

**Alaska Department of Fish and Game
Division of Wildlife Conservation**

**Federal Aid in Wildlife Restoration
Management Report of
Survey - Inventory Activities
1 July 1998 - 30 June 2000**

Raptor Survey and Inventory

John Wright



Ted Swem USFWS

**Grants W-27-2 and W-27-3
Study 8.0
December 2000**

STATE OF ALASKA

Tony Knowles, Governor

DEPARTMENT OF FISH AND GAME

Frank Rue, Commissioner

DIVISION OF WILDLIFE CONSERVATION

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2000 RAPTOR SURVEY AND INVENTORY REPORT

The Status of Peregrine Falcons, Gyrfalcons, and Other Raptors and Factors Influencing Their Population Statewide, 1 July 1998–30 June 2000

LOCATION

GAME MANAGEMENT UNITS: 12, 20, 22, 23, 26A, 26B

GEOGRAPHIC DESCRIPTION: Portions of Interior, Western, Northwestern and Northern Alaska

BACKGROUND

Twenty-one species of raptors regularly breed in Alaska, ranging in size from the tiny 68 g (2.4 oz) northern pygmy owl (*Glaucidium gnoma*) to the majestic 5 kg (12 lb) bald eagle (*Haliaetus leucocephalus*). Raptors play an important role as predators in a variety of habitats, with some species feeding on dragonflies or grasshoppers and others regularly taking voles, salmon, or caribou calves. These birds of prey are highly valued by the public for viewing, photography, and falconry.

Falconry is the only permitted activity that takes raptors from the wild in Alaska. Captive propagators are allowed to transfer falconry birds from falconry to propagation permits. Nine raptor species are permitted for use in falconry and captive propagation in Alaska: northern goshawk (*Accipiter gentilis*), sharp-shinned hawk (*Accipiter striatus*), red-tailed hawk (*Buteo jamaicensis*), Golden Eagle (*Aquila chrysaetos*), American kestrel (*Falco sparverius*), merlin (*Falco columbarius*), peregrine falcon (*Falco peregrinus*), gyrfalcon (*Falco rusticolus*), and great horned owl (*Bubo virginianus*). See *Alaska Department of Fish and Game 1996* in the Literature Cited section of this report for all falconry and captive breeding standards and regulations.

Gyrfalcons are the species most frequently used for falconry in Alaska. They are the largest of all falcons and are found in tundra regions throughout the Arctic and subarctic. Their population size in Alaska is unknown; about 180 nesting pairs have been reported in Alaska, and the statewide population was recently estimated at 375 to 635 pairs (Swem et al 1994). Gyrfalcons occur in a wide range of plumage colors, from the common gray to white and dark gray/brown. The genetic and evolutionary basis for these plumages is unknown (Clum and Cade 1994). Rare color morphs of gyrfalcons are avidly sought by falconers and captive propagators.

Two subspecies of the peregrine falcon (American peregrine, *Falco peregrinus anatum*, migrant breeding in boreal forest; Arctic peregrine, *F.p. tundrius*, migrant breeding in tundra regions) have recently recovered from near extirpation and have been removed from endangered status in the past decade. In 1998 the population sizes of American and Arctic peregrines were estimated at 350–400 and 225–250 pairs, respectively (S. Ambrose and T.

Swem, USFWS Fairbanks, personal communication). Falconry take was initiated for Arctic peregrines in Alaska in 1996, and regulations for take of American peregrines are being developed nationally. The State has participated in monitoring surveys established as part of the Alaska Peregrine Recovery Plan (USFWS 1982).

Raptor surveys have been conducted by department staff in recent years to determine the status and nesting success of recovering peregrine falcon populations, to help gather baseline information on raptor species and populations affected by falconry take, and to collect data to allow comparisons to earlier raptor surveys conducted in various parts of the State.

METHODS

During 1998, 1999, and 2000, surveys for raptors were conducted in Interior, western, northwest and northern Alaska (Figure 1). In the Interior, portions of the Tanana River GMUs 12 and 20) were surveyed for peregrine falcons (*Falco peregrinus*) in 1999. In Western Alaska, raptor surveys were completed on the Seward Peninsula (portions of GMUs 22B, 22C, 22D) in 1998 and 1999, and peregrine falcons were surveyed along the Norton Sound coast of the Seward Peninsula (GMU 22) in 2000. In northwestern Alaska, 15 drainages in the western Brooks Range (GMUs 23 and 26A) were surveyed for cliff-nesting raptors in 1999. In northern Alaska, peregrine falcons were surveyed on the Sagavanirktok River (GMU 26B) in 1998 and 1999.

Tanana River. Two surveys were conducted by ABR, Inc. in 1999 along the Tanana River by boat from the Tetlin Bridge, approximately 17 km east of Tok, to Nenana. The first survey occurred from mid-May to mid-June to document occupancy of nesting sites, and the second in early July to determine nesting success and productivity. Methods followed standardized procedures (see Bente and Wright 1993).

