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US FISH & WILDLIFE SERVICE--ALASKA

A Field Survey of Bird Use at Beaufort Lagoon

Prepared for the
Bureau of Sport Fisheries and Wildlife
Arctic National Wildlife Range

By
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Icy Reef and Beaufort Lagoon in late June.



The lagoon, gravel reef, and coastal tundra complex southeast of the Kongakut River.

SUMMARY

Beaufort Lagoon is situated along the northern periphery of the Arctic National Wildlife Range. The lagoon is defined as the area west of Demarcation Point, east of Pokok Bay, bounded on the north by Icy Reef and on the south by the mainland. For definitive purposes the study area includes the entire reef complex and all coastal land within a mile from the lagoon edge. The study area encompasses approximately 50 square miles of land and 25 square miles of reef and lagoon.

The coastline in this area runs on a northwest-southeast line. The prevailing wind is easterly. This arrangement produces a calm water effect on the lagoon side of the reef where waterfowl, shorebirds, and waterbirds find a protected feeding and resting area. During the report period, June 10th to September 10th, 19 species of birds were observed feeding or resting in the lee of the reef during inclement weather. Summer weather in this region is usually cool, characterized by fog banks, drizzle, and 10-20 mph winds.

Intermittent periods of sunny clear skies occur but occasionally strong winds accompany the sun. It is on these days of strong winds and clear skies that significant bird movements often occur. Precise weather information is summarized in the text from Barter Island weather station data.

Beaufort Lagoon is a unique segment of the ANWR. The lagoon area contains habitat and bird and animal life found on no other federally protected land. Migratory birds using the area include black brant, snow

goose, common eider, king eider, spectacled eider, white-winged scoter, surf scoter, common scoter, whistling swan, Canada goose, white-fronted goose, pintail, and various other ducks, shorebirds, and waterbirds.

The lagoon area consists of 16 avian habitat types (modified from Kessel & Cade, 1958). The major types include sedge-grass marsh, tussock-heath tundra, tundra-freshwater pond or lake edge, river waters, lagoon, and the reef.

Individual species preference for breeding, nesting, feeding, and resting areas correspond with the preceding habitat types. Preservation of a species depends on maintaining each habitat type the species requires. The lagoon area habitats form together the fragile environment like links of chain, destroy one and the rest lose their life supporting roles. The Arctic loon nests and rear their young on freshwater ponds and lakes adjacent to the lagoon. The reef maintains the lagoon which supports large quantities of brackish-water shrimp which in turn support whitefish, Arctic char and grayling upon which the loon feeds. All species utilizing the area depend upon similar energy flow between habitats. The spring runoff of the numerous rivers flowing into the lagoon creates a virtual fresh water impoundment behind the reef. Through June and early July the lagoon water was fresh enough to drink at Nuvagapak Point where our main camp is located. During the early summer the lagoon teems with fresh water fish, but as fall comes, the salinity increases and the fish move into the rivers for the winter.

Approximately 2,640,292 waterfowl days use occurred from June 10th to September 10th. Shorebird production on favorable nesting areas exceeded 600 birds per square mile. An abundance of snowy owls, short-eared owls, pomarine jaegers, long-tailed jaegers, and parasitic jaegers moved

through the area the 2nd and 3rd week in June. The lagoon and nearby tundra teems with life during the short intense summer.

The midnight sun provides the area with continuous daylight from May 18th to July 24th. The tundra near the lagoon is easily hiked across, it is possible to hike 15 miles a day. There is ample opportunity to observe many species of birds; The Arctic fox, caribou, grizzly bear, and parka squirrels are commonly observed. During the spring and early summer, the best weather and the most bird activity occurs between 9:00 P.M. and 5:00 A.M.

The fall goose and swan migration starts in earnest with the gusty winds and snow squalls of late August. Black brant are the first fall migrants to occur in large numbers. When the east wind blows, flocks averaging from 75 to 100 birds move to the west. Peak number observed occurred September 1 when 1250 brant passed Angun Point. Snow geese and white-fronted geese favor a west wind as their migration is in the opposite direction from the black brant. Snow geese and white-fronted geese move predominately at night and are characterized by large concentrations near the river mouths where they feed and rest while awaiting favorable wind conditions. Approximately 4000 snow geese were observed at the Kongakut River delta September 7th.

By the second week in September most birds have left the area. Snow storms and freezing temperatures prevail by mid-September. During the report period there were 8918 swan days use and 263970 goose days use. Peak number for swans was 200 birds, peak number for geese was 12,800 birds.

Duck and shorebird numbers, excluding oldsquaw ducks, peaked the first week of August when southbound migrants added to the local production. By the 10th of August most of the ducks, excluding oldsquaws, and most of the shorebirds left the area. Oldsquaws peaked at 45,000 birds the last week in August. At least 10,000 birds were still present on the area when the study was terminated on September 10th.

Birds Observed

Yellow-billed Loon	Rough-legged Hawk	Sanderling
Arctic Loon	Golden Eagle	Red Phalarope
Red-throated Loon	Bald Eagle	Northern Phalarope
Red-necked Grebe	Marsh Hawk	Pomarine Jaeger
Whistling Swan	Gyr Falcon	Parasitic Jaeger
Canada Goose	Peregrine Falcon	Long-tailed Jaeger
Black Brant	Willow Ptarmigan	Glaucous Gull
White-fronted Goose	Rock Ptarmigan	Glaucous-winged Gull
Snow Goose	Sandhill Crane	Herring Gull
Mallard	Curlew	Sabine's Gull
Pintail	Semi-palmated Plover	Arctic Tern
Green-winged Teal	Dotterel	Snowy Owl
American Widgeon	American Golden Plover	Short-eared Owl
Shoveler	Black-bellied Plover	Horned Lark
Greater Scaup	Ruddy Turnstone	Tree Swallow
Oldsquaw	Whimbrel	Gray Jay
Common Eider	Solitary Sandpiper	Common Raven
King Eider	Pectoral Sandpiper	Water Pipit
Spectacled Eider	Baird's Sandpiper	Common Redpoll
White-winged Scoter	Least Sandpiper	Lapland Longspur
Surf Scoter	Dunlin	Snow Bunting
Red-breasted Merganser	Long-billed Dowitcher	
Goshawk	Stilt Sandpiper	
	Semipalmated Sandpiper	

Mammals Observed

Arctic ground squirrel	Grizzly bear
Collared Lemming	Least weasel
Brown Lemming	Harbor seal
Red-backed vole	Ringed seal
Tundra vole	Bearded seal
Arctic Wolf	Caribou
Arctic Fox	Muskoxen

