Inlet
Shorebirds, seabirds, waterfowl, other
Annotated list

282. MACINTOSH, R. 1978. Birds of the Kodiak Island Archipelago. Unpublished checklist. Kodiak, Alaska. 2 pp. (Mimeo)

This checklist notes the breeding status and relative seasonal abundance of the 195 species and subspecies of birds found in the Kodiak Archipelago. MRP

Gulf of Alasks - Kodiak (Kodiak Is., Afognak Is.)
Shorebirds, seabirds, waterfowl, other
Checklist

283. MAHER, W.J. 1959. Habitat distribution of birds breeding along the upper Kaolak River, northern Alaska. Condor 61:351-368.

This paper describes the nesting distribution and status of the birds observed during the summers of 1957 and 1958 on a sector along the upper Kaolak River. Major habitats are characterized, and additional information is provided on breeding biology, density, population trends, and foods for several species. Of the 34 species treated, 21 are water-associated. CMH

Arctic - Chukchi (Kaolak R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, reproduction, food

284. MAILLIARD, J., and G.D. HANNA. 1921. New bird records for North America with notes on the Pribilof Island list. Condor 23:93-95.

This paper provides additional notes on the occurrence of several species, including nine water birds, previously recorded on the Pribilof Islands. CMH

Bering Sea - Pribilof Is.
Shorebirds, seabirds, other
Greater Yellowlegs, Long-billed Dowitcher, Least Sandpiper, Baird's Sandpiper, Pectoral Sandpiper, Sharp-tailed Sandpiper, Rock Sandpiper, Sabine's Gull, Arctic Tern
Distribution, abundance

285. MANUWAL, D.A. 1978. Avian diversity and habitat selection in the Noatak Valley, Brooks Range, Alaska. Murrelet 59:42-58.

This paper includes a checklist of the 112 species observed during a study along the Noatak River in summer 1973. Information on relative abundance, breeding status, and habitat affinities is included. Results of breeding bird surveys in three habitat types at one site are presented, and species diversity is calculated for 11 different habitats. CMH

Arctic - Kotzebue Sound (Noatak R.)
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, habitat, checklist

286. MANUWAL, D.A., and N.J. MANUWAL. 1979. Habitat utilization and migration of land birds on the Barren Islands, Alaska. West. Birds 10:201-213.

The authors primarily treat landbirds in this paper but address habitat use and seasonal occurrence of 10 species of marine birds which use terrestrial habitats other than for nesting. CMH

Gulf of Alaska - Kodiak (Barren Is.)
Shorebirds, seabirds, waterfowl, other
Harlequin Duck, Black Oystercatcher, Semipalmated Plover, Black Turnstone, Common Snipe, Spotted Sandpiper, Least Sandpiper, Glaucous-winged Gull, Mew Gull, Black-legged Kittiwake
Habitat, abundance

287. MCCANN, J.A. 1963. A Summary of Biological Field Work Done on Amchitka during the Summer of 1962. Unpublished report. U.S. Fish and Wildl. Serv., Adak, Alaska. 22 pp.

Not reviewed.

Aleutians - (Amchitka Is.)

288. MCDONALD, D., and R.C. KENYON. 1979. Waterbirds and their Wetland Resources at Storkersen Point, Alaska. 1978 final report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 77 pp.

The authors present information on breeding bird populations at Storkersen Point. Habitat use and wetlands classifications are described. The effects on macroinvertebrates from experimental oiling of ponds are assessed. MRP

Arctic - Beaufort (Storkersen Pt.)
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, habitat, migration, pollution, checklist

289. MCGREGOR, R.C. 1902. A list of birds collected in Norton Sound, Alaska. Condor 4:135-144.

Observations were made from June 27 to September 25, 1900. Annotated accounts are presented for 63 species, 24 of which are water-associated. REG

Bering Sea - Norton Sound (Egg Is., Besboro Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

290. MCGREGOR, R.C. 1906. Birds observed in the Krenitzin Islands, Alaska. Condor 8:114-122.

The author presents annotated accounts of birds observed and collected in the Krenitzin Islands. NMH

Aleutians - (Krenitzin Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

291. MCLENEGAN, S. 1887. Exploration of the Noatak River, Alaska, pp. 76-80. In Capt. M.A. Healy. Report of the Cruise of the Revenue Steamer Corwin in the Arctic Ocean in the Year 1885. U.S. Gov. Print Off., Washington, D.C.

McLenegan provides brief, usually one sentence, descriptions of the status of 48 species of birds observed along the Noatak drainage in summer 1885. REG
Arctic - Kotzebue Sound (Noatak R.)
Shorebirds, seabirds, waterfowl, other
Annotated list

292. MCROY, P., and N. MCROY. 1965. Field observations on the summer birds of the Izembek Lagoon region of the Alaska Peninsula. Bull. Alaska Ornithol. Soc. 5:1-7. (Mimeo)

The authors present an annotated list of the 54 species of birds observed during two summers at Izembek Lagoon. Numbers and dates of observation are given along with notes on nests found. Thirty-five of the species are water-associated. CMH

Bering Sea - Bristol Bay (Izembek Lagoon)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, abundance

293. MCROY, C.P., and S. STOKER. 1969. A survey of the littoral regions of Port Valdez, pp. 190-205. In D.W. Hood (ed.), Baseline Data Survey for Valdez Pipeline Terminal and Environmental Data Survey. Univ. Alaska, Inst. Mar. Sci. Rep. No. R69-17, College.

This paper presents primarily the results of a quantitative survey of intertidal organisms. However, it does include a list of the numbers of each species of bird observed from August 10-16, 1969, in Port Valdez. CMH

Gulf of Alaska - Prince William Sound (Valdez)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance

294. MCROY, C.P., S.W. STOKER, G.E. HALL, and E. MUKTOYUK. 1971. Winter observations of mammals and birds, St. Matthew Island. Arctic 24:63-65.

This note presents a list of species observed in the vicinity of St. Matthew Island on February 6 and 7, 1970. MRP

Bering Sea - St. Matthew Is.
Seabirds, waterfowl
Checklist

295. MERRIAM, C.H. 1902. Bogoslof, our newest volcano, pp. 291-336. In C. H. Merriam (ed.), Harriman Alaska Expedition, Vol. 2. Doubleday, Page and Co., New York. (Reprinted 1972, Klaus Reprint Co., New York.)

On pages 329-332, the author describes the large numbers of murres nesting on this recently active volcano. He also mentions earlier observations of Horned Puffins, kittiwakes, gulls, Harlequin Ducks, and a dead albatross. CMH

Aleutians - (Bogoslof Is.)
Seabirds, waterfowl
Abundance, habitat, public interest

296. MICKELSON, P.G. 1973. Birds and Mammals of the Copper River Delta. Unpublished report. U.S. Forest Service, Cordova, Alaska.

Not reviewed.

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, seabirds, waterfowl, other

297. MICKELSON, P.G. 1973. Status and Abundance of Birds and Mammals of the Copper River Delta - 1974. Unpublished report. U.S. Forest Service, Cordova, Alaska. 73 pp.

Not reviewed.

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, seabirds, waterfowl, other

298. MICKELSON, P.G. 1974. Report on Egg Islands, Copper River Delta, Alaska. Unpublished report. U.S. Forest Service, Cordova, Alaska. 7 pp.

Not reviewed.

Gulf of Alaska - Copper River (Egg Is.)

299. MICKELSON, P.G. 1974. Status of Birds in Prince William Sound. Unpublished report. U.S. Forest Service, Cordova, Alaska. 6 pp.

This report lists 204 species of birds found in Prince William Sound, and notes their general status in each of four management units in the sound. MRP

Gulf of Alaska - Prince William Sound
Shorebirds, seabirds, waterfowl, other
Checklist, status

300. MICKELSON, P.G. 1975. An Annotated Bibliography on the Copper River Delta with Emphasis on Waterfowl Habitat Management and Improvements. Unpublished report. U.S. Forest Service, Cordova, Alaska. 49 pp.

This annotated bibliography contains a list of published and unpublished references concerned primarily with management of resources on the Copper River Delta. Most references addressing birds pertain to waterfowl; however, other references are included. MRP

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, seabirds, waterfowl, other
Bibliography

*301. MICKELSON, P.G., J.S. HAWKINGS, D.R. HERTER, and S.M. MURPHY. 1980. Habitat Use by Birds and other Wildlife on the Eastern Copper River Delta, Alaska. Unpublished report. Univ. Alaska, Fairbanks. 189 pp.

During a study of nesting and migrating birds on the eastern Copper River Delta in 1978 and 1979, the authors determined habitat preferences, distribution, abundance, and phenology for the avifauna of the area. Critical habitats are identified and recommendations made for future surveillance and management of populations. Detailed information is presented for Dusky Canada Geese, Sandhill Cranes, and shorebirds. REG

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, seabirds, waterfowl, other
Abundance, breeding biology, checklist, distribution, food, habitat, management, migration, predation, reproduction, status

*302. MICKELSON, P.G., W. LEHNHAUSEN, and S.E. QUINLAN. 1978. Community structure of seabirds of Wooded Islands, Alaska, pp. 680-772. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

Information gathered in summer 1977 on abundance, habitat use, and reproductive ecology is presented for 10 species of seabirds. Tables present the status of all species of birds observed in 1976 and 1977. Information on abundance and phenology is included for some species. The susceptibility of each species to oil pollution is assessed. CMH

Gulf of Alaska - Prince William Sound (Wooded Is.)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, reproduction, pollution, migration

*303. MICKELSON, P.G., W.A. LEHNHAUSEN, S.E. QUINLAN, and J.M. SHERWOOD. 1977. Seabirds of the Wooded Islands, Alaska, pp. 421-499. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents information on the abundance and breeding biology of seabirds nesting on the Wooded Islands in 1976. Tables list the other species observed on the islands and their breeding status. The abundance of species occurring in littoral and marine areas is briefly noted. Potential effects of oil pollution and disturbance are discussed. CMH

Gulf of Alaska - Prince William Sound (Wooded Is.)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, pollution, disturbance

304. MILLER, E.H. 1972. Report on Activities on Round Island (Walrus Islands), Bristol Bay, Alaska, 5 June - 12 July 1972. Unpublished report. Alaska Coop. Wildl. Res. Unit., Univ. Alaska, Fairbanks.

Not reviewed.

Bering Sea - Bristol Bay (Walrus Is.)

305. MORSE, M. 1945. Natural history notes from the Aleutians. Parts I and II. Flicker 17:6-10; 23-26.

These papers present an "account of birds seen on Adak Island during the period April 9 to September 20, 1944." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Aleutians - (Adak Is.)
Shorebirds, seabirds, waterfowl, other
Distribution

306. MURDOCH, J. 1885. Bird migration at Point Barrow, Arctic Alaska, p. 63. In C.H. Merriam, Preliminary report on bird migration. Auk 2:53-65.

This is a checklist of the 50 species of birds seen during two years of observation. Included are arrival and departure dates and an assessment of relative abundance. Thirty-nine of the species are water-associated. CMH

Arctic - Chukchi (Barrow)
Shorebirds, seabirds, waterfowl, other
Checklist, migration

307. MURDOCH, J. 1885. Birds. II, pp. 104-128. In P.H. Ray, Report of the International Polar Expedition to Point Barrow, Alaska. U.S. House Rep., 48th Congr., 2nd Sess., Exec. Doc. 44. Govt. Print. Off., Washington, D.C.