Seward Peninsula. Aerial surveys of cliff habitat used for nesting by golden eagle, gyrfalcon, peregrine falcon, rough-legged hawk, and common raven were conducted using a Piper PA-18 fixed-wing aircraft. In 1998 we conducted surveys on 1 July (4 hrs) covering known raptor nest habitat in the following areas: all of GMU 22C, the southwestern portion of 22D south of the Kuzitrin River and Imuruk Basin and east of the Feather River, and 22B west of the Niukluk River. In 1999 the survey area was extended in the southeast portion of 22D to include Kougarok Mountain, Coffee Dome, and Harris Dome. We flew surveys on 14 June 1999 (4.5 hrs) in the western portion of Unit 22C, and on 15 June 1999 (7.9 hrs) in eastern Unit 22C and the southern portions of Unit 22B and 22D. A single observer in the back seat used 1:250,000 scale USGS topographic maps to navigate to known nesting areas and to additional areas of suitable habitat. Cliffs and bluffs were checked for stick-nest structures and nesting ledges as the aircraft was flown at reduced speed. Species occupancy data were recorded, and nest site locations were documented on a Garmin XL12 GPS and marked on topographic maps.

Norton Sound. During 10–14 June 2000, a single early season survey of peregrine falcons was conducted along the Norton Sound coast from Black Point, 48 km south of Unalakleet,

to Cape Prince of Wales, including the shorelines of Grantley Harbor and Tuksuk Channel near Teller. Three observers searched suitable coastal cliffs and bluffs from a Bell 206 Jet Ranger helicopter. This survey followed the procedures developed in the late 1980s and early 1990s when surveys of peregrines were first conducted in Norton Sound (Wright 1991). In addition to marking locations of observations on 1:63,600 scale USGS maps, latitude and longitude were recorded from the aircraft's GPS.

Northwest Alaska. During 1–11 July 1999, surveys were flown in a Piper PA-18 along the following river drainages north of the Brooks Range in Northwestern Alaska: Adventure Creek (15 km), Carbon Creek (16 km), Driftwood Creek (20 km), Eagle Creek (66 km), Ipewik River (150 km), Kokolik River (162 km), Kukpowruk River (213 km), Pitmegea River (94 km), Poko River (5 km), Sooner River (20 km), Sooner River/North Fork (5 km), Tingmerkpuuk River (27 km), Tupikchak River (2 km), Turbid Creek (5 km), and Utukok River (257 km). All surveys were based out of the Eagle Creek airstrip located on a tributary of the Kukpowruk River. Department staff were gathered at this location to conduct a census of the Western Arctic Caribou Herd. On days when the caribou work was not undertaken, raptor surveys were flown if weather conditions were suitable. Surveys were conducted and data recorded as described above for the Seward Peninsula.

Sagavanirktok River. Surveys of peregrine falcon nesting habitats along the Sagavanirktok River from Slope Mountain in the south to the northern end of Franklin Bluffs were conducted in a single late season survey during 17–26 Jul 1998 and 26 Jul–2 Aug 1999. Potential nest sites were accessed by raft on the river, or on foot from the Dalton Highway. Standard survey procedures were followed (Bente and Wright 1993). Young of proper age were banded with USFWS aluminum bands and uniquely coded color bands. In addition, in 1999 cooperators from the Center for Conservation Research & Technology attached 4 PTT satellite transmitters to 4 adult female peregrines captured near nest sites on the Sagavanirktok River.

RESULTS AND DISCUSSION

Tanana River. We observed 39 pairs and 1 single adult along the Tanana River in 1999 (Table 1; Ritchie et al. 2000). On the second survey in July 1999, we counted 84 young in 28 successful nests. Productivity averaged 3.00 young per successful nest and 2.10 young per total nesting pairs.

The number of pairs occupying nest sites has increased markedly since the population was almost extirpated in the mid 1970s, although recovery on the Tanana was delayed by several years compared to the Upper Yukon and Colville rivers. The number of pairs seen in recent years (38–39) is twice the number that historically nested along the Tanana (19 pairs; Roseneau et al. 1981, USFWS 1982). This marked increase in nesting density has not resulted in a decline in productivity. On the contrary, productivity appears to be positively correlated with density, even with these unanticipated high numbers of nesting pairs of peregrines ($r = 0.54$, $p = 0.007$; Figure 2). However, on the Upper Yukon River, productivity of American peregrines has declined with increasing nesting density ($r = -0.50$,

$p = 0.01$; abundance and productivity data from S. Ambrose, USFWS, Fairbanks, personal communication).

Seward Peninsula. In 1998 we found 23 active sites with raptors or common ravens in 4 hours of flight time, searching known nesting areas in GMU 22C, the southwestern portion of 22D, and the far western portion of 22B (Table 2). In 1999, with extended coverage and survey effort, we observed 47 active sites with raptors or ravens (Table 3).

Spring snowmelt and breakup were late on the Seward Peninsula in 1999. Despite delays in nesting, it appeared most species still completed breeding and nesting. The increase in numbers of nesting gyrfalcons and rough-legged hawks from 1998 to 1999 is primarily due to an increase in nest density, rather than the increase in area surveyed and survey time. Heavy snow and very late spring melt in 1998 probably contributed to lower nest densities in 1998.

The number of active raven nests is probably a minimum count because fledging may have occurred at some sites before the survey. For all species, the total number of young is not accurate because young were often obscured beneath brooding adults and because counting nestlings or eggs from fast-moving, fixed-wing aircraft is usually impractical.

Norton Sound. Peregrines were observed at 64 sites along the Norton Sound coast between Black Point (48 km south of Unalakleet) and Cape Prince of Wales. A single survey was conducted in this area in mid-June during incubation, and because of funding limitations, we were unable to make multiple passes in the helicopter to confirm nesting or look for both members of nesting pairs. Also, a few offshore sites were not surveyed in 2000 because the helicopter was not equipped with floats to permit flights across open water. Therefore, this survey is not directly comparable to previous surveys (Table 6). However, the number of sites occupied in 2000 is dramatically higher than during the previous surveys of the same area in 1991 (33) and 1990 (32).