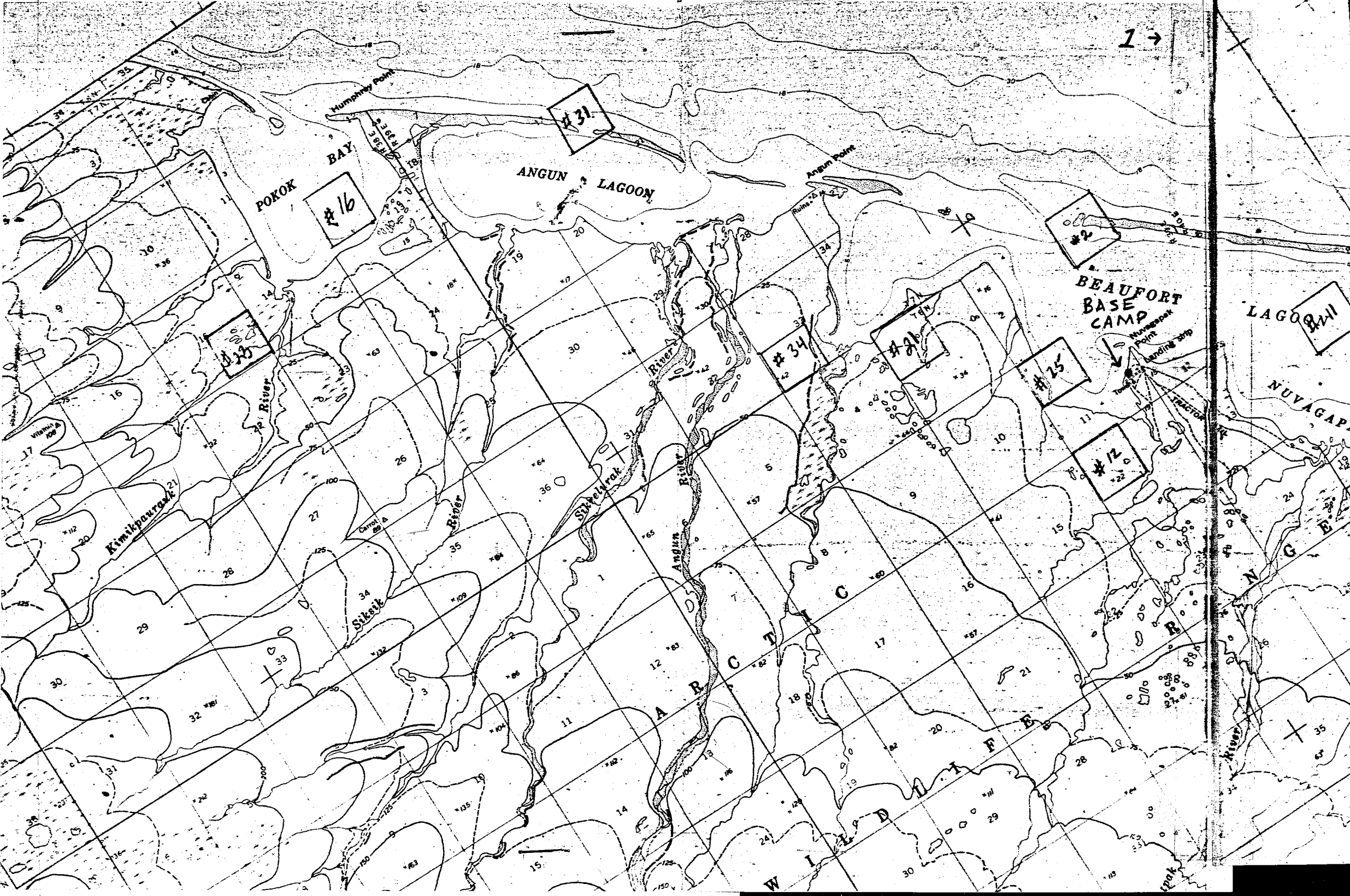
Bird Census

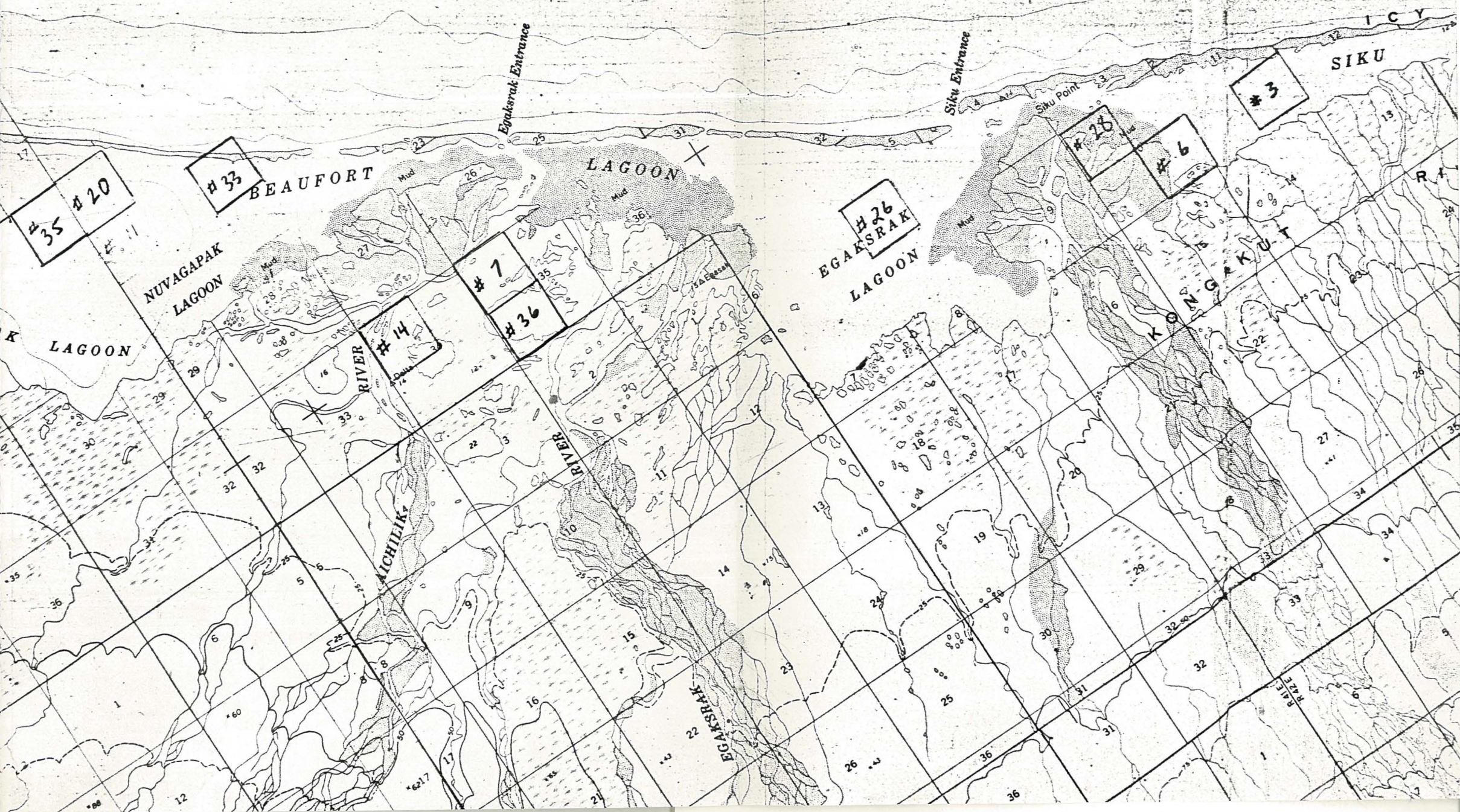
To determine relative species abundance and habitat preference for each bird activity a series of random samples were taken. Each sample consisted of a quadrat measuring one quarter mile per side. Fourteen quadrats were sampled between 13 June and 7 July. Mode of sampling was afoot, quadrats were located by use of compass directions and landmarks. Quadrats were searched with the aid of a dog to insure flushing of nesting birds.