Annotated accounts are presented for 54 species, including 42 water birds. A supplemental list of 18 species seen at Plover Bay, Siberia, in 1881 is included. REG

Arctic - Chukchi (Barrow)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, habitat, abundance

308. MURDOCH, J. 1885. Notes on some species of birds attributed to Point Barrow, Alaska. Auk 2:200-201.

The annotated accounts of nine water-associated species presented in this note are offered primarily as corrections to similar accounts presented by Nelson (Birds of the Bering Sea and Arctic Ocean, 1883). REG

Arctic - Chukchi (Barrow)
Shorebirds, waterfowl, other
Annotated list

309. MURIE, A. 1946. Observations on the birds of Mount McKinley National Park, Alaska. Condor 48:253-261.

An annotated list of 30 selected species, including 11 water-associated forms, is presented. CMH

Interior - Tanana (Mt. McKinley National Park)
Shorebirds, seabirds, waterfowl, other
Annotated list, behavior, distribution

310. MURIE, O.J. 1936. The birds of St. Lawrence Island, Alaska. Univ. Alaska Misc. Publ. 2:361-375.

This paper "is based on collections made by Geist during several years work on the island. (An) annotated list of birds (is presented), including several additions to Friedmann's list, bringing the total species recorded to more than 90." (From T.J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen). CMH

Bering Sea - St. Lawrence Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

311. MURIE, O.J. 1959. Fauna of the Aleutian Islands and Alaska Peninsula. North Am. Fauna 61. 364 pp.

This major work, based largely on observations gathered in 1936 and 1937, represents the first comprehensive treatment of the avifauna of this region. Included are sections on fishes and mammals as well as detailed physiographic and floristic descriptions of the area. REG

Aleutians
Bering Sea - Bristol Bay (Alaska Peninsula)
Gulf of Alaska - Kodiak (Alaska Peninsula)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, habitat, zoogeography

*312. MYRES, M.T., and J. GUZMAN. 1976. Ecology and behavior of southern hemisphere shearwaters (Genus Puffinus) and other seabirds, when over the outer continental shelf of the Bering Sea and Gulf of Alaska during the northern summer, pp. 1-52. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports from Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

This preliminary report discusses primarily the distribution, abundance, and behavior of Short-tailed and Sooty Shearwaters as determined from shipboard surveys. The potential impact of oil development is briefly discussed. Included is tabular information on the distribution of the 22 other species of marine birds observed during the cruises. CMH

Gulf of Alaska
Bering Sea
Shorebirds, seabirds, waterfowl, other
Distribution

*313. MYRES, M.T., and J. GUZMAN. 1977. Ecology and behavior of southern hemisphere shearwaters (Genus Puffinus) and other seabirds, when over the outer continental shelf of Bering Sea and Gulf of Alaska during the northern summer, pp. 179-191. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 3. NOAA, Environ. Res. Lab., Boulder, Colo.

Observations of shearwaters in summer 1976 are mapped and briefly discussed. The relative abundance of other species of marine birds observed is noted in a table. NMH

Gulf of Alaska
North Pacific
Bering Sea
Shorebirds, seabirds, waterfowl
Abundance, checklist

314. NARVER, D.W. 1970. Birds of the Chignik River drainage, Alaska. Condor 72:102-105.

From observations between 1960 and 1963, the author provides annotated accounts for seven species. The distribution and relative abundance of an additional 60 species, including 37 water-associated forms, are treated in a somewhat more abbreviated format. REG

Gulf of Alaska - Kodiak (Chignik R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, abundance

315. NELSON, E.W. 1880. An afternoon in the vicinity of St. Michaels, Alaska. Bull. Nutt. Ornithol. Club 5:33-36.

In a narrative form, the author describes a collecting trip in the vicinity of St. Michael. Most of the account concerns seabirds; however, a few specimens of shorebirds, waterfowl, and landbirds were collected. MRP

Bering Sea - Norton Sound (St. Michael)
Shorebirds, seabirds, waterfowl, other
Specimen record

316. NELSON, E.W. 1883. Birds of the Bering Sea and Arctic Ocean, pp. 54-120. In Cruise of the Revenue-steamer Corwin in Alaska and the N.W. Arctic Ocean. Treasury Dept. Doc. 429. Washington, D.C.

This represents probably the finest historical account of Alaska avifauna. Nelson provides detailed annotated accounts for some 190 species and subspecies of birds observed in western and northwestern Alaska in 1881. His accounts on birds of the Yukon Delta are further supported by observations he made at St. Michael in the late 1870's. Mention is also made of several species from northeastern Siberia. REG

Alaska
Aleutians
Arctic - Chukchi (Barrow), Kotzebue Sound
Bering Sea - Norton Sound, Yukon Delta
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

317. NELSON, E.W. 1885. Counter - "Notes on some species of birds attributed to Point Barrow, Alaska." Auk 1:239-241.

This is Nelson's rebuttal to Murdoch's (Auk 2:200-201, 1885) questioning of several of Nelson's observations from the Pt. Barrow region. Nelson stands by his original observations as reported in 1883. REG

Arctic - Chukchi (Barrow)
Shorebirds, waterfowl, other
Annotated list

318. NELSON, E.W. 1887. Report upon Natural History Collections Made in Alaska between the Years 1877 and 1881. U.S. Army, Signal Serv., Arct. Ser. Publ. 3. 337 pp.

This report contains annotated accounts for 258 species or subspecies of birds, of which 132 are water-associated. The information is drawn mainly from the Yukon Delta and Norton Sound areas where the author spent four years, but he also summarizes notes and specimen records from explorers of other areas of Alaska. Notes on migration dates, distribution, relative abundance, general habitat use, plumage, and behavior are included. A partial bibliography of Alaska ornithology is presented. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, abundance, migration, bibliography, habitat, plumage, specimen record, behavior, food

*319. NELSON, U.C. 1949. Investigations on Breeding and Wintering Populations, Nesting Studies, and Banding of Migratory Waterfowl. Unpublished report. Project No. 3-R-4. Fed. Aid in Wildl. Rest., Alaska 4(1):4-40.

The author summarizes information from aerial surveys of the Arctic Coast, Yukon-Kuskokwim Delta, and northwest Alaska. Results of nesting and migration studies on the Kaskunuk River and Innoko, Iditarod, and Pike Lake areas are also presented. General observations of many species are included. MRP

Arctic - Beaufort, Kotzebue Sound
Bering Sea - Yukon Delta
Interior - Innoko, Koyukuk
Shorebirds, seabirds, waterfowl, other
Annotated list

*320. NELSON, U.C. 1951. Migratory Waterfowl Studies, Breeding and Wintering Populations, Nesting and Banding. Unpublished report. Project No. 3-R-6. Fed. Aid in Wildl. Rest., Alaska 6(1):3-61.

This compendium of reports includes checklists of the species of birds recorded during other studies throughout Alaska. MRP

Arctic - Kotzebue
Bering Sea - Yukon Delta
Interior - Innoko, Koyukuk, Tanana
Shorebirds, seabirds, waterfowl, other
Checklist

321. NEWTON, A. 1867. On some new or rare birds' eggs. Proc. Zool. Soc. London 1867:161-168.

Not reviewed.

Specimen record

322. NEWTON, A. 1871. On some new or rare birds' eggs. Proc. Zool. Soc. London 1871:55-58.

Not reviewed.

Specimen record.

323. NORTON, D.W., I.W. AILES, and J.A. CURATOLO. 1975. Ecological relationships of the inland tundra avifauna near Prudhoe Bay, Alaska, pp. 125-133. In J. Brown (ed.), Ecological Investigations of the Tundra Biome in the Prudhoe Bay Region, Alaska. Biol. Pap. Univ. Alaska. Spec. Rep. 2. 215 pp.

This paper presents information on abundance, distribution, and reproductive success of birds at Prudhoe Bay, and discusses human-related impacts. MRP

Arctic - Beaufort (Prudhoe Bay)
Shorebirds, seabirds, waterfowl, other
Distribution, reproduction, abundance, pollution

*324. NYSEWANDER, D.R., and D.B. BARBOUR. 1979. The breeding biology of marine birds associated with Chiniak Bay, Kodiak Island, 1975-1978, pp. 21-106. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 2. NOAA, Environ. Res. Lab., Boulder, Colo.

Abundance, nesting habitat, breeding phenology, and productivity of 10 species are discussed, and data collected in 1978 are compared with those of 1975 and 1977. Chick growth and feeding rates are addressed for Black-legged Kittiwakes and Tufted Puffins. An annotated list of the 75 species observed in summer 1978 is appended. REG

Gulf of Alaska - Kodiak (Chiniak Bay)
Shorebirds, seabirds, waterfowl, other
Annotated list

*325. NYSEWANDER, D., and P. KNUDTSON. 1977. The population ecology and migration of seabirds, shorebirds, and waterfowl associated with Constantine Harbor, Hinchinbrook Island, Prince William Sound, 1976, pp. 500-575. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

The results of seabird colony censuses are reported and compared with 1972 censuses. Reproductive phenology and success are discussed for major breeding species, and results from "sea watch" and shoreline transects are reported. An annotated list of the 90 species observed in summer 1976 is appended. REG

Gulf of Alaska - Prince William Sound (Hinchinbrook Is.)
Shorebirds, seabirds, waterfowl, other
Abundance, reproduction, migration, annotated list

*326. OAKLEY, K.L., and K.J. KULETZ. 1979. Summer Distribution and Abundance of Marine Birds and Mammals in the Vicinity of Naked Island, Prince William Sound, Alaska, in 1978, and Aspects of the Reproductive Ecology of the Pigeon Guillemot. Unpublished annual report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 103 pp.

The first section of this report contains annotated species accounts of marine birds and mammals in the vicinity of Naked Island. The second section is a report on the reproductive ecology of Pigeon Guillemots. Appended is an annotated list of all species observed between May 8 and August 31, 1978. MRP

Gulf of Alaska - Prince William Sound (Naked Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

327. OATES, E.W. 1901-1905. Catalogue of birds' eggs. British Museum, London. I, 1901, 234 pp.; II, 1902, 379 pp.; III, 1903, 323 pp.; IV, 1905, 352 pp.

Not reviewed.