In addition to peregrines, we also observed the following species: bald eagle (2 sites), golden eagle (6), osprey (1), gyrfalcon (9), merlin (1), rough-legged hawk (21), and common raven (27) (Table 7). As in surveys of other areas, the phenology of nesting influences the sightability of each species. For example, early nesters such as golden eagles, gyrfalcons, and ravens had already hatched (some ravens already fledged) at the time of this survey in mid-June, so young in nests were often conspicuous. Later nesters like the peregrine and rough-legged hawk were incubating and less conspicuous because adults often sat tight on nests.

Northwest Alaska. Nesting sites were located for 84 raptors and ravens in the drainages surveyed in northwest Alaska (Table 4). The only species that had changed markedly in abundance since an earlier survey in 1989 by Bente (Appendix A) was the peregrine falcon, whose numbers increased fivefold. The actual increase may have been greater because the original survey was done from a helicopter, which provides a much better observation platform than the fixed-wing used in 1999.

Peregrines may also have been undercounted in 1999 because most were incubating at the time of the 1999 survey, and they are less visible when holding tight to their nests. Additionally, the number of ravens may have been undercounted because many nests had already fledged young.

Sagavanirktok River. Twenty-seven pairs and 3 single adult Arctic peregrines were observed along the Sagavanirktok River in 1998, and 25 pairs and 5 lone adults were seen in 1999 (Table 5). In each of the past 3 years, the number of nesting pairs observed has been greater than twice the assumed historical number of pairs on the Sagavanirktok (11 pairs; Roseneau et al. 1981, USFWS 1982). Because only a single late season survey was conducted in each of these years, our counts of nesting pairs may be low; therefore, some sites where we observed single adults may have been occupied by pairs earlier in the season, and birds at other sites may have been missed because they had abandoned their territories by late July. All of our surveys on the Sagavanirktok from 1995 to present have consisted of a single late survey, while those from 1991 to 1994 included both an early season survey to determine occupancy and a late survey to count nestlings to determine productivity.

Forty-four nestlings were counted in 1998, and 35 in 1999. Productivity peaked in 1997 when 62 young were observed, and productivity declined the following 2 years. No trend is apparent in the relationship of abundance of nesting pairs and productivity from 1991 to 1999 ($r = 0.01$, $p = 0.97$; Figure 3). Nesting success and productivity may be influenced more by weather and food availability than by nesting density. However, productivity of Arctic peregrines on the Colville River has trended downward since the early 1980s as the nesting population increased and stabilized ($r = -0.59$, $p = 0.005$; abundance and productivity data from T. Swem, USFWS, Fairbanks, personal communication).

Satellite transmitters were placed on 4 adult female peregrines captured in their nesting territories. Three were followed through mid-November as they migrated to their wintering areas. One migrated along the east side of the Rockies all the way into eastern Mexico and was last reported in northeast Colombia on 15 November 1999. A second also started down the east side of the Rockies but then headed south down through the states and crossed the Gulf of Mexico to the Yucatan Peninsula and then through Central America to northern Colombia (13 November 1999). The third also started south along the east side of the Rockies, but then headed east and then south along the Mississippi River to the Gulf, crossing southwest (north of the Yucatan) and finally reached southern Mexico by 15 November 1999. The fourth adult female left Alaska along the east side of the Rockies but never ventured beyond a site in northern Alberta (21 October–7 November 1999) where it probably died.

See maps of locations on the Internet at http://www.ccr.org/HTML/migration_oct.html.

MORTALITY

Harvest

In 2000 there were 46 falconers in Alaska: 25 Master Class, 11 General, and 10 Apprentice. Master falconers are permitted to hold 3 raptors and take 2 from the wild in a 12-month period. Generals are permitted to hold 2 raptors and take 2 from the wild in a 12-month period; and apprentices may hold 1 raptor and may take 1 from the wild each 12 months. Captive propagators acquire birds by transferring raptors from their falconry permits with a maximum limit of 6 pairs, of which no more than 4 birds may have originally been taken from the wild.

As of September 2000, 15 raptors had been taken from the wild in Alaska in year 2000 (Table 8). In 1999, 13 raptors were taken from the wild, and in 1998 20 raptors were taken. The northern goshawk (14) was the taxon taken most frequently during the past 3 years, followed closely by the gyrfalcon (12), and then by the Peale's peregrine (9).

Alaskan falconers and captive propagators presently hold 104 raptors (Table 9). Far more Gyrfalcons (67) are held than any other taxa, followed by the Northern goshawk (11), and Peale's peregrine (10).

CONCLUSIONS AND RECOMMENDATIONS

Surveys of Arctic peregrines are no longer a high priority since the 5-year postdelisting period has passed (Arctic peregrines were delisted in October 1994), and because representative study populations on the Sagavanirktok and Colville (T. Swem, USFWS Fairbanks, personal communication) Rivers are well above assumed historical levels and are stable or increasing. Norton Sound was the last area to be surveyed as part the range-wide census of Arctic peregrines completed at the end of the 5-year postdelisting period for Arctic peregrines. Future monitoring surveys should be considered on a 5- or 10-year schedule. Harvest of Arctic peregrines by falconers has been below the quota established to protect the population and will probably remain at that level or lower once harvest of American peregrines is permitted.