From 12 June to 10 September bird activity was recorded from field observations. Afoot and by boat the reef, lagoon, and shore areas were traversed. Following is a summation of the quadrat data and a list of individual bird observations. Habitat types were modified from Kessel and Cade, 1958. The random quadrats used for sampling were devised by Dr. James C. Bartonek.

Quadrat Location

<u>Quadrat #</u>	<u>Geographical Description</u>	<u>Vicinity</u>
5	SW 1/4 Sec 14, T4N, R43E	Pingokraluk Point
6	SE 1/4 Sec 10, T5N, R41E	Siku Point
7	NW 1/4 Sec 35, T6N, R40E	Aichilik River Delta
12	NW 1/4 Sec 14, T6N, R39E	Nuvagapak Point
14	NW 1/4 Sec 34, T6N, R40E	Aichilik River BM Delta
17	SE 1/4 Sec 4, T4N, R43E	Raluk Point
21	NW 1/4 Sec 3, T6N, R39E	Angun Point
23	SE 1/4 Sec 15, T7N, R38E	Kimikpaurauk River
24	NW 1/4 Sec 10, T4N, R43E	Raluk Point
25	NW 1/4 Sec 11, T6N, R39E	Nuvagapak Point
28	NW 1/4 Sec 10, T5N, R41E	Siku Point
32	NE 1/4 Sec 15, T4N, R43E	Pingokraluk Point
34	SW 1/4 Sec 33, T7N, R39E	Angun River
36	SW 1/4 Sec 35, T6N, R40E	Egaksrak River