Specimen record

328. O'FARRELL, T.P., and A.M. SHEETS. 1962. Birds observed wintering on Middleton Island, Alaska. Condor 64:440-441.

The authors present annotated accounts for seven species of birds observed on Middleton Island in February 1961. REG

Gulf of Alaska - Northern Gulf (Middleton Is.)
Shorebirds, seabirds, waterfowl, other
Pelagic Cormorant, Emperor Goose, Common Snipe, Glaucous-winged Gull
Annotated list

329. OSGOOD, W.H. 1901. Natural history of the Cook Inlet region, Alaska. North Am. Fauna 21:51-81.

The author describes the physiography, flora, and fauna of the region, which he visited in summer 1900, and summarizes information from other explorers. An annotated list of 77 species of birds, including 30 water-related forms, provides information on relative abundance. CMH

Gulf of Alaska - Cook Inlet
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

330. OSGOOD, W.H. 1904. A Biological Reconnaissance of the Base of the Alaska Peninsula. North Am. Fauna 24. 86 pp.

This monograph reports field observations of birds and mammals during the summer and fall of 1902. MRP

Bering Sea - Bristol Bay
Gulf of Alaska - Kodiak, Cook Inlet
Shorebirds, seabirds, waterfowl, other
Annotated list

331. OSGOOD, W.H. 1905. In Alaska's rain belt. Condor 7:68-71.

A collecting trip to Prince of Wales Island is recounted. Included are notes on some of the birds observed and collected. NMH

Gulf of Alaska - Southeastern (Prince of Wales Is.)
Seabirds, waterfowl, other
Distribution, specimen record

332. OSGOOD, W.H. 1909. Biological Investigations in Alaska and Yukon Territory. North Am. Fauna 30. 96 pp.

This treatise presents avifaunal accounts based on field investigations in 1903-1904 in eastcentral Alaska and the Yukon Territory. Each section is preceded by an introduction and general account of the region. Some 75 species are addressed of which 18 are water-associated forms. REG

Interior - Upper Yukon (Circle, Eagle)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

333. OSGOOD, W.H., and L.B. BISHOP. 1900. Results of Biological Reconnaissance of the Yukon River Region. North Am. Fauna 19. 100 pp.

The title of this paper is somewhat misleading, as the text contains information collected in southeastern Alaska and the Bering Sea in transit to and from the Yukon. An itinerary, a discussion of faunal districts, and a section on previous works are presented, along with annotated accounts for over 100 species, including 70 water-associated forms. REG

Bering Sea - Yukon Delta, Pribilof Is.
Gulf of Alaska - Southeastern (Lynn Canal, White Pass)
Shorebirds, seabirds, waterfowl, other
Annotated list

334. OSGOOD, W.H., E.A. PREBLE, and G.H.PARKER. 1914. The Fur Seals and Other Life of the Pribilof Islands, Alaska, in 1914. Bull. Bur. Fish. 34.

On pages 121-124, the authors mention 10 species of birds. (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Bering Sea - Pribilof Is.
Distribution

335. PAIGE, B. 1979. Birds of Glacier Bay National Monument: A Checklist. U.S. Dept. Int., National Park Service. 15 pp.

This checklist includes 214 species of birds observed in Glacier Bay National Monument. The status, relative abundance, habitat preference, and seasonal occurrence are given for each species. JCG

Gulf of Alaska - Southeastern (Glacier Bay)
Shorebirds, seabirds, waterfowl, other
Checklist

336. PALLAS, P.S. 1781. Neue Nordische Beytrage. Vol. 2, 1781. Vols. 5 and 6, 1793. St. Petersburg.

This is "Steller's Journal of the Sea Voyage from Kamchatka to America and Return, as edited and published by Pallas." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

337. PALLAS, P.S. 1811. Zoographia Rosso-Asiatica, sistens omnium animalium in extenso Imperio Rossica...Petropoli in officina cass. Academie scientiarum impress. Edit.(1831). 2 vols.

Reference is made to species in Alaska, and the original descriptions of the Pelagic Cormorant and several other species are included. (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Pelagic Cormorant
Distribution, plumage, taxonomy

338. PALMEN, J.A. 1887. Bidrag till kannedomen om Sibriska Ishafskustens fogelfauna enligt Vega-expeditionens iakttagelser och samlinger bearbetode. Vega Expedition, Vetensk. Iakttag 5:242-511. Stockholm.

This treatise summarizes primarily observations obtained during the Vega Expedition on avifauna of the Arctic coasts of Siberia. However, it also discusses the distribution of bird species over the entire Arctic province, and addresses matters pertinent to Alaska avifauna. (From Stejneger, 1888, Auk 5:306-311. Original not seen.) CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Distribution

339. PALMER, W. 1899. The avifauna of the Pribilof Islands, pp. 355-431 + plates. In D.S. Jordon (ed.), The Fur Seals and Fur Seal Islands of the North Pacific, Part III. U.S. Treas. Dept., Comm. Fur-seal Investig., Washington, D.C.

This work summarizes, in narrative format, extensive information gathered primarily between 1872 and 1895. Annotated accounts of 69 species, including 54 marine forms, are presented. Numerous specimen records, many with meristic data, are cited. REG

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

340. PEARSE, T. 1968. Birds of the Early Explorers in the Northern Pacific. Publ. by author. Comax, British Columbia. 275 pp.

Not reviewed.

Alaska

341. PELZEN, A. VON. 1873. On the birds of the Imperial Collection at Vienna obtained from Leverian Museum. Ibis 1873:14-54; 105-124.

This paper "refers to specimens collected during Cook's voyages." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Specimen record

342. PENNANT, T. 1785. Arctic Zoology, Vol. 2, Class 2, Birds. Henry Hughs, London, pp. 188-586.

This work "contains a few matters pertinent to early records in Alaska, mostly Russian." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Alaska
Distribution

*343. PETERSEN, M.R., and M.J. SIGMAN. 1977. Field studies at Cape Peirce, Alaska - 1976, pp. 633-693. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents information on the abundance, breeding biology, and predation of seabirds, and on spring migration, molt and foraging areas of loons and waterfowl. An appended table lists the 132 species of birds recorded from the area between 1963 and 1976; notes are included for those recorded only in 1976. CMH

Bering Sea - Bristol Bay (Cape Peirce)
Shorebirds, seabirds, waterfowl, other
Checklist

344. PITELKA, F.A. 1974. An avifaunal review for the Barrow region and North Slope of Arctic Alaska. Arct. Alp. Res. 6:161-184.

This paper reviews published and unpublished avifaunal records of the North Slope of Alaska from 1948 to 1973, with particular reference to the Barrow region. Distributional status is provided for all species. MRP

Arctic - Chukchi, Beaufort
Shorebirds, seabirds, waterfowl, other
Annotated list, checklist, distribution

345. PITELKA, F.A., and H.E. CHILDS, JR. 1951. Banding activities on the Arctic Slope of Alaska. Bird-Banding 22:181.

Total numbers of individuals banded in 1951 are given. REG

Arctic - Chukchi (Barrow)
Shorebirds, seabirds, waterfowl, other
Oldsquaw, American Golden Plover, Semipalmated Plover, Ruddy Turnstone, Baird's Sandpiper, Dunlin, Red Phalarope, Arctic Tern
Techniques

346. PORTENKO, L.A. 1968. On the problem of the Beringia-bridge. [In German.] Bonner Zool. Beitr. 19:176-180.

Not reviewed.

Alaska

347. PREBLE, E.A., and W.L. MCATEE. 1923. A biological survey of the Pribilof Islands, Alaska. Part 1. Birds and Mammals. North Am. Fauna 46:1-128.

This is a rather extensive treatment of the avifauna of the Pribilof Islands, including often detailed accounts of the foods and feeding habits of some 130 species. REG

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, food, distribution, migration

348. PRENTIS, D.W., JR. 1902. Notes on birds of the Pribilof Islands. Osprey 1:97-103.

The author summarizes observations of birds on the Pribilof Islands in the summer of 1895. Of the 24 species treated, 22 are water-associated. MRP

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list

*349. QUINLAN, S.E. 1979. Breeding biology of storm-petrels at Wooded Islands, Alaska. M.S. thesis. Univ. Alaska, Fairbanks. 206 pp.

This thesis presents results of a two-year study of the comparative breeding biology of Leach's and Fork-tailed Storm-Petrels. Taxonomy, predation, and chick growth are also treated in depth. An appendix notes the breeding status of the 118 species recorded during the two summers. CMH

Gulf of Alaska - Prince William Sound (Wooded Is.)
Shorebirds, seabirds, waterfowl, other
Checklist

350. RAUSCH, R. 1958. The occurrence and distribution of birds of Middleton Island, Alaska. Condor 60:227-242.

The author conducted a survey of the birds of Middleton Island in June 1956, and recorded 45 species. He correlates the distribution of the 16 breeding species with major ecological formations. REG

Gulf of Alaska - Northern Gulf (Middleton Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, distribution

351. REED, E.B. 1956. Notes on some birds and mammals of the Colville River, Alaska. Can. Field-Nat. 70:130-136.

Provided is an annotated list of the 46 species of birds observed on a float trip down the Colville River during summer 1955. Information on relative abundance, habitat use, and breeding status is included, along with a checklist of the species seen at each confluence along the river. Twenty-six of the species are water-associated. CMH

Arctic - Beaufort (Colville R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, abundance, habitat, checklist

352. REICHENOW, A. 1909. Birds, pp. 240-245. In P. Niedrach, Cruises in the Bering Sea, London.

Not reviewed.

Bering Sea

353. RIDGWAY, R. 1893. Catalogue of a collection of birds made in Alaska by Mr. C.H. Townsend during the cruise of the U.S. Fish Commission steamer Albatross in the summer and autumn of 1888. Proc. U.S. Natl. Mus. 16:663-665.

Specimen numbers and locations of collections are listed. MRP

Gulf of Alaska
North Pacific
Shorebirds, seabirds, other
Specimen record

354. RILEY, J.H. 1919. Annotated catalogue of a collection of birds by Mr. Copley Ambry, Jr. in northeastern Siberia. Proc. U.S. Natl. Mus. 54:607-626.

Much of this paper deals with eastern Siberian birds, but will be of interest to anyone addressing avifauna of the northern Bering Sea and Gulf of Alaska. Included are reports of specimens of Short-tailed Shearwater collected in Alaska waters. REG

Bering Sea - Bristol Bay
Gulf of Alaska - Kodiak
Seabirds, waterfowl, other
Short-tailed Shearwater
Specimen record, distribution

*355. RITCHIE, R. 1978. Seabirds and their Nesting Habitats on Western Nunivak Island, Alaska. Unpublished final report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 34 pp.

The author conducted surveys of breeding seabirds from July 1-29, 1978. Habitats and their use by seabirds are described, and estimates of breeding populations are presented. Daily checklists are appended. MRP

Bering Sea - Nunivak Is.
Shorebirds, seabirds, waterfowl, other
Checklist

356. ROTHE, T.C. 1979. Birds Associated with the Atigun River Crude Oil Spill (TAPS). Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 6 pp.

The author reports observations from June 26-28, 1979 of birds and habitats affected by the Atigun River crude oil spill of June 10, 1979. MRP

Interior - Upper Yukon (Atigun R.)
Shorebirds, seabirds, waterfowl, other
Pollution, habitat

357. ROWINSKI, L.J. 1970. The bird and mammal collections of the University of Alaska. Proc. Alaska Science Conf. 11:36. (Abstract)

The collections of birds and mammals in the Museum of the University of Alaska are briefly described; holdings of particular interest are noted. NMH

Alaska
Shorebirds, seabirds, waterfowl, other
Specimen record

358. SAGE, B. 1973. Alaska and its Wildlife. Viking Press, N.Y. 128 pp.

This book presents a naturalist's description of the state and its wildlife. The author also discusses the problem of development in relation to conservation, and suggests means to preserve the wilderness. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Public interest, pollution, management

359. SAGE, B.L. 1974. Ecological distribution of birds in the Atigun and Sagavanirktok River Valleys, Arctic Alaska. Can. Field-Nat. 88:281-291.