The American peregrine was delisted from Federal Endangered/Threatened status in August 1999. A 5-year postdelisting, monitoring period will continue through year 2004 with annual surveys of the Upper Yukon and Tanana river study areas conducted under coordination of the US Fish and Wildlife Service. A rangewide survey of American peregrines in Alaska should also be completed by 2004. The Tanana River population continued to occupy new nest sites and reproduce at high levels in 1998 and 1999. A national harvest program for American peregrines is being developed by the US Fish and Wildlife Service with participation by the states and other interested parties. It is anticipated that regulations permitting a limited take by falconers in Alaska will be in place by year 2002.

Information gained in preliminary surveys on the Seward Peninsula and in northwest Alaska in 1998 and 1999 will be used to establish long-term study areas to monitor

occupancy and productivity of gyrfalcons. Because of the relative rarity of some color morphs of gyrfalcons and the great demand for those rare-colored birds by falconers and captive propagators, monitoring these gyrfalcon populations is a high priority.

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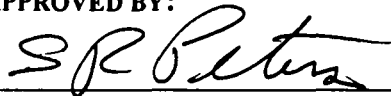
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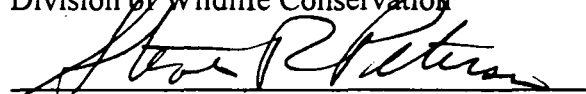
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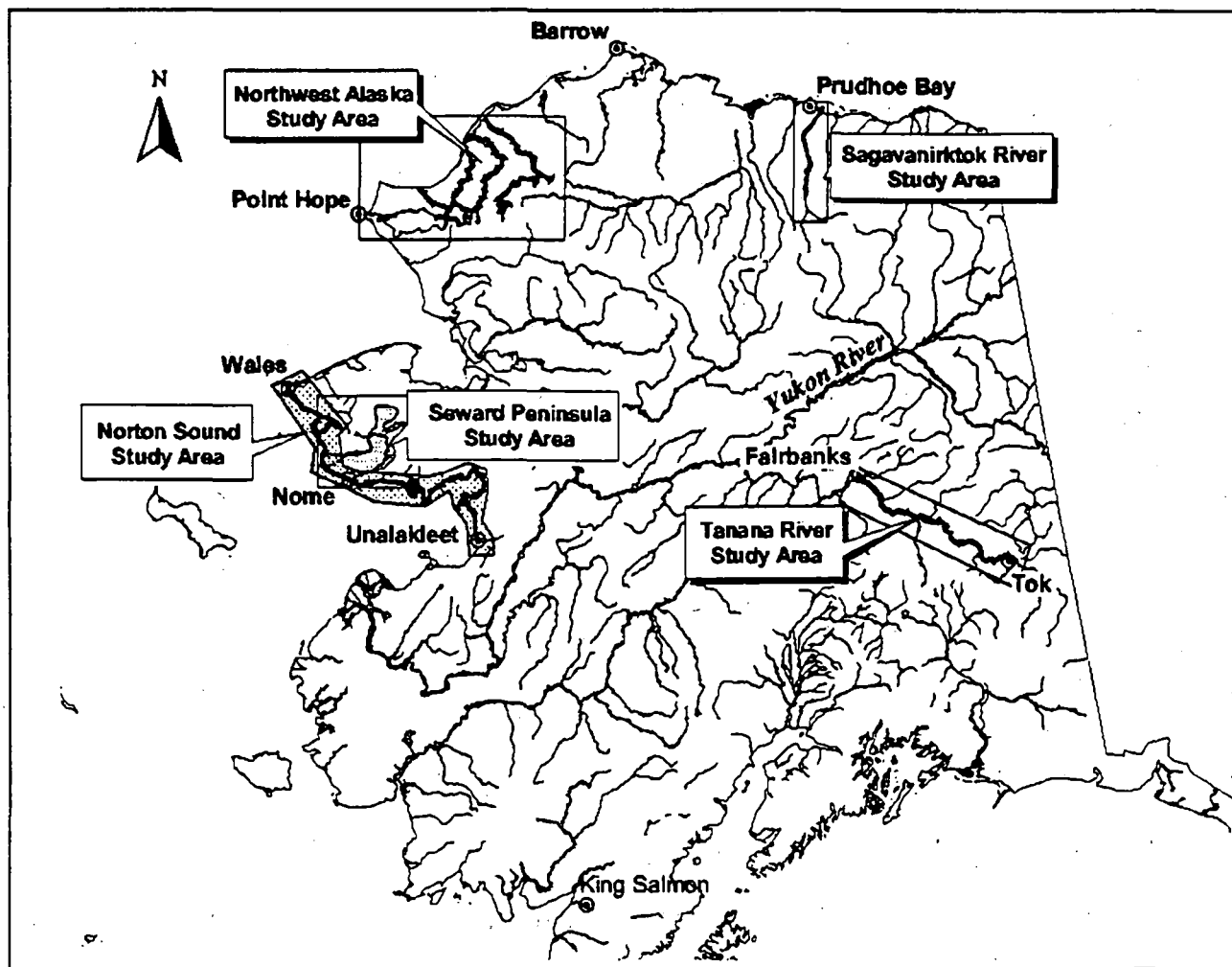


Figure 1. Map of Alaska with study areas.