#35 #20

#33

BEAUFORT LAGOON

#7
#36

#14

#26
EGAKSRAK LAGOON

#28

#6

#3

SIKU RIVER

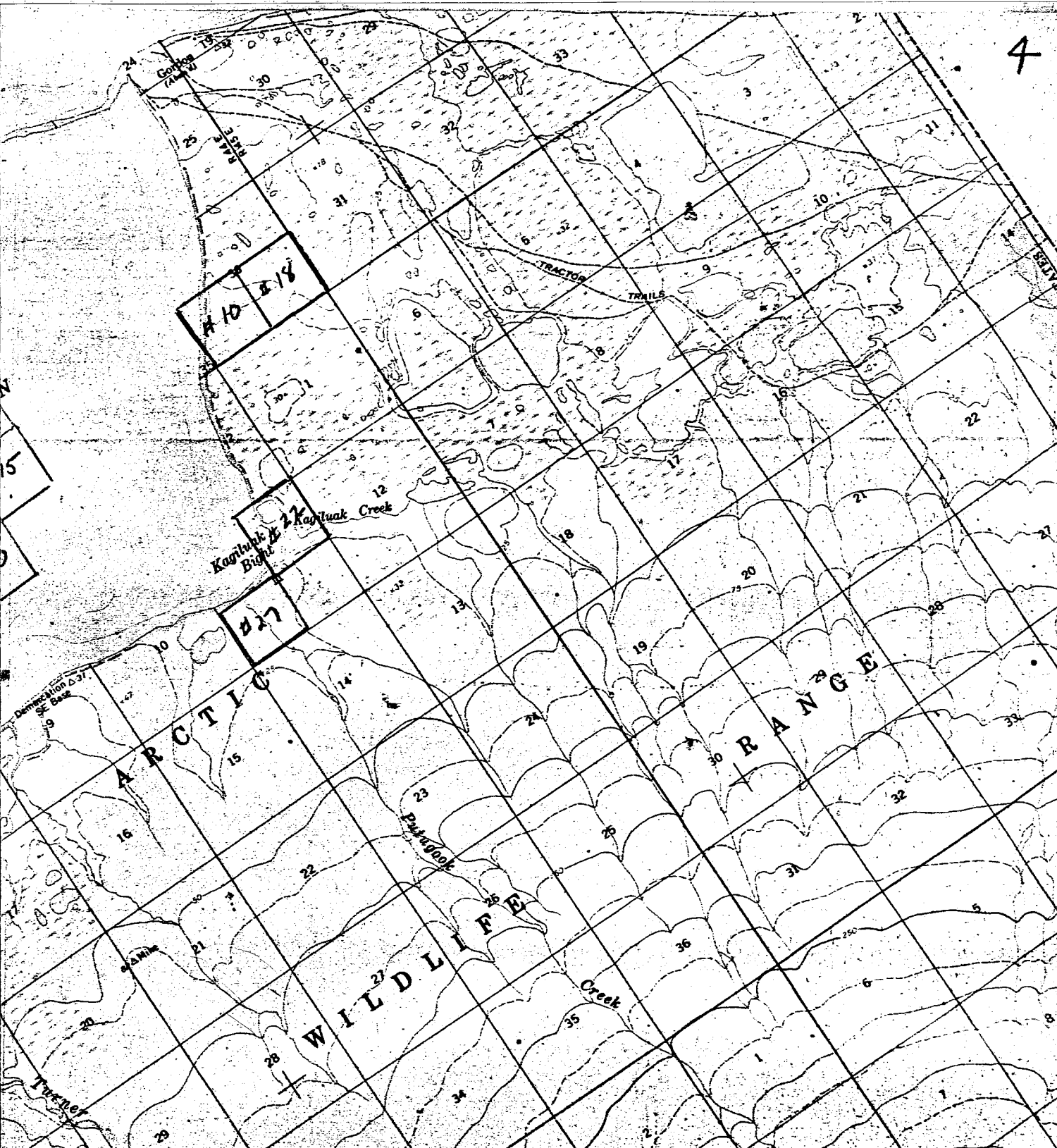
MICHILIK RIVER

RIVER

KONGKUT RIVER

EGAKSRAK RIVER

RILEY



*Average percentage of habitat type estimated to be within the sampled units. No birds observed on some types of habitat in the sampled units.

Sedge-grass Marsh 27% *
(Total number birds observed in quadrats)

Species	Foraging	Displaying	Resting	Nesting	Escaping
SP Sandpiper	22			46	
Red Phalarope				86	11
N. Phalarope				47	
Parasitic Jaeger	1				
Whistling Swan				5	
Pintail	74		20	10	
Arctic Tern	5				
Glaucous Gull	8				
Short-eared Owl	1				
Rough-legged Hawk	3				
Pectoral SP		5		16	
Black Brant	15				
GW Teal	5				
Sandhill Crane	1				
Snow Bunting					1
Lapland Longspur	5				
Long-tailed Jaeger	2				
Long-billed Dowitcher				2	
Peregrine Falcon	2				

Lacustrine Waters 15% 9.

Species	Foraging	Displaying	Resting	Nesting	Escaping
Pintail	151		14		
Arctic Tern	20				
Arctic Loon	8			11	
Glaucous Gull	2				
Red Phalarope	4	30		2	1
Mallard			3		3
Oldsquaw	12	3	11	14	
Red-throated Loon				15	1
Pectoral Sandpiper		5			1
Northern Phalarope		4		10	
King Eider	2				
Scaup sp.			2		
Whistling Swan				7	
Shoveler	1				
Widgeon	55				

Lagoon & Tundra-marine Water Edge 12.5%

<u>Species</u>	<u>Foraging</u>	<u>Displaying</u>	<u>Resting</u>	<u>Nesting</u>	<u>Escaping</u>
Common Eider			15		30
Spectacled Eider			10		
Oldsquaw	500		430		
Surf Scoter	90		20		
Glaucous Gull	11				
Arctic Tern	8				
Sabine Gull	1				
Arctic Loon	2				
Red-throated Loon	6				

Tundra-lacustrine Water Edge 7.5%

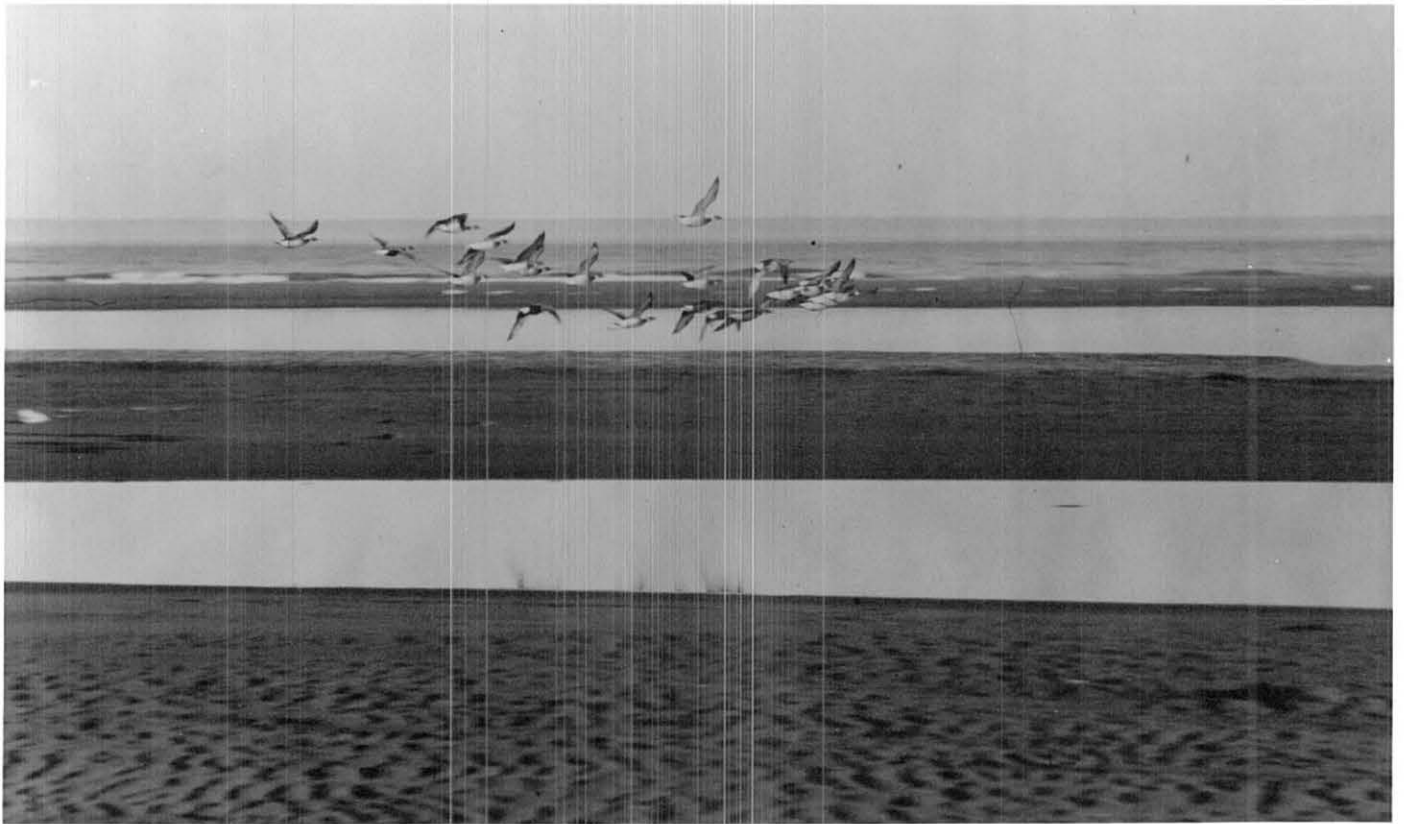
<u>Species</u>	<u>Foraging</u>	<u>Displaying</u>	<u>Resting</u>	<u>Nesting</u>	<u>Escaping</u>
Arctic Tern	18				
Red-throated Loon				12	4
Glaucous Gull	2				
SP Sandpiper		10			
Pectoral Sandpiper		16			
Parasitic Jaeger	1				
Pomarine Jaeger	2				
Red Phalarope				50	
Northern Phalarope				10	
Oldsquaw				3	
Whistling Swan				11	