This paper addresses habitat use and compares the avifauna of the area with that of the Colville River Valley. Observations from summer and fall 1969 and 1970, plus June 1971, provide the basis for annotated accounts for 65 species. Included are 40 water-associated forms. REG

Arctic - Beaufort (Atigun R., Sagavanirktok R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

360. SAGE, B. 1974. The Yukon-Kuskokwim Delta in Alaska supports monumental numbers of birds, delta paradise. Wildlife 16(9):412-415.

Not reviewed.

Bering Sea - Yukon Delta

361. SAGE, B.L. 1975. Recent observations in the Wrangell Mountains, Alaska. Condor 77:206-230.

Annotated accounts summarize observations of 22 species, including 8 water-associated forms, during summer 1973. REG

Gulf of Alaska - Copper River (Wrangell Mtns.)
Shorebirds, waterfowl, other
Annotated list, distribution

362. SALTER, R., and R.A. DAVIS. 1974. Surveys of terrestrial bird populations in Alaska, Yukon Territory, Northwest Territories and Northern Alberta, May, June, July, 1972. Arct. Gas Biol. Rep. Ser. 12:36-384.

The authors conducted a series of ground censuses along the proposed gas pipeline route during summer 1972. Thirteen habitat types are described, and bird densities and species composition are analyzed for each. An annotated list presents information on abundance and habitat use for 152 species. Checklists indicate the species recorded at each census site. CMH

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Annotated list, checklist, habitat, abundance

*363. SANGER, G.A. 1972. Checklist of bird observations from the eastern North Pacific Ocean, 1955-1967. Murrelet 53:16-21.

The author has summarized bird observations collected aboard oceanographic vessels during 26 cruises between 1955 and 1967. Annotated accounts are presented for 36 species of birds, all typical marine forms except for Peregrine Falcon and Long-eared Owl. REG

Gulf of Alaska
Aleutians
North Pacific
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, abundance

364. SANGSTER, M.E. 1979. Seasonal distribution and habitat utilization of marine birds in Port Valdez, Alaska. Pac. Seabird Group Bull. 6(2):38. (Abstract)

This paper reports on the winter and summer distribution of marine birds in Port Valdez and assesses the extent of bird use in the area. MRP

Gulf of Alaska - Prince William Sound (Port Valdez)
Shorebirds, seabirds, waterfowl
Abundance, distribution

*365. SANGSTER, M.E., D.J. KURHAJEC, and C.T. BENZ. 1978. Reproductive Ecology of Seabirds at Hinchinbrook Island and a Census of Seabirds at Selected Sites in Prince William Sound, 1977. Unpublished annual report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. 98 pp.

This report includes information on the abundance, breeding phenology, and productivity of seabirds using Constantine Harbor and Porpoise Rocks; general accounts of shorebirds, waterfowl, Bald Eagles, and marine mammals; information on breeding populations of Pigeon Guillemots and Parakeet Auklets on Smith and Little Smith Islands; and census information on seabirds of Naked and Storey Islands. MRP

Gulf of Alaska - Prince William Sound
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, annotated list, food

366. SAUER, E.G.F., and E.K. URBAN. 1964. Bird notes from St. Lawrence Island, Alaska. Bonn. Zool. Beitr. 15:45-58.

Not reviewed.

Bering Sea - St. Lawrence Is.

367. SAUER, M. 1802. An Account of a Geographical and Astronomical Expedition to the Northern Parts of Russia...the Whole Coast of the Tshutski...and of the Islands in the Eastern Ocean, Stretching to the American Coast Performed...by Commodore Joseph Billings in the Year 1785...to 1794.

Page 179 pertains to birds on Kodiak. (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Gulf of Alaska - Kodiak (Kodiak Is.)

368. SCHAANNING, H.T.L. 1928. Birds from the North-eastern Siberian Arctic Ocean, pp. 1-16. In The Norwegian North Polar Expedition with the Maud 1918-1925, Scientific Results, Vol. 5.

Sightings of 19 species are summarized, including Ross' Gull, Steller's Eider, Black Brant, and Snow Goose (from summary in Auk 46:256, original not seen). REG

Arctic
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

369. SCHALOW, H. 1891. J. F. von Brandt: Weber die Vogelfauna der Aleuten, Kurlien und der Russischamerikanis. Chen Colonien. Journ fur Ornith. 39:235-271.

This paper "includes a list of 128 species with many records from Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Annotated list

370. SCHAMEL, D. 1976. Avifaunal utilization of the offshore island area near Prudhoe Bay, Alaska, pp. 409-447. In Environmental Assessment of the Alaskan Continental Shelf, Principal Investigators' Reports, July - September 1976, Vol. 1. NOAA, Environ. Res. Lab., Boulder, Colo.

This final report provides results of a study of bird use of Egg Island and surrounding waters during summer 1972. Annotated accounts are presented for the major species, and graphs depict densities throughout the season in bay, sea, and island habitats. Patterns of habitat use are discussed in light of potential petroleum development. CMH

Arctic - Beaufort (Egg Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, abundance, pollution, management, migration

371. SCHAMEL, D. 1978. Bird use of a Beaufort Sea barrier island in summer. Can. Field-Nat. 92:55-60.

This paper documents changes in bird numbers over time and space near a barrier island in summer. Annotated accounts of eiders, Oldsquaw, loons, Red Phalaropes, Glaucous Gulls, and Arctic Terns are presented. REG

Arctic - Beaufort (Egg Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, migration, abundance

372. SCHAMEL, D., D. TRACY, P.G. MICKELSON, and A. SEGUIN. 1979. Avian community ecology at two sites on Espenberg Peninsula in Kotzebue Sound, Alaska, pp. 289-607. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

A study of avian occurrence and habitat use in the vicinity of Cape Espenberg was conducted during summers 1976 and 1977. Detailed information is presented on seasonal abundance, breeding biology, foods, habitat preferences, and predation. Daily checklists and an annotated species list are included for the 85 species of birds recorded. The probable impacts on birds from petroleum development are assessed. CMH

Arctic - Kotzebue Sound (Cape Espenberg)
Shorebirds, seabirds, waterfowl, other
Abundance, habitat, breeding biology, growth, annotated list, checklist, predation, subsistence, pollution, food

373. SCHMIDT, W.T. 1970. A Field Survey of Bird Use at Beaufort Lagoon. Unpublished report. U.S. Fish and Wildl. Serv., Fairbanks, Alaska. 34 pp.

An ecological survey of Beaufort Lagoon and adjacent areas was conducted from June through September. The species and number of birds observed in each habitat are noted. Annotated species accounts are presented for loons, grebes, swans, geese, and ducks. MRP

Arctic - Beaufort (Beaufort Lagoon)
Shorebirds, seabirds, waterfowl, other
Checklist, habitat, abundance, distribution, annotated list

374. SCHULMEISTER, S. 1979. Migratory Birds of Amchitka Island, Alaska, November 26, 1975 - June 30, 1979. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 57 pp.

This paper presents information from weekly bird censuses and from personal field notes of other observers. Sixty-two species are listed, 19 of which are new to the island. MRP

Aleutians (Amchitka Is.)
Shorebirds, seabirds, waterfowl, other
Abundance, annotated list

375. SCHWEINSBERG, R.E. 1974. An ornithological study of proposed gas pipeline routes in Alaska, Yukon Territory, and the Northwest Territories, 1971. Arct. Gas Biol. Rep. Ser. 10:1-215.

This paper describes the bird populations along the proposed alternative gas pipeline routes between Prudhoe Bay and Arctic Red River and from Ft. MacPherson to the U.S. border. MRP

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Distribution, abundance, habitat

*376. SCOTT, R.F. 1948. Banding of Waterfowl and Study of Nesting Conditions. Unpublished report. Fed. Aid in Wildl. Rest., Alaska. Project No. 3-R-3, Work Plan No. 8, Job No. 8. 49 pp.

An intensive survey of the Innoko River region was conducted primarily to determine habitat use by waterfowl. Information on their abundance, distribution and life history is presented. A checklist of all birds observed in the region and notes on the most common species are included. MRP

Interior - Innoko
Shorebirds, seabirds, waterfowl, other
Checklist

377. SEALE, A. 1898. Notes on Alaskan water birds. Proc. Acad. Nat. Sci. Phila. 1898:126-140.

Not reviewed.

Alaska

378. SEALY, S.G. 1967. Spring bird phenology on St. Lawrence Island, Alaska. Blue Jay 25:23-24.

Spring arrival dates are given for 25 species. REG

Bering Sea - St. Lawrence Is.
Shorebirds, seabirds, waterfowl, other
Migration

379. SEALY, S.G., J. BEDARD, M.D.F. UDVARDY, and F.H. FAY. 1971. New records and zoogeographical notes on the birds of St. Lawrence Island, Bering Sea. Condor 73:322-336.

This paper reports several additions to the known avifauna of St. Lawrence Island and discusses the zoogeographical significance of these and previous records. Approximately half of the 55 species discussed are coastal or marine-associated. REG

Bering Sea - St. Lawrence Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, zoogeography

380. SELKREGG, L.L. (ed.). 1975. Alaska Regional Profiles: Arctic Region (218 pp.), Southwest Region (313 pp.), Southcentral Region (255 pp.), Yukon Region (346 pp.), Southeast Region (233 pp.), Northwest Region (265 pp.). Univ. Alaska, Arct. Environ. Inform. Data Center, Anchorage.

These volumes describe in general the natural resources of and influences of man on each region of Alaska. The families of birds occurring in each major habitat are listed. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Public interest, management

*381. SENNER, S. 1977. Food habits of migrant Dunlins and Western Sandpipers on the Copper River Delta, Alaska, pp. 576-592. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This report presents results of a preliminary analysis of stomach contents, plus a discussion of live-trapping techniques. Included in an appendix are selected observations of spring and fall migration for 45 species of birds. CMH

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, seabirds, waterfowl, other
Migration, annotated list

382. SHELDON, C. 1909. List of birds observed on the upper Toklat River near Mt. McKinley, Alaska, 1907-1908. Auk 26:66-70.

Included in this annotated list of 60 species is information on spring arrival, breeding status, and relative abundance. Sixteen of the species are water-associated. CMH

Interior - Tanana (Toklat R.)
Shorebirds, seabirds, waterfowl, other
Annotated list, abundance, migration

*383. SHEPHERD, P.E.K. 1962. An ecological reconnaissance of the Trumpeter Swan in southcentral Alaska. M.S. thesis. Washington State Univ., Pullman. 168 pp.

This thesis presents detailed information on the breeding biology, distribution, abundance, and habitat requirements of Trumpeter Swans in Alaska. Recommendations for management and research are included. MRP

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, seabirds, waterfowl, other
Checklist

384. SHIELDS, G.F., and L.J. PEYTON. 1977. Avian community ecology of the Akulik-Inglutalik River Delta, Norton Bay, Alaska, pp. 150-205. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

An annotated list and histograms document the seasonal abundance and breeding status of the 83 species of birds observed in summer 1976. Nesting densities, phenology, and success are summarized for the most common breeding species. CMH

Bering Sea - Norton Sound (Norton Bay)
Shorebirds, seabirds, waterfowl, other
Checklist, annotated list, abundance, reproduction

385. SHIELDS, G.F.,and L.J. PEYTON. 1979. Avian community of the Akulik-Inglutalik River Delta, Norton Bay - Alaska, pp. 608-710. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 5. NOAA, Environ. Res. Lab., Boulder, Colo.