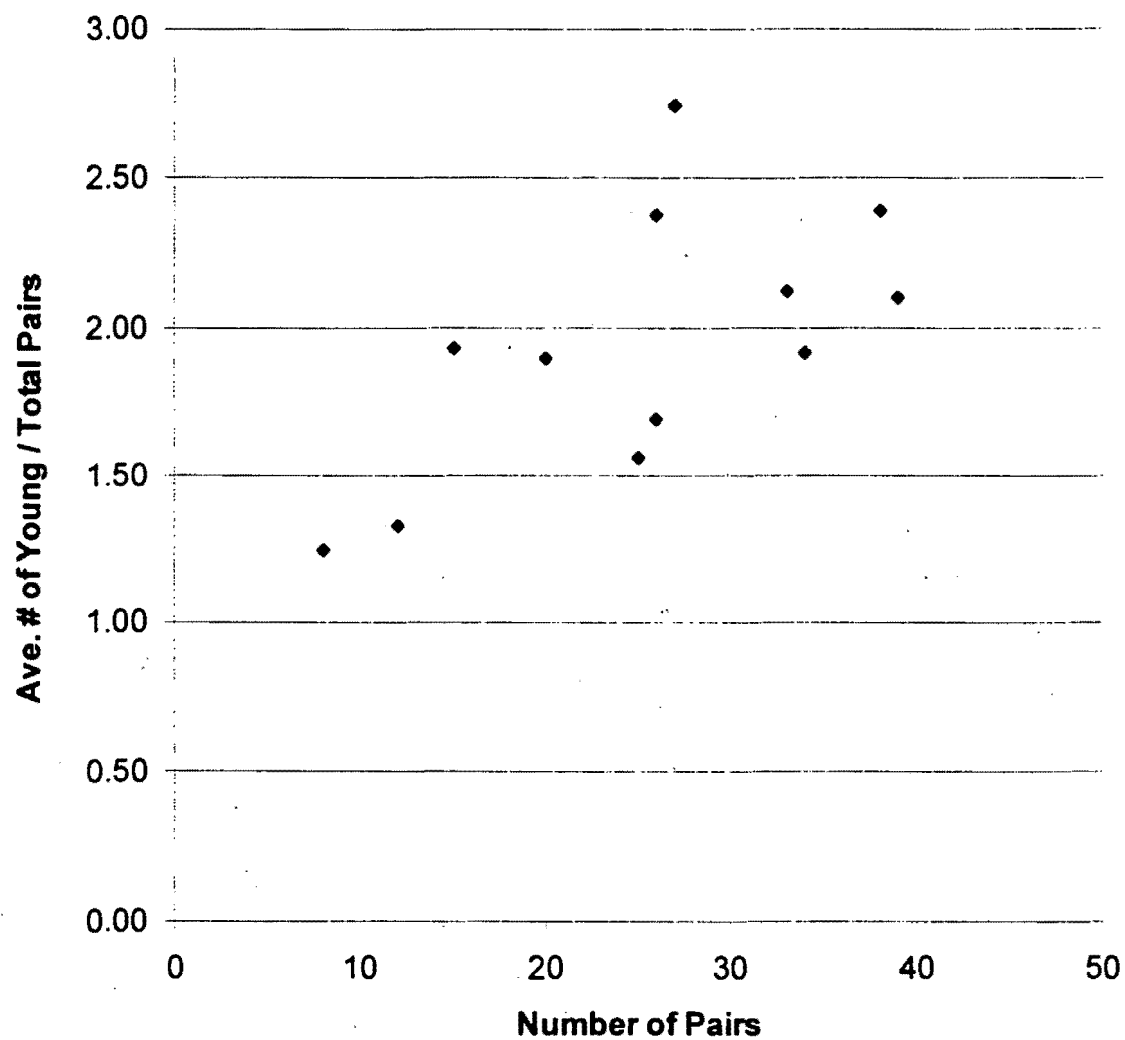


Figure 2. Abundance of nesting peregrines and productivity, Tanana River, 1987–1999.