Tussock-heath Tundra 28.5%

Lapland Longspur		42			1
Short-eared Owl	7				
Snowy Owl	3				
Pomarine Jaeger	2				
Parasitic Jaeger	4		2		
Rock Ptarmigan	2	2			
Red Phalarope		10			
Willow Ptarmigan					1
SP Sandpiper	52	2		20	
Pectoral Sandpiper	310	2			
Black Brant					4



The snowy owl preys on lemmings and voles on the coastal tundra.



Black brant follow the reef during their fall migration from the Mackenzie River breeding grounds.

Tussock-heath Tundra 7.5% continued

<u>Species</u>	<u>Foraging</u>	<u>Display</u>	<u>Resting</u>	<u>Nesting</u>	<u>Escaping</u>
Long-tailed Jaeger	2				
Rough-legged Hawk	1				
Glaucous Gull	1				
Northern Phalarope					1
Sandhill Crane			2		
Long-billed Dowitcher	2				

Fluviatile Waters 1.5%

Red-throated Loon	5				5
Whistling Swan			8		
Red Phalarope			30		

Bars & Spits 5.5%

Arctic Tern	4			8	
Oldsquaw	200		500		
Arctic Loon	2				
Red-throated Loon	1				
Glaucous Gulls	8				
Common Eider				60	

Bird Observations

Loons (Gaviidae)

Yellow-billed Loon (*Gavia adamsii*)

A total of nine birds were seen during the summer. Only singles were observed and all but one individual were flying over the lagoon. On 13 June at Nuvagapak Point four birds were spotted at intervals flying west along the lagoon. On 16 June from Nuvagapak Point one bird was observed flying west and one bird was seen flying east. Enroute to the Aichilik River from Nuvagapak Point on 23 July two singles were disturbed and in each instance the bird circled around the boat several times before flying off to the west. On 26 July one adult male was found drowned in a fish net along with an Arctic loon. Several 2-3" fish were found in the stomach. Barter Island Eskimos reported shooting some yellow-billed loons in the vicinity of Pokok Bay the first week in July. Eskimos eat the flesh and occasionally utilize the skins for clothing.

Yellow-billed loons are not abundant here probably because of the relative scarcity of large lakes inland that they are reported to prefer for breeding. The individual caught in the fish net weighed 11 pounds and measured 34" in length.

Arctic Loon "*Gavia arctica*"

The second most common loon in the area with an estimated density of 4 per square mile. On preferred habitat such as the delta of the Egaksrak and Aichilik Rivers where polygonal sedge-grass marsh interspersed with lakes predominates Arctic loon density reaches 21 birds per square mile.

In this area the Arctic loon prefers larger lakes for breeding than does the red-throated loon. A nest with two eggs was found at the lake in section 16 at the Aichilik River Delta 28 June. Four pairs were observed 1 July three miles NW of Nuvagapak Point on a lake 1/8 mile long that was interspersed with many small islands. Breeding activity seemed to peak the last week in June.

During the last week in July young loons began appearing. On July 27 two almost fully feathered young and one adult were seen in a small pond at Collins Point near the Camden Bay DEW-Line site. During the third week in August, 8 young were seen in the Aichilik-Egaksrak River delta; in all cases only one young bird remained or perhaps successfully hatched. Parent birds in most instances would leave the young but remain flying in the area uttering their characteristic alarm notes.

Arctic loons were quite commonly observed feeding in the lagoon usually near the reef. In the evening they generally moved inland to sheltered lakes. Occasionally Arctic loons were observed feeding on rivers usually in pools below a riffle.

Red-throated Loon "Gavia stellata"

Red-throated loons were abundant throughout the summer. From quadrat data density was estimated to be 6 birds per square mile. On 24 June while camped at the mouth of the Aichilik River 9 red-throated loons spent the night feeding in the river adjacent to the camp. Their continual wailing and crying made sleep impossible. Red-throated loons were seen almost everyday and their cries were the most common sound in the delta areas.



A whistling swan pair at Nuvagak Point with Brooks Range to the south.



A red-throated loon in coastal nesting habitat.

These birds prefer small ponds for their breeding and nesting activities. As with Arctic loons breeding and nesting activities peak in late June. On 28 June a nest with one egg was found at a small pond in section 16 at the Aichilik River Delta. Another inaccessible nest lay in a pond 100 yards from the first. On the Egaksrak River a nest with one egg was found July 25. On 23 August one fully feathered young was seen on a small pond one-fourth mile from the mouth of the Aichilik River and 60 yards from the riverbank. On the same day another fully feathered young and an adult bird were seen on the edge of the lake that is one-eighth mile east of BM Delta on the Egaksrak River.

In late June and during July red-throated loons fed heavily on stickleback in the small freshwater lakes and ponds adjacent to the coast. Later in the summer the bulk of their feeding occurred on the rivers, the lagoon, and the open sea adjacent to the reef. Similar to the Arctic loon the red-throated loon, after feeding, flew inland to freshwater lakes and ponds.

Red-throated loons are more wary than Arctic loons and are not easily approached. Red-throated loons when flushed usually fly in a wide circle around the intruder several times before departing. Their flight appears to be quite rapid as several were observed overtaking oldsquaw flocks while traveling along the reef.

Red-necked Grebe "*Podiceps grisegena*"

A single observation was recorded on the Kogotpak River 15 June. These grebes are reported as Arctic coast breeders. The bird observed on the Kogotpak River appeared to be feeding on small fish in a deep pool.

Whistling Swan "*Olor columbianus*"

Whistling swans were a common breeder at Beaufort Lagoon. From an aerial survey taken 21 June and from quadrat data, density is estimated at three birds per square mile.