The avifauna of upper Norton Bay were investigated in summer 1976 and 1977. A checklist notes the relative abundance and nesting status of 103 species. Quantitative data on habitat use, timing of migration, nesting densities, productivity, and banding returns are presented for the most common species. Invertebrates sampled from pond edges and nearshore mudflats are identified. CMH

Bering Sea - Norton Sound (Norton Bay)
Shorebirds, seabirds, waterfowl, other
Habitat, migration, abundance, reproduction, subsistence, predation, food, checklist, pollution

386. SHORTT, T.M 1939. The Summer Birds of Yakutat Bay, Alaska. Contr. Royal Ontario Mus. Zool. 17. 30 pp.

The author presents annotated accounts of the birds observed and collected between May 13 and August 24, 1939. Of the 96 species addressed, 46 are water-associated. A general description of the area is included. MRP

Gulf of Alaska - Copper River (Yakutat)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

387. SHUNTOV, V.P. 1962. Land birds and shorebirds in the Bering Sea. [In Russian.] Ornithologiya 4:373-375.

Not reviewed.

Bering Sea
Shorebirds, other

*388. SHUNTOV, V.P. 1972. Marine Birds and the Biological Structure of the Ocean. Pac. Res. Instit. Fish. Manage. Oceanogr. (TINRO), Far-Eastern Publishers, Vladivostok. 378 pp. [Transl. from Russian, Agence Tunisienne de Public - Relations for U.S. Dept. Int., Bur. Sport Fish. Wildl. and Natl. Sci. Found, 1974. 566 pp.]

The species' assortment, seasonal distribution, migration, population density, numbers and geographic dispersal of seabirds are examined with respect to the existing biological structure of the World Ocean. Considerable attention is given to 17 species, 9 of them common to Alaska waters. The number of seabirds on the World Ocean is estimated and their role as consumers of other animals is discussed. REG

Gulf of Alaska
Aleutians
North Pacific
Bering Sea
Shorebirds, seabirds, waterfowl
Distribution, abundance

389. SLADEN, W.J. 1966. Additions to the avifauna of the Pribilof Islands, Alaska, including five species new to North America. Auk 83:130-135.

The author reports the addition of 22 species to the list of avifauna of the Pribilof Islands. Observations and collections were made in 1960, 1961, and 1962 and include those of 15 species of water-associated birds. REG

Bering Sea - Pribilof Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, specimen record

390. SLATER, R., and R.A. DAVIS. 1974. Surveys of terrestrial bird populations in Alaska, Yukon Territory, Northwest Territories, and northern Alberta, May, June, July 1972. Arct. Gas Biol. Rep. Ser. 12:36-384.

Bird populations were censused, habitat types were identified, and habitat use by birds was quantified at sites along the proposed gas pipeline route. MRP

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Abundance, annotated list, distribution, habitat

391. SMITH, P.S., and J.B. MERTIE, JR. 1930. Geology and Mineral Resources of Western Alaska. U.S. Geol. Surv. Bull. 815. 351 pp.

This volume primarily reports on the early geological investigation of northwestern Alaska. A brief anecdotal account of the region's avifauna is included. NMH

Arctic - Chukchi
Waterfowl, other
Distribution

*392. SNARSKI, D. 1970. Kittiwake ecology, Tuxedni National Wildlife Refuge. Alaska Coop. Wildl. Res. Unit Quart. Prog. Rep. 22(1):10-12.

This progress report presents a brief summary of results from a study on the nesting ecology of Black-legged Kittiwakes on Chisik Island. Included is an annotated list of 57 species of birds, 32 of them water-related, observed on or near the island. MRP

Gulf of Alaska - Cook Inlet (Tuxedni NWR)
Shorebirds, seabirds, waterfowl, other
Annotated list

393. SNYDER, L.L. 1926. The birds of Wrangell Island, with special reference to the Crawford Collection of 1922. Univ. Toronto Stud. Biol. Ser. 28:3-20.

This includes an "annotated list of 20 species and a hypothetical list of 17 others. References are made to some matters of Alaskan distribution." (From T.J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Alaska
Distribution

394. SPINDLER, M.A. 1979. Bird Populations in Coastal Habitats, Arctic National Wildlife Range, Alaska. Unpublished report. U.S. Fish and Wildl. Serv., Fairbanks, Alaska. 23 pp.

This report presents information on the abundance and distribution of birds within the coastal zone of the Arctic National Wildlife Range. MRP

Arctic - Beaufort (Arctic NWR)
Shorebirds, seabirds, waterfowl, other
Abundance, distribution

395. SPINDLER, M.A., and B. KESSEL. 1977. Wetland Bird Populations in the Upper Tanana River Valley, Alaska, 1977. Unpublished report. Northwest Alaskan Pipeline Company. 71 pp.

This report contains information on the timing of migration, habitat use, density, and species diversity of birds in the upper Tanana River, lower Nabesna River, Chisana River, and Scottie Creek drainages. MRP

Interior - Tanana (Tanana R.)
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, habitat, migration

396. SPINDLER, M.A., M.A. MOUTON, and S.O. MACDONALD. 1980. Biological Surveys in the Firth-Mancha Research Natural Area, Alaska, 1979-1980. Unpublished report. U.S. Fish and Wildlife Serv., Fairbanks, Alaska. 91 pp.

This report includes an annotated list of the 87 species of birds, including 33 water birds, recorded in the Mancha Creek area. Habitat types are identified and described; the distribution and abundance of birds are analyzed for five major habitats. Intense field work in summer 1979 was supplemented by visits in other seasons. CMH

Arctic - Beaufort (Mancha Creek)
Shorebirds, seabirds, waterfowl, other
Annotated list, abundance, distribution, habitat

397. SPRINGER, H.K. 1966. Unusual bird records from Hooper Bay, Alaska. Condor 68:600-601.

Annotated accounts of five species of birds seen near Hooper Bay between May 22 and 29, 1964, are presented. Included are Rufous-necked Sandpiper, Short-billed Dowitcher, Aleutian Tern, Black Guillemot, and Brambling. REG

Bering Sea - Yukon Delta (Hooper Bay)
Shorebirds, seabirds, other
Short-billed Dowitcher, Rufous-necked Sandpiper, Aleutian Tern, Black Guillemot
Annotated list, status, distribution

398. STEJNEGER, L. 1885. Results of Ornithological Explorations in the Commander Islands and in Kamschatka. U.S. Natl. Mus. Bull. 29. 382 pp.

The author discusses 142 species collected or observed, plus other matters, some of which relate to Alaska. (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Alaska
Distribution

399. STEJNEGER, L. 1888. Palmen's contributions to the knowledge of the bird fauna of the Siberian coasts of the Arctic Sea. Auk 5:306-311.

In the course of this review, the author also discusses the identification, taxonomic status, and occurrence of seven species of Alaska water birds. CMH

Arctic
Bering Sea
Shorebirds, seabirds, waterfowl
White-fronted Goose, American Golden Plover, Rufous-necked Sandpiper, Dunlin, Herring Gull, Black-legged Kittiwake, Black Guillemot
Taxonomy, distribution, plumage

400. STONE, W. 1900. Report on the birds and mammals collected by the McIlhenny Expedition to Pt. Barrow, Alaska. Proc. Acad. Nat. Sci. Phila. 1900:4-49.

This paper summarizes specimen data and gives a brief description of molts and plumages of birds collected at several sites in Alaska between July 1897 and August 1898. The collection consists of over 1,400 specimens of 59 species. MRP

Arctic - Chukchi (Cape Lisburne, Wainwright, Pt. Hope, Barrow)
Bering Sea - Norton Sound (Port Clarence, King Is.)
North Pacific
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record, plumage

401. STRESEMANN, E. 1948. Dr. C.H. Merck's ornithologische Aufzeichnungen, wahrpend der Billingsschen Expedition von Ochotsk nach Alaska (1787-1791). [In German.] Zoologische Jahrbucher; Abt. fur Systematik, Okologie and Geographie der Tiere 1948. Bol. 78:97-132.

Not reviewed.

402. STRESEMANN, E. 1949. Birds collected in the North Pacific area during Capt. James Cook's last voyage (1778 and 1779). Ibis 91:244-255.

This paper presents a brief itinerary of the voyage and lists all of the specimens collected at each stop. Several changes in nomenclature are suggested. MRP

Gulf of Alaska - Prince William Sound
Aleutians - (Unalaska Is.)
Bering Sea - Norton Sound, St. Matthew Is.
Shorebirds, seabirds, waterfowl, other
Taxonomy, specimen record

403. SUTTON, G.M., and R.S. WILSON. 1946. Notes on the winter birds of Attu. Condor 48:83-91.

Annotated accounts, summarizing observations obtained between February 20 and March 18, 1945, are presented for 26 species, including 18 water-associated forms. REG

Aleutians - (Attu Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

404. SWARTH, H.S. 1911. Birds and mammals of the 1909 Alexander Alaska Expedition. Univ. Calif. Publ. Zool. 7:9-172.

This very detailed report describes habitats of various localities visited by the expedition, and presents detailed annotated accounts of birds and mammals observed. Of the 137 species of birds recorded, 55 are water-oriented forms. MRP

Gulf of Alaska - Southeastern (Sitkan district)
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record, habitat

405. SWARTH, H.S. 1922. Birds and mammals of the Stikine River region of northern British Columbia and southeastern Alaska. Univ. Calif. Publ. Zool. 24:125-314.

The author describes the habitats of the Stikine valley, and provides checklists and annotated accounts of birds and mammals of the area. Of the 127 species of birds treated, 24 are water-associated. MRP

Gulf of Alaska - Southeastern (Stikine R.)
Shorebirds, seabirds, waterfowl, other
Habitat, checklist, annotated list

406. SWARTH, H.S. 1934. Birds of Nunivak Island, Alaska. Pac. Coast Avifauna 22. 64 pp.

This work remains the most extensive and complete account of the avifauna of this Bering Sea island. Observations were made between June 30 and November 6, 1927, and address some 150 forms. Morphometric data are reported for many of the 555 specimens collected. REG

Bering Sea - Nunivak Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, status, distribution, migration, habitat, specimen record

407. SWARTH, H. 1936. Origins of the fauna of the Sitkan district, Alaska. Proc. Calif. Acad. Sci. (4th ser.) 15:59-78.

The author discusses the possible geographic origins of species of birds, mammals, and amphibians in southeastern Alaska. The distribution of 32 species and subspecies of birds in this region and adjacent areas is discussed. MRP

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Great Blue Heron, Canada Goose, Mallard, Spotted Sandpiper, Greater Yellowlegs
Distribution, zoogeography

408. TABER, R.D. 1946. The winter birds of Adak, Alaska. Condor 48:272-277.

Annotated accounts summarize observations between November 18, 1945, and January 20, 1946. Of the 37 species of birds observed, 26 were water-associated forms. A brief comparison of the winter avifaunas of Adak and Attu Islands is presented. REG

Aleutians - (Adak Is., Attu Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

409. TAVERNER, P.A. 1915. List of specimens collected by Capt. Jos. Benard on the Arctic Coast, N.W.T., Canada. Summ. Rep., Geol. Surv., Dept. Mines, 1915:258-260.