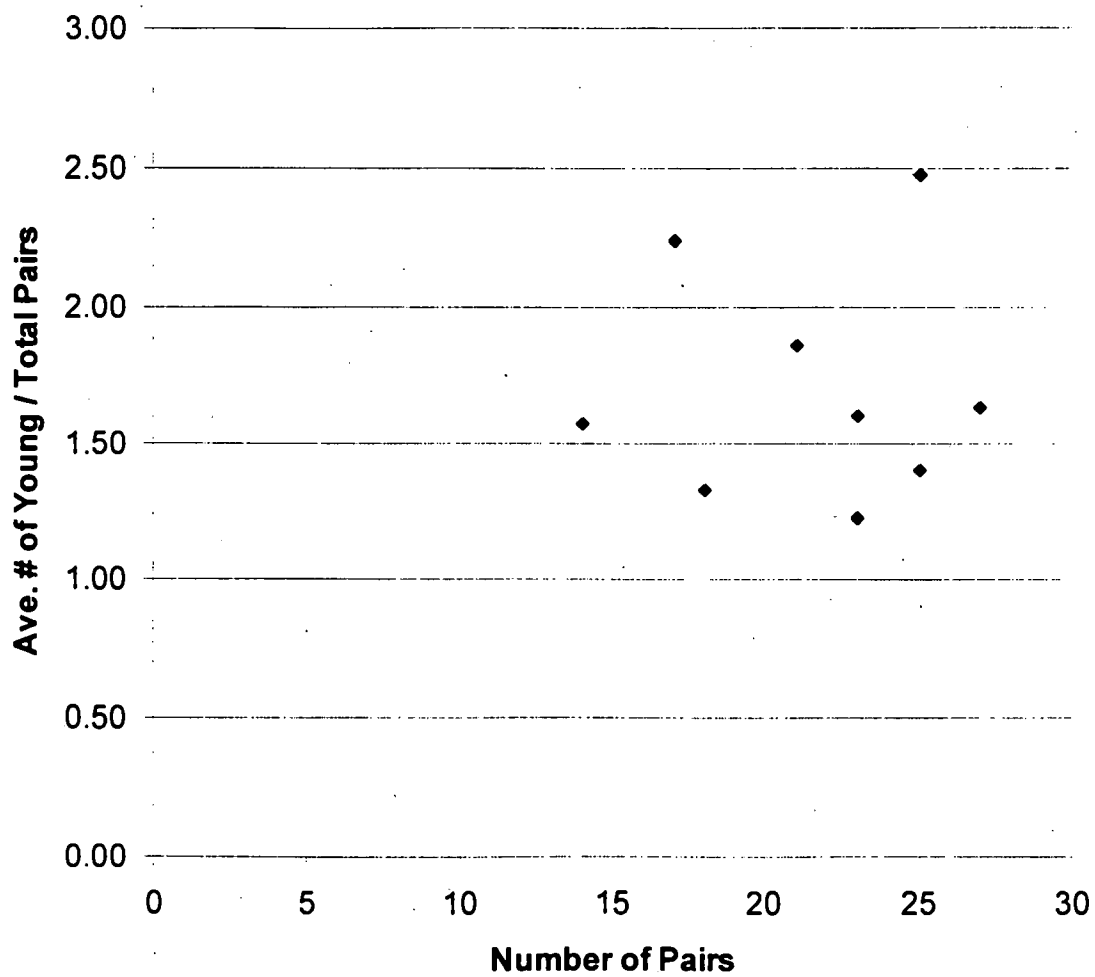


Figure 3. Abundance of nesting peregrines and productivity, Sagavanirktok River, 1991–1999.

Table 1. Occupancy and productivity of peregrine falcons, Tanana River, Alaska, 1968–1999^a

Year	Occupancy			Productivity		
	Lone adults	Total pairs	Successful pairs	Number of young	Young per total pairs	Young per successful pair
1968	0	12	11	23	1.92	2.09
1970	0	6	6	16	2.67	2.67
1971	0	4	3	9	2.25	3.00
1972	0	4	3	7	1.75	2.33
1973	0	4	4	8	2.00	2.00
1974	0	2	1	1	0.50	1.00
1975	1	2	0	0	0	--
1976	2	0	0	--	--	--
1977	0	3	1	1	0.33	1.00
1978	0	4	3	6	1.50	2.00
1979	3	3	2	4	1.33	2.00
1980	0	4	2	5	1.25	2.50
1981	0	5	5	12	2.40	2.40
1982	0	5	3	8	1.60	2.67
1983	0	5	4	11	2.20	2.75
1984	1	4	2	4	1.00	2.00
1985	0	4	3	5	1.25	1.67
1986	2	5	4	12	2.40	3.00
1987	0	8	5	10	1.25	2.00
1988	1	12	9	16	1.33	1.78
1989	0	15	11	29	1.93	2.64
1990	3	15	9	29	1.93	3.22
1991	0	20	16	38	1.90	2.38
1992	3	25	16	38	1.56	2.44
1993	1	26	19	62	2.38	3.26
1994	1	27	24	74	2.74	3.08
1995	3	34	26	71	2.09	2.73
1996	7	27	17	44	1.69	2.59
1997	3	33	28	70	2.12	2.50
1998	2	38	32	91	2.39	2.84
1999	1	39	28	84	2.10	3.00

^a Data for 1968–1978 from a review by Roseneau et al. 1981. Data for 1979–1990 from US Fish and Wildlife Service, Endangered Species, Fairbanks, Alaska unpublished summaries. Data for 1991–1994 from Bente and Wright 1992, 1993, 1994 and 1995. Data for 1997–99 from Ritchie et al. 2000.

^b U = unknown, no second survey

Table 2. Raptors and ravens observed on the Seward Peninsula, 1998.

Species	Single Adult	Pair	Active Nest	Total # Sites
Rough-legged Hawk	1		5	6
Golden Eagle		1	3	4
Peregrine Falcon		1		1
Gyr Falcon	2		4	6
Common Raven	1		9	10

Table 3. Raptors and ravens observed on the Seward Peninsula, 1999.

Species	Single Adult	Pair	Active Nest	Total # Sites
Rough-legged Hawk		1	12	13
Golden Eagle	4	2	3	9
Peregrine Falcon	1		1	2
Gyr Falcon	4	2	15	21
Common Raven			10	10

Table 4. Raptors and ravens observed in northwest Alaska, 1999.

Species	Single Adult	Pair	Active Nest	Total # Sites
Rough-legged Hawk		20	54	74
Golden Eagle	4	11	20	35
Peregrine Falcon	3	6	8	17
Gyr Falcon	2	12	27	41
Common Raven	1		9	10

Table 5. Occupancy and productivity of peregrine falcons, Sagavanirktok River, Alaska, 1958-1999^a.