On our arrival at Nuvagapak Point June 21 a pair of swans were establishing territory on a small pond adjacent to the airstrip. On 14 June their nest was discovered, with no eggs, about 10 meters to the north of the pond. On June 15 a helicopter from an oil company landed on the strip to support geologists camping at Nuvagapak Point. The pair of swans seemed extremely frightened and flew off to the east. These birds did not return to their nest and they were not seen in the area again. Two pintail pairs and one green-winged teal pair left the pond area adjacent to the strip after several helicopter landings on the strip. On June 21 three nests, one at Siku Point, one at Raluk Point, and one at Kagiluak Bight were sighted. These nests held 4, 5, and 4 eggs respectively. On 25 June a swan nest with four eggs was found on the Egaksrak River about one-eighth mile from the mouth. The nest was located about 40 yards from the river bank on a slight rise and 10 feet from a driftwood log about 16" in diameter. On 27 June a nest with 5 eggs was found on the Aichilik River delta. On 7 July a swan was seen sitting on a nest situated at the edge of a small lake adjacent to Raluk Point.

Total number of swans decreased in July as non-breeders left the area in a general movement to the east. By September 1 breeders and young departed, also in a movement to the east. On September 6, three groups with 4, 3, and 7 birds were seen flying east along the reef opposite of Nuvagapak Point. These were the last seen and their movement coincided

with a large snow goose and white-fronted goose flight to the east on this particular day.

Whistling swans preferred the larger lakes for their breeding, nesting, and feeding activities. They commonly used the rivers for feeding but no swans were seen feeding in the lagoon. Since few young were observed no measure of nesting success can be evaluated. Swan broods were secretive and extremely shy. One dead cygnet still in the downy stage was found 23 July at the edge of a large lake on the Egaksrak River delta. Cause of death appeared to be exposure.

Canada Goose "*Branta canadensis*"

Canada goose utilization of Beaufort Lagoon was primarily the passage of spring migrants. June 24th seven Canadian geese were observed at the Aichilik River mouth. These birds remained in the delta area for at least three days feeding and resting. A pair of Canada geese fed on the sedge-grass flats on the Siku Point delta June 27, and on this day 5 birds were seen at the Egaksrak River mouth. On 29 June two flocks of Canada geese, numbering 130 and 60, passed Nuvagapak Point going west. These were the last birds seen till September 5 when a lone bird was seen traveling west with a flock of black brant.

Black Brant "*Branta nigricans*"

Black brant were the most common geese of the area. Four birds were seen 13 June in quadrat 25 near Nuvagapak Point; three flying north at Nuvagapak Point 15 June; four at Section 29 Nuvagapak Point 15 June; 25 foraging at the Aichilik delta 15 June; two flying south at Nuvagapak Point 17 June; flocks of 75, 100, 100, 100, 150 going west passed

Nuvagapak Point 22 June; flocks of 100, 150, 75, 100 going west past Nuvagapak Point 23 June; 35 feeding at Angun Point 23 June; 20 feeding at the Aichilik delta 28 June; and the last of the spring migrants were 4 birds seen at Pokok Bay 2 July.

Black brant movements in the spring were in conjunction with the prevailing east wind. No evidence of nesting was found in the Beaufort Lagoon area. The fall migration started 22 August when the east wind brought a low cloud bank with intermittent snow. From 22 August to 27 August an estimated 800 birds a day mostly in flocks of 100 or less passed Nuvagapak Point moving west. Movement was restricted to daylight hours as opposed to snow geese and white-fronted geese who moved primarily at night. Peak movement occurred from daylight to 9:00 a.m. and then from 3:00 p.m. till twilight. About 75% of the passing brant followed an identical flight path that generally followed the contour of the coast. On 1 September 18 flocks passed directly over an observation blind at Angun Point while 4 flocks passed inland from the blind and 2 flocks passed along the reef just 100 yards from the blind. September 1 was the peak day for black brant as 1,250 birds passed Angun Point.

As mentioned black brant movement corresponded with wind direction. On 27 August after a three-hour calm the wind shifted to a west wind. This wind increased steadily to 50 mph and was accompanied by snow and sleet. The snow goose and white-fronted goose movement started in earnest at this time. On 28 August 300 black brant were resting on the east side of Nuvagapak Point one and one-half miles northwest from the Kogotpak

River mouth. On September 1 the wind was again favorable for brant migration. On September 10 observations at Beaufort Lagoon were terminated due to severe weather. Black brant flew past Nuvagapak Point seven days out of the first 10 days in September. An average of 980 birds a day passed during this period. On September 10th the bulk of the brant, snow goose, and white-fronted goose migration appeared to be over. From 22 August to 10 September a total of 12,910 black brant were observed passing Nuvagapak and Angun Point flying to the west. It is suspected these birds had come from areas adjacent to the Mackenzie River.

From 1 September to 7 September 30 black brant were collected. Of these 16 were juveniles and 14 were adults. Of the adults 8 were males.

White-fronted Goose "Anser albifrons"

In the spring occasional flocks of white-fronted geese passed Nuvagapak Point in generally a westward direction. On 14 June 10 birds going north passed over Nuvagapak Point. Eighteen white-fronts passed along the reef 16 June going west. On 20 June three flocks at 12, 26, and 18 were flying west along the reef.

No evidence of nesting was found. White-fronted geese were absent through July. On August 21 a flock of 15 passed Angun Point headed east. From 27 August to 30 August 23 flocks averaging approximately 32 birds per flock passed Angun and Nuvagapak Points during daylight hours. An undetermined number flew over Nuvagapak Point during the night in this same period. This night movement of birds seemed to be at least twice as great as daylight movement. On the nights of 28 and 29 August calling flocks of white-fronts could be heard continuously from the camp at Nuvagapak Point. On 5 September 8 flocks of white-fronts averaging 40 birds per flock passed Angun Point. On 6 and 7 September 14 flocks moved past Nuvagapak Point. The fall white-front movement past Nuvagapak Point was estimated to be 3000 to 4000 birds. An undetermined number passed further inland and it is suspected some birds passed too far out to sea to be visible.

Snow Goose "*Chen hyperborea*"

The snow goose was the second most common goose seen at Beaufort Lagoon. On the first day spent in the field June 13, twenty snow geese flew southeast towards Kogotpak River where they landed to rest or feed. On 14 June two flocks totaling 45 birds flew northwest over Nuvagapak Point. On 20 June 14 birds flew northwest over the Kogotpak River. Twenty-three birds spent two hours resting on the tundra next to the Nuvagapak airstrip 21 June. On 24 June seven snow geese flew west about one mile inland from the Aichilik River delta. Two birds fed on the sedge-grass marsh two miles north of the Aichilik delta 27 June. Snow geese were not seen in July and early August.

