PEREGRINE FALCON SURVEYS ALONG THE NORTHWEST ALASKAN PIPELINE ROUTE, ALASKA, 1981

FINAL REPORT

Prepared for and funded by:

NORTHWEST ALASKAN PIPELINE COMPANY

Administered by:

FLUOR NORTHWEST, INC.

Contract No. 4780-9-K191

Task 2

Prepared by:

Robert J. Ritchie

and

James A. Curatolo

ALASKA BIOLOGICAL RESEARCH
P.O. Box 81929
Fairbanks, Alaska 99708

October 1981

ABR

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INTRODUCTION

The Northwest Alaskan (NWA) gas pipeline route in Alaska crosses or parallels important historical and current nesting habitat for two endangered races of the peregrine falcon (Falco peregrinus tundrius and F. p. anatum). Many of these areas, such as the Tanana River, have an extensive history of survey and inventory (Haugh 1976). More recent investigations have provided data on current occupancy and reproductive success (Kessel 1978; Roseneau and Bente 1979; Roseneau and Bente 1980).

The objectives of the 1981 raptor studies program were:

1) to continue to monitor the status of known active and historical nesting sites and potential nesting habitat of peregrine falcons near the NWA gas pipeline route, proposed facilities, and material sites; and

2) to record observations of other cliff nesting raptors near the route.

STUDY AREA

The study area included all historic peregrine nesting areas and supposed nesting areas adjacent to the NWA gas pipeline route between M.P. 25 and M.P. 666, specifically:

1. Franklin and Sagwon Bluffs, Sagavanirktok River,
2. Slope Mountain,
3. Yukon River crossing, Grapefruit Rocks,
4. Chena and Salcha rivers, and
5. Tanana River, Tetlin Bridge crossing to Fairbanks.

Cliff areas other than those used by peregrines were surveyed from the Dalton Highway for raptor use between Grayling Lake and the upper Sagavanirktok River. Figure 1 delineates these areas.