Year	Occupancy			Productivity		
	Lone adults	Total pairs	Successful pairs ^b	Number of young ^b	Young per total pairs	Young per successful pair
1958	0	5	U	U	--	--
1963	0	4	U	U	--	--
1964	0	1	U	U	--	--
1970	0	3	2	5	1.67	2.50
1972	1	4	2	5	1.25	2.50
1973	0	2	U	U	--	--
1974	1	4	2	3	0.75	1.50
1975	0	3	1	1	0.33	1.00
1976	0	1	1	1	1.00	1.00
1977	0	3	1	2	0.67	2.00
1978	0	1	U	U	--	--
1979	0	4	3	6	1.50	2.00
1980	1	3	1	2	0.67	2.00
1981	0	4	3	8	2.00	2.67
1982	0	4	2	4	0.67	2.00
1983	0	5	5	13	2.60	2.60
1984	1	6	6	15	2.50	2.50
1985	0	8	6	20	2.50	3.33
1986	0	7	6	16	2.29	2.67
1987	2	7	6	24	3.43	4.00
1988	0	10	6	14	1.40	2.33
1989	1	10	10	29	2.90	2.90
1990	2	10	7	19	1.90	2.71
1991	6	14	11	22	1.57	2.00
1992	2	23	15	37	1.60	2.47
1993	4	23	11	28	1.22	2.55
1994	4	17	14	38	2.24	2.71
1995	2	18	13	24	1.33	1.85
1996	6	21	16	39	1.86	2.44
1997	2	25	23	62	2.48	2.70
1998	3	27	16	44	1.62	2.75
1999	5	25	17	35	1.40	2.06

^a Data for 1958–1978 from a review by Roseneau et al. 1981. Data for 1979–1990 from US Fish and Wildlife Service, Endangered Species, Fairbanks unpublished summaries. Data for 1991–1994 from Bente and Wright 1992, 1993, 1994 and 1995.

^b U = Unknown

Table 6. Occupancy and productivity of peregrine falcons, Norton Sound coast, Alaska, 1987–2000.

Year	Occupancy			Productivity		
	Lone adults	Total pairs	Occupied Sites	Number of young ^b	Young per total pairs	Young per successful pair
1987 ^a	0	6	6	12	2.00	3.00
1988 ^b	1 or 2	19	20	34	1.79	2.62
1989 ^b	2	23	25	35	1.52	2.50
1990 ^b	10	27	37	53	1.96	2.52
1991 ^c	10	27	37	54	2.00	2.45
2000 ^d			64			

^a Single survey in July by boat and foot; Wright and Hughes 1988

^b 2 surveys, June and July, in helicopter; Wright 1989, 1990, 1991

^c Single survey in July by helicopter; Bente and Wright 1992

^d Single survey in June by helicopter

Table 7. Raptors (other than peregrines) and ravens, Norton Sound, June 2000.

Species	Single Adult	Pair	Active Nest	Total # Sites
Osprey			1	1
Bald Eagle	1		1	2
Red-tailed Hawk			1	1
Rough-legged Hawk	8	1	11	20
Golden Eagle	2	1	3	6
Merlin	1			1
Gyr Falcon	2	1	3	6

Table 8. Raptors taken from the wild in Alaska by falconers, 1998–2000.

Species	1998		1999		2000 (to Sept.)	
	Eyas	Passage	Eyas	Passage	Eyas	Passage
Northern Goshawk	2		4	2	6	
Red-tailed Hawk		1				1
American Kestrel		1		1		1
Merlin	3	1				
Arctic Peregrine Falcon	3		1			
Peale's Peregrine Falcon	3		2		4	
Gyr Falcon	6		2	1	3	

Table 9. Raptors held by falconers and captive propagators in Alaska, 2000.

	Falconry		Propagation	
	Wild Origin	Captive-Bred	Wild Origin	Captive-Bred
Northern Goshawk	11			
Red-tailed Hawk	6			
Golden Eagle	1			
American Kestrel	3			
Arctic Peregrine	2			
Peale's Peregrine	9			1
Peregrine (unkwn)	1		3	
Gyr Falcon	25	6	16	20

APPENDIX A.

USFWS REPORT, RAPTOR SURVEY, NORTHWEST ALASKA, 1989

Peter Bente
USFWS Endangered Species
Fairbanks, Alaska

13 November 1989

Summary of Activities 1989

Several rivers in Northwest Alaska were surveyed during 17–20 July 1989 using a Bell 206 helicopter. A base camp and fuel cache were established at Eagle Creek airstrip to support the survey. Surveys were conducted at low level at approximately 70 mph indicated airspeed. Most cliffs were checked using one pass; however high cliffs were checked at two or more levels. Locations with previous use by Peregrine Falcons were checked from the air and then from the ground by landing near the area and observing with binoculars and/or spotting scope.

Weather conditions were not good and prevented surveying on two days. Low ceilings, rain, and generally poor viewing conditions occurred on portions of the flights. An inoperative starter motor caused an early departure from the study area and immediate return to Kotzebue, Alaska.