No evidence of breeding could be found in the Beaufort Lagoon area.

Snow goose used the area for resting and feeding in both the spring and fall migrations. At dusk on 21 August the vanguard of the fall movement passed Nuvagapak Point as three small flocks totaling 58 birds flew east over the point. Six days later on 27 August the snow goose migration started in force. From the 27th to the 30th of August continuous flocks of snow geese could be seen flying over Nuvagapak Point and to a much greater extent further inland. At night their cries intermingling with white-fronted geese was a continuous bedlam. In this four-day period 8000 to 10,000 snow geese passed Nuvagapak Point. On 1 September the wind shifted to an easterly flow and snow geese movement was almost completely stopped. On 5 September the east wind relented and once again snow geese started moving to the east. On 7 September a wind shift from west to east occurred for an eight-hour period. During this period approximately 4000 snow geese were sighted on the Kongakut River delta resting and feeding. Large river deltas were a favorite resting habitat for snow geese during adverse wind conditions. From 5 September to 9 September a gradual lessening of flock movement occurred. On 10 September only one flock of 16 snow geese was sighted.

The bulk of the snow geese migrated inland from the Beaufort Lagoon as they primarily feed on the berries located on the higher dry tundra. No meaningful estimate of total snow goose numbers migrating along the north slope adjacent to Beaufort Lagoon could be ascertained. However, at least 12,000 snow geese passed in the vicinity of Nuvagapak Point.



Long-billed dowitchers in foreground and northern phalaropes feeding on lee side of Icy Reef.



Oldsquaw duck brood on the Aichilik River Delta.

Mallard (*Anas platyrhynchos*)

Mallards were uncommon in this area. One male and two females were seen at Angun Point 17 June; one male at Aichilik delta 28 June; and another male at Nuvagapak Point 28 June.

On 4 July a hen's call was heard at the Egaksrak delta. No direct evidence of breeding was found. A male was sighted on a tundra pool 22 August at the Aichilik delta.

Pintail (*Anas acuta*)

Next to oldsquaws, pintails were the most common breeding duck in the area. Overall density for the study area was estimated to be 20 birds per square mile. On favorable small pond nesting areas adjacent to the river deltas density reached 16 pairs per square mile.

Pintails were paired when the camp was set up June 12th. The greatest concentration of birds occurred the last two weeks in June when pintails were abundant throughout the study area. Breeding pairs that stayed to nest concentrated in polygonal ground that was interspersed with many small lakes and ponds. Predominantly these nesting areas were sedge-grass marshes but small ponds on the wetter tussock-heath tundra were also utilized. By the second week in July broods began appearing on the tundra ponds. On 23 July a brood of seven class II pintails was seen on a small pond at the Aichilik delta. By 25 August pintails had vacated the Beaufort Lagoon area.

Green-winged Teal (*Anas carolinensis*)

Green-winged teal occurred in small numbers on the same breeding habitat used by pintails and oldsquaws. An estimate of two pairs per square mile on favorable nesting habitat was ascertained from quadrat data. On 13 June a pair was displaying on a small pond next to the Nuvagapak airstrip. The female nested on this pond and had laid two eggs when she abruptly left, perhaps due to the repeated helicopter landings 50 yards from her nest. On 15 June 10 males fed on a small delta one mile east from the mouth of the Kogotpak River. A lone male was seen two miles north of the Aichilik delta 15 June. On 24 June 16 birds were in a mixed flock of pintails, American widgeon, and one shoveler on the Aichilik River delta. No broods were observed and the last green-wing teal seen, a female, flew east across the Egaksrak River mouth 23 July.

American Widgeon (*Mareca americana*)

American widgeon were only seen in the spring as passing migrants. On 21 June on an aerial survey 8 widgeon were seen at Siku Point; and 50 birds, of which at least 90% were males, were seen five miles east of the Kongakut River delta. On 24 June 34 birds were feeding on the Aichilik River delta. No evidence of nesting was seen, and no widgeon were seen in the fall.

Greater Scaup (Aythya marila)

Occasional small flocks of scaup passed Nuvagapak Point in late June. Three flocks numbering 10, 16, and 23 flew west along Icy Reef June 24. On 28 June, 50 greater scaup lay on the open water north of the Aichilik Delta together with approximately 200 surf scoter males.

No evidence of breeding was found, and no birds were positively identified in the fall. However, numerous flocks of unidentified ducks flying east far out to sea were observed in late August and the first three days in September. It is suspected that some of these birds were scaup. In the spring generally the ice pack lay one-fourth of a mile from the coast and the bulk of the sea and coastal birds migrated along the open lead and were readily observed. However, in the fall the ice pack was out as far as 50 miles and birds moved east across the open water and to a large extent were not visible from shore and were not recorded.

Shoveler (Spatula clypeata)

In quadrat number seven on the Egaksrak River delta a lone male shoveler was sighted. The shoveler was feeding with a mixed flock of widgeon and pintails on a small pond. This bird was the first recorded sighting for this species on the Arctic National Wildlife Range. No other shovelers were observed during the report period.

Oldsquaw (Clangula hyemalis)

By far the most abundant duck at Beaufort Lagoon was the hardy oldsquaw. An estimated breeding pair density of 16 per square mile was calculated from quadrat data and general observations. Small flocks of oldsquaws were distributed along the coast in late June wherever open water could be found.

On 24 June 20 pairs of oldsquaw were observed along the open lead from the mouth of the Kogotpak River to the mouth of Aichilik River. As the summer progressed flock sizes gradually increased. On 25 August approximately 6,000 oldsquaws were concentrated in the bay on the west side of Nuvagapak Point. Between Humphrey Point and Siku Point, a straight line distance of approximately 18 miles, oldsquaws in the first week of September numbered approximately 14,000 birds.

In the spring oldsquaw movement was primarily westward with the bulk of the migration occurring the last week in June. Many oldsquaws began nesting the last week in June and nesting activity seemed to peak the first week of July. On 25 August a brood of eleven class III oldsquaws were located at the mouth of the Aichilik River on a small tundra pool.

Common Eider (Somateria mollissima)

Scattered small flocks were seen flying predominantly to the west during the month of June. On 16 June two males were resting on the Aichilik Delta. Two males were seen on the reef outside Nuvagapak Point flying northwest 19 June, and 4 males and 11 females were seen flying southeast on 19 June.