This paper includes "several specimens taken in Alaska." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Arctic
Specimen record

410. TAYLOR, E.J., S.G. SIMPSON, and M.S. BROMLEY. 1980. Waterbird Populations and Wetland Habitats at Goose Lake Study Site, 1979. Unpublished report. U.S. Fish and Wildl. Serv., Office of Special Studies, Anchorage, Alaska. Unpaginated.

This report provides detailed information on wetland habitats near Teshekpuk Lake and their seasonal use by birds. MRP

Arctic - Beaufort (Teshekpuk R.)
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, habitat, reproduction, food, disturbance, annotated list

411. THAYER, J.E., and O. BANGS. 1914. Notes on the birds and mammals of the Arctic Coast of East Siberia. Proc. New England Zool. Club 5:1-66.

This paper includes an "annotated list of 109 species, some of which have pertinence to Alaska." (From T. J. Cade, 1953, A Synoptic Bibliography of Alaskan Ornithology, Univ. Calif. Dept. Zool., Los Angeles. Original not seen.) CMH

Alaska
Annotated list

412. THOMPSON, C.F. 1967. Notes on the birds of the Northeast Cape of St. Lawrence Island and of the Punuk Islands, Alaska. Condor 69:411-419.

This paper presents annotated accounts of 44 species, including 38 water-associated forms, observed from April 25, 1964, to January 20, 1965. Avian habitats of the area are described. REG

Bering Sea - St. Lawrence Is., Punuk Is.
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat

413. TOWNSEND, C.H. 1887. List of the midsummer birds of the Kowak River, northern Alaska. Auk 4:11-13.

This is a checklist of the 52 species of birds, including 21 water birds, observed during an exploration of the Kowak (= Kobuk) River in July and August 1885. Relative abundance and breeding status are noted. CMH

Arctic - Kotzebue Sound (Kobuk R.)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance

414. TOWNSEND, C.H. 1887. Notes on the natural history and ethnology of northern Alaska, pp. 85-162. In Capt. M.A. Healy, Report of the Cruise of the Revenue Steamer Corwin in the Arctic Ocean, 1885. U.S. Govt. Print. Off., Washington, D.C.

Brief annotated accounts are given for 58 species observed along the Kowak (= Kobuk) River in summer 1885. In addition, there is a short description of birds "obtained at various places between the Aleutian Islands and Kotzebue Sound." This consists of short annotated accounts for the 48 species collected, and concerns mostly birds encountered on the Pribilof Islands and Unalaska. REG

Arctic - Kotzebue Sound (Kobuk R.)
Bering Sea
Aleutians
Shorebirds, seabirds, waterfowl, other
Annotated list, specimen record

*415. TRAPP, J.L. 1977. Aerial Bird Survey of the Coastal Waters of Kodiak Island, Alaska: March 9-14, 1977. Unpublished report. U.S. Fish and Wildlife Serv., Kodiak National Wildlife Refuge, Kodiak, Alaska. 17 pp.

An aerial survey was conducted over coastal waters of Kodiak Island. Annotated accounts are presented for the species of birds observed, and distribution patterns are discussed. Numbers of birds, densities, and frequency of occurrence are summarized in tables for each species. Results are compared with those of previous surveys. CMH

Gulf of Alaska - Kodiak (Kodiak Is.)
Shorebirds, seabirds, waterfowl
Abundance, annotated list, habitat, distribution

416. TRAUTMAN, M.B. 1966. Birds, pp. 121-144. In A. Mirsky (ed.), Soil Development and Ecological Succession in a Defoliated Area of Muir Inlet, Southeast Alaska. Inst. Polar Stud., Ohio State Univ. Res. Found. Rep. 20. 167 pp.

Transects radiating from a retreating glacier were censused repeatedly in June 1965 to determine abundance of the 110 species recorded in the area. Abundance was then analyzed, for the most common species, in relation to the amount of time habitats had been available since glaciation. Only general results are discussed, but tables present a daily list of the numbers of each species seen and summarize specific results. CMH

Gulf of Alaska - Southeastern (Muir Inlet)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, habitat

417. TRUETT, J.C. 1978. Beaufort Sea barrier island-lagoon ecological process studies, Section 1. Overview and synthesis, pp. 406-466. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 7. NOAA, Environ. Res. Lab., Boulder, Colo.

This report provides a brief overview and synthesis of information from studies on the oceanography, geology, and ecology of a barrier island/lagoon system. The information on birds is summarized from Johnson (1978, same volume). CMH

Arctic - Beaufort (Simpson Lagoon)
Shorebirds, seabirds, waterfowl, other
Abundance, habitat, migration, food, management, disturbance

418. TULL, C.E., I.D. THOMPSON, and P.E. TAYLOR. 1974. Continuing surveys of terrestrial bird populations in Northwest Territories, Yukon Territory, and Alaska: June and July, 1973. Arct. Gas Biol. Rep. Ser. 29:1-217.

Ground censuses of avian populations were conducted along the proposed gas pipeline route. Results and discussion are very general. A checklist of all species seen is appended. CMH

Arctic - Beaufort
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, distribution, habitat

419. TURNER, L.M. 1885. Notes on the birds of the Nearer Islands, Alaska. Auk 2:154-159.

The author provides a short description of the three westernmost Aleutian Islands and includes a briefly annotated checklist of the birds observed or collected there during a year-long visit in 1880-1881. Relative abundance and breeding status are noted for each of the 69 species recorded, 51 of which are water-associated. CMH

Aleutians - (Attu Is., Agattu Is., Semichi Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, subsistence

420. TURNER, L.M. 1886. Contributions to the natural history of Alaska, Part V, Birds, pp. 115-196. In U.S. Army Signal Service, Arct. Ser. Publ. 2., Washington, D.C.

This major work is the result of extensive field work conducted between 1874 and 1881. Detailed annotated accounts are presented for 161 taxa, with specimen and meristic data listed for several. Most of the work was conducted over western Alaska and the eastern Aleutians. A checklist of all birds known from Alaska at that time is appended. REG

Alaska
Aleutians - (Unalaska Is.)
Bering Sea - Norton Sound (St. Michael)
Shorebirds, seabirds, waterfowl, other
Annotated list, subsistence, distribution, specimen record, checklist

421. U.S. FISH AND WILDLIFE SERVICE. 1948 to present. Kenai National Moose Range. Unpublished narrative reports. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

These narrative reports present information on weather, habitat, wildlife, refuge development and maintenance, resource management, public relations, and field investigations on the refuge. The amount and type of information vary between years. However, numbers, arrival dates, and general observations of birds are included in some reports. MRP

Gulf of Alaska - Cook Inlet (Kenai National Moose Range)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, distribution, behavior, disturbance, food, habitat, management, migration, mortality, population dynamics, predation, public interest, reproduction, research, status, techniques

422. U.S. FISH AND WILDLIFE SERVICE. 1950 to present. Aleutian Islands National Wildlife Refuge. Unpublished annual reports. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

These narrative reports present information on weather conditions, water conditions, fires, wildlife, refuge development and maintenance, resource management, field investigations, and public relations on refuges. Content of the reports varies between years. However, numbers, arrival dates, and general observations of birds are reported for most years. Information from the Eastern Aleutians NWR, Semidi NWR, Simeonof NWR, and Izembek NWR is included through 1971. Thereafter, only information from the Aleutian Island NWR and Bogoslof NWR is included. MRP

Aleutians - (Aleutian Island NWR, Eastern Aleutians NWR)
Bering Sea - Bristol Bay (Izembek NWR)
Gulf of Alaska - Kodiak (Semidi NWR)
North Pacific - (Simeonof NWR)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, distribution, behavior, disturbance, food, habitat, management, migration, mortality, population dynamics, predation, public interest, reproduction, research, status, techniques

423. U.S. FISH AND WILDLIFE SERVICE. 1950 to present. Kodiak National Wildlife Refuge. Unpublished narrative reports. U.S. Fish and Wildlife Service, Anchorage, Alaska.

These narrative reports present information on weather, habitat, wildlife, refuge development and maintenance, resource management, public relations, and field investigations on the refuge. The amount and type of information vary between years. However, numbers, arrival dates, and general observations of birds are included in some reports. MRP

Gulf of Alaska - Kodiak (Kodiak NWR)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, distribution, behavior, disturbance, food, habitat, management, migration, mortality, population dynamics, predation, public interest, reproduction, research, status, techniques

424. U.S. FISH AND WILDLIFE SERVICE. 1951 to present. Nunivak National Wildlife Refuge. Unpublished narrative reports. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

These narrative reports present information on weather, habitat, wildlife, refuge development and maintenance, resource management, public relations, and field investigations on the refuge. The amount and type of information vary between years. However, numbers, arrival dates, and general observations of birds are included in most reports. MRP

Bering Sea - Yukon Delta (Nunivak Is.)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, distribution, behavior, disturbance, food, habitat, management, migration, mortality, population dynamics, predation, public interest, reproduction, research, status, techniques

425. U.S. FISH AND WILDLIFE SERVICE. 1963 to present. Clarence Rhode National Wildlife Range. Unpublished narrative reports. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

These narrative reports present information on weather, habitat, wildlife, refuge development and maintenance, resource management, public relations, and field investigations on the refuge. The amount and type of information vary between years. However, numbers, arrival dates, and general observations of birds are included in most reports. Information from the Nunivak National Wildlife Refuge is included in some years. MRP

Bering Sea - Yukon Delta (Clarence Rhode NWR, Nunivak NWR)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, distribution, behavior, disturbance, food, habitat, management, migration, mortality, population dynamics, predation, public interest, reproduction, research, status, techniques

426. U.S. FISH AND WILDLIFE SERVICE. 1969 to present. Cape Newenham National Wildlife Refuge. Unpublished narrative reports. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

These reports present information on human use and a brief description of studies on the refuge. Most reports include lists of the species of birds, fish, and mammals seen, and some provide additional notes. MRP

Bering Sea - Bristol Bay (Cape Newehnam NWR)
Shorebirds, seabirds, waterfowl, other
Annotated list, checklist, subsistence, fishing, pollution

427. U.S. FISH AND WILDLIFE SERVICE. 1970 to present. Arctic National Wildlife Refuge. Unpublished reports. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

These narrative reports present information on weather, habitat, wildlife, refuge development and maintenance, resource management, public relations, and field investigations on the refuge. The amount and type of information vary between years. However, numbers, arrival dates, and general observations of birds are frequently included. MRP

Arctic - Beaufort (Arctic NWR)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, distribution, behavior, disturbance, food, habitat, management, migration, mortality, population dynamics, predation, public interest, reproduction, research, status, techniques

428. U.S. FISH AND WILDLIFE SERVICE. 1970. Birds of the Arctic National Wildlife Range. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

This is a checklist of 139 species, 27 of which are treated as occurring hypothetically. REG

Arctic - Beaufort (Arctic NWR)
Shorebirds, seabirds, waterfowl, other
Checklist

429. U.S. FISH AND WILDLIFE SERVICE. 1970. A Reconnaissance Report on the Impact on Fish and Wildlife Resources of the North Slope Oil Development, Trans-Alaska Pipeline System, and Marine Terminal Sites. Unpublished report. U.S. Fish and Wildl. Serv., Juneau, Alaska. 57 pp.

Not reviewed.