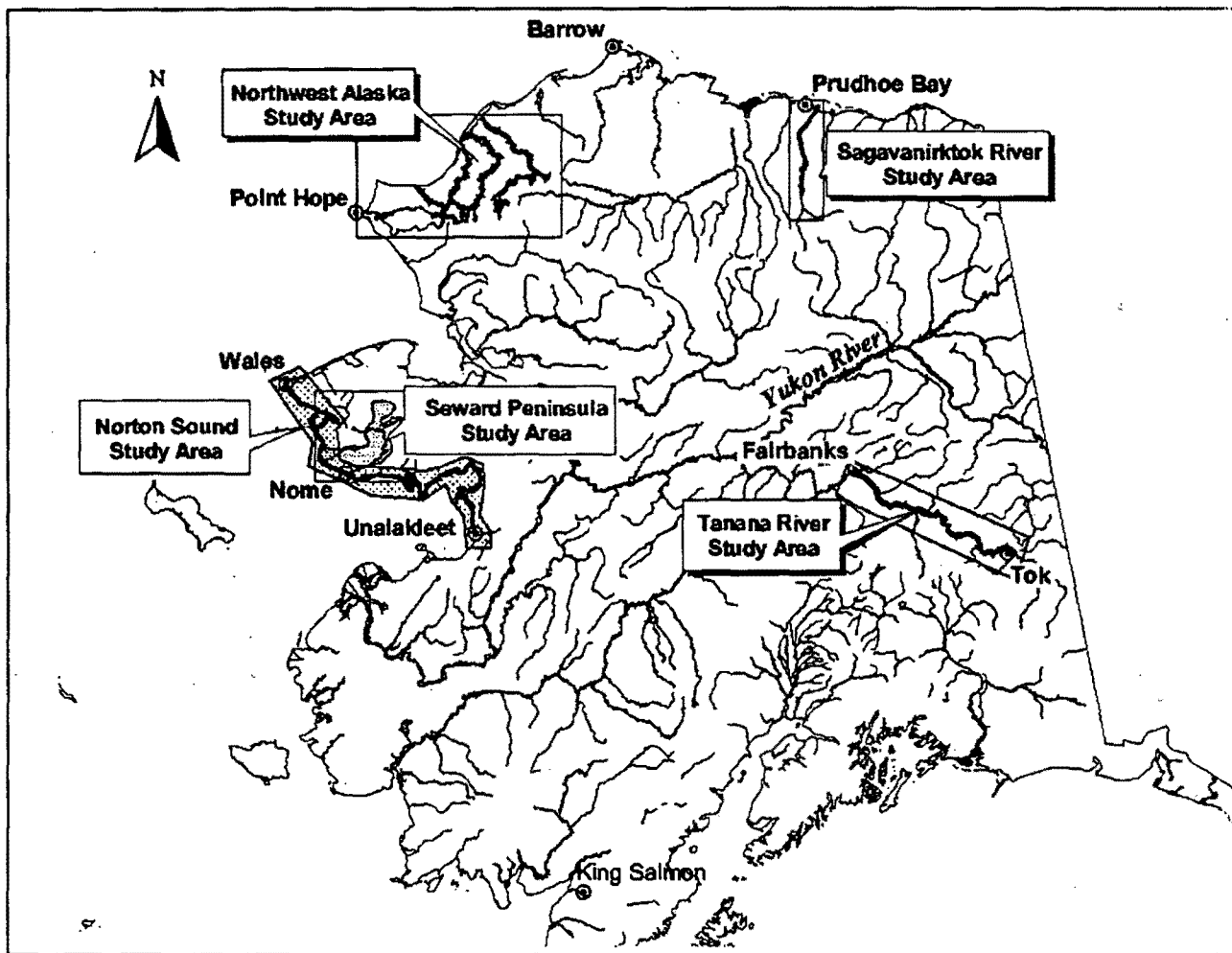
Portions of nine drainages were checked for presence of cliff nesting raptors. Primary emphasis was to locate Peregrine Falcons and band nestling birds; other species were recorded, but no effort was made to land and verify or band birds of the other species.

The following rivers and creeks were surveyed: Eagle Creek, 8 km (12%); Ipewik River, 68 km (45%); Kokolik River, 134 km (40%); Kukpowruk River, 194 km (70%); Pitmegea River, 94 km (100%); South Fork Eagle Creek, 23 km (93%); Sooner River, 17 km (57%); Tingmerkpuuk River, 26 km (53%); and Utukok River, 245 km (66%). A total of 808.5 km were surveyed.

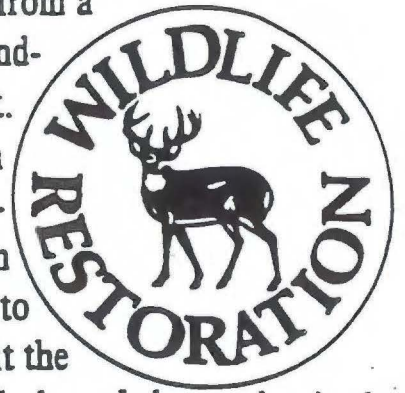
The following species were observed in the study area in 1989:

Raptor occupancy in northwest Alaska, 1989

Species	Empty nests	Sub-adult	Single Adult	Pair w/ no yng	Pair w/ yng	Number of yng	Total active nests
CORA	3	-	1	-	1	?	1
GOEA	48	16	16	6	18	27	24
GYRF	-	-	6	3	28	52	31
PEFA	2	-	1	-	3	11	3
RLHA	35	-	13	3	22	53	25
TOTAL	90	16	38	12	72	143	84



The Federal Aid in Wildlife Restoration Program consists of funds from a 10% to 11% manufacturer's excise tax collected from the sales of handguns, sporting rifles, shotguns, ammunition, and archery equipment. The Federal Aid program allots funds back to states through a formula based on each state's geographic area and number of paid hunting license holders. Alaska receives a maximum 5% of revenues collected each year. The Alaska Department of Fish and Game uses federal aid funds to help restore, conserve, and manage wild birds and mammals to benefit the public. These funds are also used to educate hunters to develop the skills, knowledge, and attitudes for responsible hunting. Seventy-five percent of the funds for this report are from Federal Aid.



Ted Swem USFWS