On 5 July 23 active nests were located on two reefs one mile south of Pingokraluk Point. No other breeding activity was noted.

During the first week in September numerous small flocks of unidentified eiders were seen out to sea flying generally to the west. One male common eider flew west over Angun Point on 1 September and two females were shot by Eskimos 6 September at Pokok Bay.

King Eider (Somateria spectabilis)

King eider were the most abundant eider in the area. During June and the first week in July small flocks could be seen daily on the coast or near inland lakes.

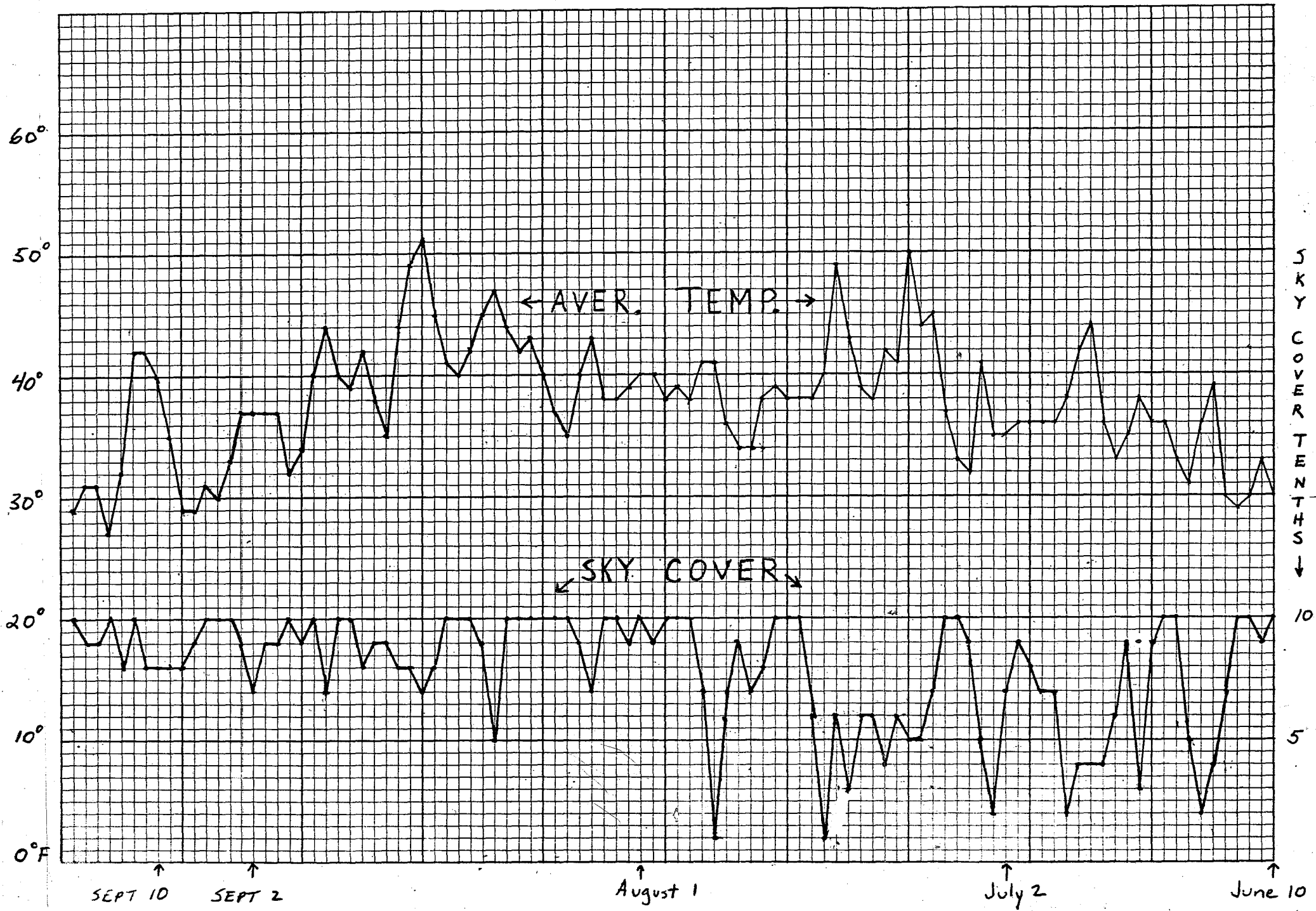
King eider seemed not to favor this area for breeding. Few nests were found and no young were observed.

In late August and the first week in September a few small flocks went west past Angun Point.

Spectacled eider (Lampronetta fischeri)

Occasional small flocks of spectacled eiders were observed flying along the reef in late June. A pair were seen in a pond on the Aichilik Delta 16 June and 10 individuals flew west over quadrat 6 on 6 July. Probably a few breeders in the area but no nests or young were found.

The only spectacled eiders sighted in the fall were three males and one female at Angun Point on 1 September.



	Average wind speed mph	Wind direction degrees T.N.		Average wind speed mph	Wind direction degrees T.N.
June 10	8	30	Aug. 1	9	50
11	10	90	2	11	300
12	8	300	3	11	330
13	9	80	4	18	80
14	7	310	5	8	70
15	9	270	6	11	280
16	7	60	7	7	320
17	14	80	8	7	20
18	17*	90	9	8	70
19	8	340	10	7	20
20	10	290	11	8	60
21	12	80	12	10	70
22	9	300	13	14	60
23	10	270	14	13	80
24	8	30	15	19	100
25	8	80	16	8	70
26	9	90	17	11	90
27	12	80	18	12	100
28	9	350	19	10	190
29	8	50	20	6	110
30	7	310	21	10	280
July 1	13	280	22	10	280
2	12	70	23	14	100
3	11	300	24	14	110
4	9	70	25	10	240
5	9	290	26	10	80
6	8	40	27	10	110
7	12	80	28	12	270
8	7	60	29	7	320
9	11	100	30	8	290
10	10	50	31	10	130
11	9	90	Sept. 1	14	90
12	16	90	2	25	80
13	13	80	3	22	100
14	7	350	4	14	280
15	8	20	5	24	270
16	15	90	6	17	270
17	11	80	7	11	260
18	13	70	8	16	270
19	8	70	9	10	240
20	6	340	10	11	240
21	8	10			
22	13	80			
23	11	70			
24	13	70			
25	14	80			
26	16	90			
27	13	80			
28	17	80			
29	8	360			
30	11	260			
31	8	330			