Arctic - Chukchi, Beaufort

430. U.S. FISH AND WILDLIFE SERVICE. 1971. Birds of the Clarence Rhode National Wildlife Range. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

The status, relative abundance, and seasonal occurrence of 96 species are presented in this checklist. JCG

Bering Sea - Yukon Delta (Clarence Rhode NWR)
Shorebirds, seabirds, waterfowl, other
Checklist

431. U.S. FISH AND WILDLIFE SERVICE. 1972 to present. Izembek National Wildlife Range. Unpublished reports. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

These narrative reports present information on weather, habitat, wildlife, refuge development and maintenance, resource management, public relations, and field investigations on the refuge. The amount and type of information vary between years. However, numbers, arrival dates, and general observations of birds are frequently included. This series contains information from Izembek NWR, Simeonof NWR, Semidi NWR, and Eastern Aleutians NWR. MRP

Aleutians - (Eastern Aleutians NWR)
Bering Sea - Bristol Bay (Izembek NWR)
Gulf of Alaska - Kodiak (Semidi NWR)
North Pacific - (Simeonof NWR)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, distribution, behavior, disturbance, food, habitat, management, migration, mortality, population dynamics, predation, public interest, reproduction, research, status, techniques

432. U.S. FISH AND WILDLIFE SERVICE. 1973. Birds of the Izembek National Wildlife Range. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

The status, relative abundance, seasonal occurrence, and habitat preferences of 124 species are given. An additional 18 species are treated as occurring accidentally. JCG

Bering Sea - Bristol Bay (Izembek NWR)
Shorebirds, seabirds, waterfowl, other
Checklist

433. U.S. FISH AND WILDLIFE SERVICE. 1974. Birds of the Aleutian Islands National Wildlife Refuge. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

This checklist addresses 127 species. An additional 59 species are treated as occurring accidentally. Status, relative abundance, seasonal occurrence, and habitat affinities are given for each species in the eastern, central, and western Aleutians. JCG

Aleutians
Shorebirds, seabirds, waterfowl, other
Checklist

434. U.S. FISH AND WILDLIFE SERVICE. 1975. Birds of the Kodiak National Wildlife Refuge. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

The status, relative abundance, seasonal occurrence, and habitat preferences of 116 species are given. JCG

Gulf of Alaska - Kodiak (Kodiak Is.)
Shorebirds, seabirds, waterfowl, other
Checklist

435. U.S. FISH AND WILDLIFE SERVICE. 1976. Birds of Nunivak National Wildlife Refuge. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

The status, relative abundance, seasonal occurrence, and habitat preferences of 108 species are given in this checklist. JCG

Bering Sea - Nunivak Is.
Shorebirds, seabirds, waterfowl, other
Checklist

436. U.S. FISH AND WILDLIFE SERVICE. 1976. Checklist of Birds Common to the Kenai National Moose Range. U.S. Fish and Wildl. Serv., Anchorage, Alaska.

This is a checklist of 38 species. Their status, relative abundance, and seasonal occurrence are given. JCG

Gulf of Alaska - Cook Inlet (Kenai Peninsula)
Shorebirds, seabirds, waterfowl, other
Checklist

437. UNIVERSITY OF ALASKA, ARCTIC ENVIRONMENTAL INFORMATION AND DATA CENTER AND INSTITUTE OF SOCIAL, ECONOMIC, AND GOVERNMENT RESEARCH. 1974. The Bristol Bay Environment: A Study of Available Knowledge. U.S. Dept. Army, Corps of Eng., Anchorage, Alaska. 858 pp.

This report includes a very general discussion of the water birds and raptors of Bristol Bay, summarizing available information on occurrence, habitat use, and food habits. CMH

Bering Sea - Bristol Bay
Shorebirds, seabirds, waterfowl, other
Habitat, distribution, food

438. VENIAMINOF, B.I. 1875. [Extract from] Zabieska ob Octrovah Oonahlashkenskaho Otdayla. St. Petersburg, 1840. [Translation of "selections, most pertinent to subject" (Pribilof Islands) published by Elliott in his report on the condition of affairs in the Territory of Alaska, 1875, pp. 241-244.]

"A paragraph mentioning somewhat over a dozen species of birds which visit the Pribilof Islands seems to be the earliest note on the ornithology of the group." (From Gabrielson and Lincoln, Birds of Alaska, 1959. Original not seen.) CMH

Bering Sea - Pribilof Is.
Distribution

439. VINCENT, R.E. 1964. The origin and affinity of the biota of the Kodiak Island Group, Alaska. Pac. Sci. 18:119-125.

This paper primarily addresses the plants of the Kodiak Island area; however, some fish, mammals, and birds are mentioned. MRP

Gulf of Alaska - Kodiak (Kodiak Is. archipelago)
Seabirds, waterfowl, other
Zoogeography

*440. WAHL, T.R. 1978. Seabirds in the northwestern Pacific Ocean and south central Bering Sea in June 1975. West. Birds 9:45-66.

The distribution and abundance of birds recorded on a cruise from Hakodate, Hokkaido, Japan, to Kodiak, Alaska, are reported. MRP

Aleutians
Bering Sea
Shorebirds, seabirds, waterfowl
Abundance, annotated list, distribution

441. WALKINSHAW, L.H. 1950. Some bird observations at Chevak, Alaska. Auk 67:249.

This note presents a list of 29 species of birds observed at Chevak (= Old Chevak) on June 20 and 21, 1946. Clutch sizes are listed for all nests found. MRP

Bering Sea - Yukon Delta
Shorebirds, seabirds, waterfowl, other
Annotated list

442. WALKINSHAW, L.H., and J.J. STOPHLET. 1949. Bird observations at Johnson River, Alaska. Condor 51:29-34.

The authors provide a checklist of 49 species observed between June 1 and 20, 1946. In addition, they present annotated accounts of the 20 species, including 11 water birds, found breeding in the area. An introduction describes the plants of the area and discusses the weather during the course of the investigation. REG

Bering Sea - Yukon Delta (Johnson R.)
Shorebirds, seabirds, waterfowl, other
Checklist, annotated list

*443. WARNER, I.M. 1975. Census of Seabirds: Gulf of Alaska, September 1975. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 13 pp.

The author presents results of shipboard censuses conducted in the Gulf of Alaska and provides information on food habits of birds collected during the cruise. MRP

Gulf of Alaska
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, food

*444. WATSON, G.E., and G.J. DIVOKY. 1974. Marine birds of the western Beaufort Sea, pp. 681-695. In J.C. Reed and J.E. Sater (eds.), The Coast and Shelf of the Beaufort Sea. Arct. Instit. North Am., Washington, D.C.

Censuses were conducted during two shipboard cruises in the western Beaufort Sea in falls 1971 and 1972. In an annotated list, the authors summarize information on the distribution and food habits of the species of birds observed. MRP

Arctic - Beaufort
Shorebirds, seabirds, waterfowl
Annotated list, distribution, food

445. WEBSTER, J.D. 1941. Notes on the birds of Sitka and vicinity, southeastern Alaska. Condor 43: 120-121.

Annotated accounts are presented for 21 species, including 13 marine forms. Data were collected between February and September 1940 and update previous ornithological works from the area. REG

Gulf of Alaska - Southeastern (Sitka)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

446. WEBSTER, J.D. 1950. Altitudinal zonation of birds in southeastern Alaska. Murrelet 31:23-26.

This paper describes the major vegetation types and associated bird species of three altitudinal zones in southeastern Alaska. CMH

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Habitat

447. WEBSTER, J.D. 1950. Notes on the birds of Wrangell and vicinity, southeastern Alaska. Condor 52:32-38.

The author presents an annotated list of 51 of the species observed in the vicinity of Wrangell in spring and summer 1946. These records provide new information for the avifauna of southeastern Alaska as a whole, or for that of the upper Stikine River. Eighteen of the species treated are water-associated. CMH

Gulf of Alaska - Southeastern (Wrangell)
Shorebirds, seabirds, waterfowl, other
Annotated list

*448. WEHLE, H., E. HOBERG, and K. POWERS. 1977. Studies of marine birds on Ugaiushak Island, pp. 155-277. In Environmental Assessment of the Alaskan Continental Shelf, Annual Reports of Principal Investigators, Vol. 4. NOAA, Environ. Res. Lab., Boulder, Colo.

This reports on the populations, breeding biology, food habits, and foraging areas of 21 species of marine birds in summer 1976. A daily checklist of the birds observed on the island, numbering 50 species, is appended. CMH

Gulf of Alaska - Kodiak (Ugaiushak Is.)
Shorebirds, seabirds, waterfowl, other
Checklist

449. WELCH, R.A. 1965. Ecological observations in the Muir Inlet area, Glacier Bay National Monument, Alaska. Rep. Inst. Polar Stud. 15:1-19.

Not reviewed.

Gulf of Alaska - Southeastern (Muir Inlet)

450. WEST, G.C., and B.B. DEWOLFE. 1974. Populations and energetics of taiga birds near Fairbanks, Alaska. Auk 91:757-775.

In this study, the authors estimated the total amount of energy required by a community of taiga birds in interior Alaska between late May and the end of August. Estimates are based on trail censuses of two areas and from direct measurement of the daytime resting metabolic rate of 11 of the 49 species recorded. Nine of the species censused are water-associated. CMH

Interior - Tanana (Fairbanks)
Shorebirds, seabirds, waterfowl, other
Abundance, physiology, food, habitat

451. WEST, G.C., and C.M. WHITE. 1966. Range extensions and additional notes on the birds of Alaska's Arctic Slope. Condor 68:302-304.

Annotated accounts are given for 17 species, including 10 water-associated forms, observed and/or collected in spring and summer 1964 near Umiat, Alaska. REG

Arctic - Beaufort (Umiat)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, specimen record

452. WEST, R.L. 1980. Field Report for the Walrus Project at Savoonga, Alaska on Saint Lawrence Island - May to June 1980. Unpublished report. U.S. Fish and Wildl. Serv., Anchorage, Alaska. 46 pp.

Included in this report is a discussion of subsistence use of birds. A table lists the species observed in May and June 1980 and those previously recorded on the island. The numbers of each species seen during six visits to the nearby seabird cliffs are presented. CMH

Bering Sea - St. Lawrence Is. (Savoonga)
Shorebirds, seabirds, waterfowl, other
Checklist, abundance, subsistence

453. WETMORE, A. 1911. Report of Birds Observed in the Aleutian Islands during the Summer of 1911. Unpublished report compiled by D.C. Hooper, 1953. U.S. Fish and Wildl. Serv., Cold Bay, Alaska. 51 pp.

This report presents an annotated list of species observed in the Aleutians during the summer of 1911. MRP

Aleutians
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

454. WHITE, C.M., and T.J. CADE. 1971. Cliff-nesting raptors and ravens along the Colville River in Arctic Alaska. Living Bird 10:107-150.

This paper examines the ecological niches of the Peregrine Falcon, Gyrfalcon, Rough-legged Hawk, and Common Raven nesting on cliffs in Arctic Alaska. It discusses spatial and temporal habitat use, food habits, and possible benefits from other species. A wide variety of water birds are found to be important prey, especially for the Peregrine Falcon. CMH

Arctic
Shorebirds, seabirds, waterfowl, other
Predation

455. WHITE, C.M., and J.R. HAUGH. 1969. Recent data on summer birds of the upper Yukon River, Alaska and adjacent part of the Yukon Territory, Canada. Can. Field-Nat. 83:257-271.

The authors provide annotated accounts for 92 species observed between June 10 and August 3, 1966, and during brief periods from May to July 1968. Some 40 of the species discussed are typically water-associated. The relative stability of several populations is discussed. REG

Interior - Upper Yukon (Circle)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, status

456. WHITE, C.M., F.S.L. WILLIAMSON, and W.B. EMISON. 1977. Avifaunal investigations, pp. 227-260. In M.L. Merritt and R.G. Fuller (eds.), The Environment of Amchitka Island, Alaska. Tech. Inform. Cent., Energy Res. Develop. Admin., Springfield, Virginia.

This chapter summarizes results of a study of the bird populations of Amchitka Island between 1967 and 1973. The status and seasonal abundance of each species are presented. Of the 131 species treated, 94 are water-related. The distribution of birds is analyzed in relation to 14 ecological formations. Information on population densities and food habits is presented for some species. CMH

Aleutians - (Amchitka)
Shorebirds, seabirds, waterfowl, other
Checklist, distribution, abundance, habitat, food, disturbance

457. WICKERSHAM, J. 1927. A Bibliography of Alaskan Literature, 1724-1924. Misc. Publ. of the Alaska Agric. College and School of Mines, Vol. 1. Cordova Daily Times Print, Cordova. 635 pp.

This book contains a comprehensive list of all publications between 1724 and 1924, including those in English, Russian, and several other languages. Listings 690-773 pertain specifically to birds. CMH

Alaska
Shorebirds, seabirds, waterfowl, other
Bibliography

458. WILLETT, G. 1912. Report of G. Willett, agent and warden stationed on St. Lazaria Bird Reservation, Alaska. Bird-Lore 14:419-426.

Not reviewed.

Gulf of Alaska - Southeastern (St. Lazaria Is.)

459. WILLETT, G. 1914. Birds of Sitka and vicinity, southeastern Alaska. Condor 16:71-91.

During the summers of 1912 and 1913 the author made detailed notes on the avifauna of the Sitka area, primarily that associated with the numerous island groups. This paper provides annotated accounts of some 150 taxa, of which 75 are water-associated. An extensive literature cited section is included. Numerous specimen records are listed. REG

Gulf of Alaska - Southeastern (Sitka, Baranof Is., Kruzof Is., Chichagof Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution, specimen record

460. WILLETT, G. 1915. Summer birds of Forrester Island, Alaska. Auk 32:295-305.

This paper provides annotated accounts for 27 species of water birds and 21 species of landbirds observed on Forrester Island between May 23 and August 15, 1914. Included is a tabular summary of numbers of breeding water birds. REG

Gulf of Alaska - Southeastern (Forrester Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list, abundance

461. WILLETT, G. 1917. Further notes on the birds of Forrester Island, Alaska. Condor 19:15-17.

This annotated list reports observations made during two summers. The 26 species addressed had not previously been recorded for the island's avifauna. Included are 16 species of water-associated birds. CMH

Gulf of Alaska - Southeastern (Forrester Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

462. WILLETT, G. 1918. Bird notes from Forrester Island, Alaska. Condor 20:85.

This note presents records for 15 species not previously reported on Forrester Island. Eleven are water-associated species. CMH

Gulf of Alaska - Southeastern (Forrester Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

463. WILLETT, G. 1921. Bird notes for 1920 from southeastern Alaska. Murrelet 2:7-11.

The author presents, in narrative format, an account of the birds observed throughout the year 1920. Some species are discussed in detail, but most are only listed as having been seen at a given locality and time. REG

Gulf of Alaska - Southeastern (Craig, Forrester Is., Wrangell Is., Dall Is.)
Shorebirds, seabirds, waterfowl, other
Distribution, habitat

464. WILLETT, G. 1921. Bird notes from southeastern Alaska. Condor 23:156-159.

The author updates previously published information on the birds of southeastern Alaska by presenting annotated accounts of 36 species, including 18 water-related forms. Much of the information presented in this paper came from the notes and collections of F. H. Gray, of Wrangell. REG

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Annotated list

465. WILLETT, G. 1921. Ornithological notes from southeastern Alaska. Auk 38:127-129.

The author provides information which extends the known ranges of 21 species, and suggests new common names for a few. CMH

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Yellow-billed Loon, Red-necked Grebe, Horned Grebe, Whistling Swan, Canada Goose, Herring Gull, Mew Gull, Black Oystercatcher, Black Turnstone, Common Snipe
Distribution, taxonomy

466. WILLETT, G. 1923. Bird records from Craig, Alaska. Condor 25:105-106.

This note details the occurrence of 10 species new to the vicinity of Craig; five water-related species are included. REG

Gulf of Alaska - Southeastern (Craig)
Shorebirds, seabirds, waterfowl, other
Western Grebe, White-fronted Goose, Hooded Merganser, California Gull, Red Knot
Annotated list, distribution

467. WILLETT, G. 1927. Notes on the occurrence and distribution of some southeastern Alaskan birds. Condor 29:58-60.

The author discusses the distribution of selected species common to southeastern Alaska and British Columbia. CMH

Gulf of Alaska - Southeastern
Shorebirds, seabirds, waterfowl, other
Annotated list, distribution

468. WILLETT, G. 1928. Notes on some birds of southeastern Alaska. Auk 45:445-449.

This note was written to update the information on the avifauna of this region and includes annotated accounts of 22 taxa. The White-crested Cormorant (= Double-crested), Baird's Cormorant (= Pelagic) and Lesser Scaup are the only water birds discussed. REG

Gulf of Alaska - Southeastern
Seabirds, waterfowl, other
Double-crested Cormorant, Pelagic Cormorant, Lesser Scaup
Annotated list, distribution

469. WILLIAMSON, F.S.L. 1957. Ecological distribution of birds in the Napaskiak area of the Kuskokwim River delta, Alaska. Condor 59:317-338.

The climate, topography, and general ecological attributes of the Napaskiak area are briefly discussed. The distribution of birds observed during the summers of 1955 and 1956 is analyzed in relation to ten ecologic formations, characterized mainly by the life form of the vegetation. An annotated list presents information on 62 species, of which 34 are water birds. Specimen data are included. CMH

Bering Sea - Yukon Delta (Napaskiak)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, specimen record

470. WILLIAMSON, F.S.L., and L.J. PEYTON. 1961. Birds of the Anchorage Area, Alaska. Alaska Ornithological Society Field Checklist. Anchorage, Alaska.

This is a checklist of 119 species. The status, relative abundance, habitat association(s), and seasonal occurrence of each species are presented. REG

Gulf of Alaska - Cook Inlet (Anchorage)
Shorebirds, seabirds, waterfowl, other
Checklist

471. WILLIAMSON, F.S.L., and L.J. PEYTON. 1962. Faunal Relationships of Birds in the Iliamna Lake Area, Alaska. Biol. Pap. Univ. Alaska 5. 73 pp.

This paper describes 12 major ecologic formations in the vicinity of Iliamna Lake and analyzes the distribution of birds associated with each. Annotated accounts are presented for the 102 species of birds recorded from the area, including 39 water-associated forms. Relative abundance and habitat preferences are noted for each. Meristic data are provided for specimens. CMH

Bering Sea - Bristol Bay (Iliamna L.)
Shorebirds, seabirds, waterfowl, other
Annotated list, habitat, specimen record

472. WILLIAMSON, F.S.L., L.J. PEYTON, and M.E. ISLEIB. 1965. New distributional and overwintering records of birds from south-central Alaska. Condor 67:73-80.

This paper provides an annotated list of 26 species of birds for which there are new distributional or winter records for the region. Eight of the species are water-associated. CMH

Gulf of Alaska - Cook Inlet, Prince William Sound, Copper River
Shorebirds, seabirds, waterfowl, other
Fork-tailed Storm-Petrel, Great Blue Heron, Canvasback, Oldsquaw, Ivory Gull, Killdeer, Hudsonian Godwit, Upland Sandpiper
Distribution, annotated list

473. WILLIAMSON, F.S.L, M.C. THOMPSON, and J.Q. HINES. 1966. Avifaunal investigations, pp. 437-480. In N.J. Wilimovsky (ed.), Environment of the Cape Thompson Region, Alaska. U.S. Atomic Energy Commission, Oak Ridge, Tennessee.

This chapter presents information on bird populations in the Cape Thompson area during springs and summers of 1959 through 1961. Species composition, ecological distribution, density, productivity, and seasonal movements of birds were determined. MRP

Arctic - Chukchi (C. Thompson)
Shorebirds, seabirds, waterfowl, other
Distribution, checklist, migration, reproduction, habitat

474. WILSON, R.S. 1948. The summer bird life of Attu. Condor 50:124-129.

The author provides annotated accounts of 24 species of birds, including 17 marine forms, observed on Attu during the summer of 1945. REG

Aleutians - (Attu Is.)
Shorebirds, seabirds, waterfowl, other
Annotated list

475. WRIGHT, J.M. 1979. Reindeer grazing in relation to bird nesting on the northern Seward Peninsula. M.S. thesis. Univ. Alaska, Fairbanks. 109 pp.

This thesis presents information on the preferential use of vegetation by nesting birds and reindeer. The vulnerability of nests to disturbance and destruction is assessed for various habitats. MRP

Arctic - Kotzebue Sound (Seward Peninsula)
Shorebirds, seabirds, waterfowl, other
Abundance, distribution, habitat, checklist, management, mortality

476. YESNER, D.R. 1977. Avian exploration, occupational seasonality, and paleoecology of the Chugachik Island site. Anthropol. Pap. Univ. Alaska 18(2):23-30.

This paper relates prehistoric avifaunal remains from Chugachik Island to present bird use of Kachemak Bay. Approximately 75 percent of the remains were identifiable to family level, with waterfowl (Anatidae) comprising 57 percent of the remains. REG

Gulf of Alaska - Cook Inlet (Kachemak Bay)
Shorebirds, seabirds, waterfowl, other
Archaeology, abundance

477. YOCOM, C.F. 1963. Birds of the Tetlin Lake - Tok Junction - Northway area, Alaska. Murrelet 44:1-8.

The author presents annotated accounts for 66 species observed in the upper Tanana River Valley in July 1962. JCG

Interior - Tanana (Tok, Tetlin L.)
Shorebirds, seabirds, waterfowl, other
Annotated list, food, behavior

478. YOCOM, C.F. 1963. July bird life in the Copper River delta country, Alaska - 1962. Murrelet 42:28-34.

This paper presents annotated accounts of 40 species of birds observed in the Copper River - Cordova area in July 1962. The majority of species discussed are water-associated. REG

Gulf of Alaska - Copper River (Copper R. Delta)
Shorebirds, seabirds, waterfowl, other
Annotated list

479. YOCOM, C.F. 1964. Noteworthy records of birds from the Fort Yukon area and the Yukon Flats, Alaska. Murrelet 45:30-36.

This paper offers brief annotated accounts for some 60 species, including 27 water-associated forms. Observations were made from July 4-7 and from August 3 to September 3, 1962. REG

Interior - Upper Yukon (Yukon Flats, Ft. Yukon)
Shorebirds, seabirds, waterfowl, other
Annotated list

AVIFAUNA - AREA INDEX

AVIFAUNA - SUBJECT INDEX

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