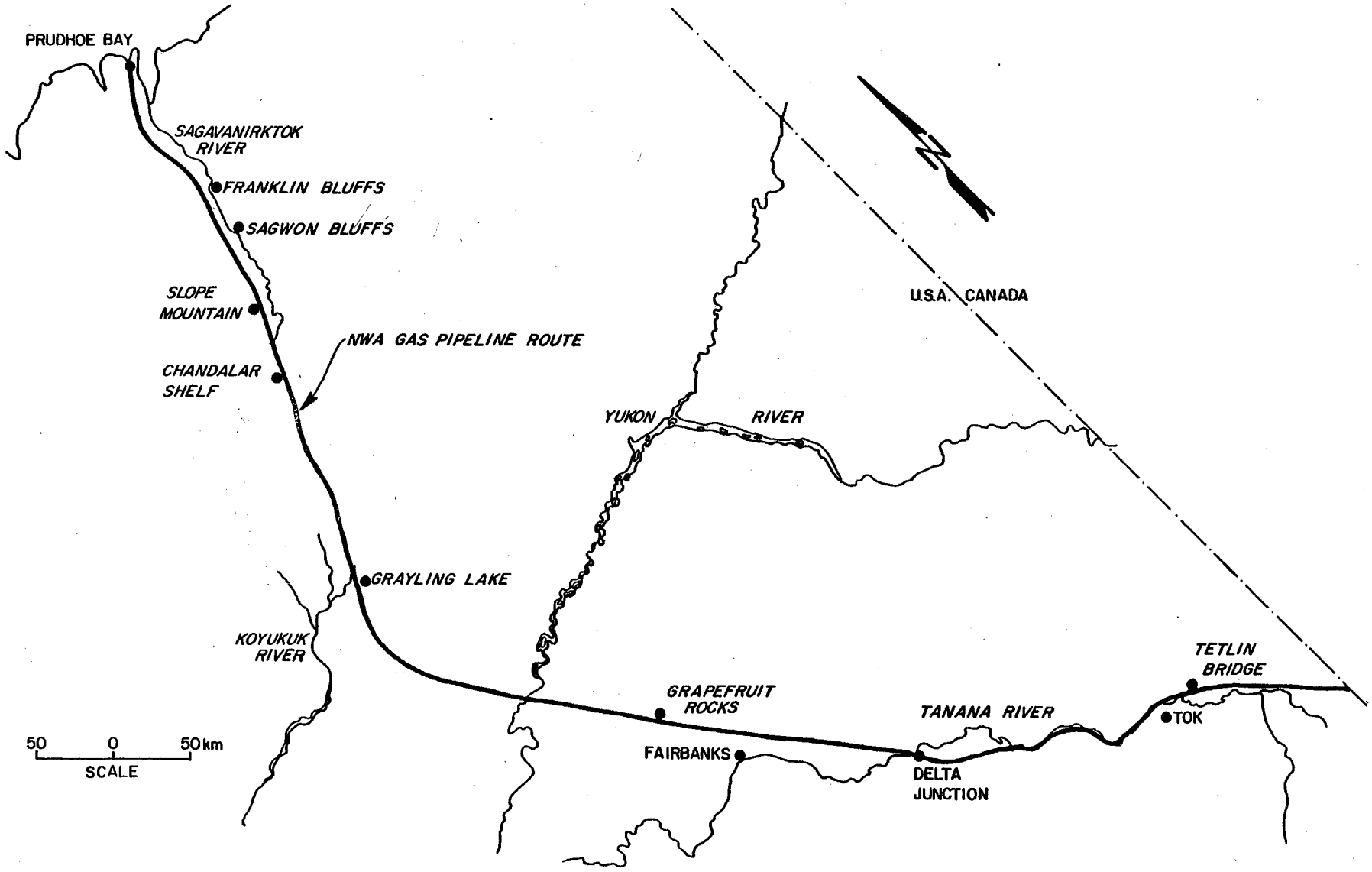

Figure 1. 1981 NWA gas pipeline route raptor study area, Alaska

METHODS

Historical peregrine nesting areas adjacent to the NWA gas pipeline route were surveyed for peregrine falcons. Material site locations designated in the Civil Master Guide, Revision 3, were also checked. Occupancy of cliffs was determined between 20 May and 10 June 1981; productivity was described for nests found active between 11 July and 2 August (Table 1).

On the first survey, cliff sites were approached slowly and observed with the aid of a spotting scope and binoculars. Cliffs were approached more closely only after scrutinizing available perches, ledges, and stick nests. An exception to this routine occurred at Franklin Bluffs (M.P. 25-42), where a helicopter placed us 1 mile east and above historical sites, and we hiked along the bluffs upon our arrival.

On the second survey, active nests were revisited in the manner described above, and nestlings and recently fledged young were counted. Another exception to this routine occurred in the Franklin Bluffs area, where a raft was used for primary access. Specific means of visitation and dates of survey have been included in Table 1.

Table 1. A summary of survey areas, dates, and transportation modes used in raptor surveys near the NWA pipeline route, Alaska, 1981.

Geographic Area	Dates of Surveys	Survey Methods
Tanana River	20 May-25 May, 12 July-14 July	motorized raft
Salcha River	28 May	motorized canoe
Chena River	11 June	motorized canoe
Grapefruit Rocks	6 June, 18 July	hiking
Middle Yukon[1]	2-6 June, 1-5 July	motorized raft
Slope Mountain	3 June	hiking
Sagwon Bluffs	4-5 June, 30-31 July	raft, hiking
Franklin Bluffs	6 June, 31 July	helicopter, raft, hiking
Grayling Lake to Atigun Gorge	28 July-30 July	truck, hiking

[1] Data provided by Lance Craighead and Dave Mindell (pers. comm.) on contract with U.S.F.W.S.

Nest site numbers are the same as those used by Roseneau and Bente (1980). New nest locations were given numbers between previously numbered sites. Nest sites have been mapped in an Environmental Master Guide (EMG), Revision 3, and on USGS 1:63,360 topographic maps.

RESULTS AND DISCUSSION

Peregrine Falcons

Fifty "historic" peregrine falcon sites were surveyed between 20 May and 10 June, including 3 sites visited by USFWS investigators near the Yukon River crossing (Craighead pers. comm.). Twelve sites were occupied, each with a pair of adult peregrine falcons. Ten of these pairs were successful breeders, producing 32 young. The North Slope tundrius subspecies averaged 2.67 large young/successful pair (n = 8, young 25-35 days old), while Interior anatum subspecies averaged 2.86 large young/successful pair (n = 20, young 15-35 days old). Table 2 summarizes data for all sites occupied by peregrine falcons.

Franklin Bluffs

Two pairs were observed on Franklin Bluffs (216 and 220), each producing 3 and 2 young respectively. There have been 7-10 sites designated as "historic" sites (Roseneau and Bente 1979, Roseneau et al. 1981), although no more than 2 pairs have been observed here in any one year since 1973 (Table 3) (Roseneau et al. 1981).

Table 2. Locations occupied by peregrine falcons in areas adjacent to or near the Northwest Alaskan Pipeline Company gas pipeline route, Alaska, 1981.

NWA Location Number	Number of Adults	Number of Large Chicks Observed[1]	Last Year Occupied
21a	2	3*	1980
29b	2	2	1980
34a	2	3*	1978
52	2	2*	1980
73b	2	2*	1980[2]
88.1	2	4	1980
92.1	2	0	1980
95a	2	4	1974[3]
97	2	0	1980
196 (RLH 195)	2	0	?
211	2	3	1980
216	2	3	?
220	2	2*	1980

[1] Large chicks ranging from 15-35 days were observed.

[2] 73b has been reported in Roseneau and Bente (1979) as active in 1980; Roseneau et al. (1981) records it as inactive in this same year.

[3] 95a is Sightas Island (Haugh and Halperin 1976), and MY 5 (Springer et al. 1979); these reports list this site as unsuccessful, while the original notes of C. White record it as unoccupied (Roseneau, pers. comm.).

* Birds banded.

Table 3. History of use and productivity of peregrine falcon sites at North Slope locations on the Sagavanirktok River, Slope Mountain, Sagwon and Franklin Bluffs, Alaska, 1970-81.

NWA Location Number	Occupancy and Productivity											
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
183a	-	nc	-	nc	-	-	nc	?	nc	-	-	-
194	-	-	?	nc	-	pr w/4 eggs none hatched[2]	-	-	[	4 eggs	-	-
196 (RLH 195)	-	no	?	nc	pr w/2 yg[2]	-	-	-		-	-	pr/broken eggs
201	pr ?[1]	survey	-	nc	pr w/1 yg[2]	pr w/3 eggs none survived[2]	pr (no young)[2]	pr w/1+ egg	pr	-	-	-
205	-	data	-	nc	-	-	-	-		-	-	-
206	-		-	nc	-	-	-	-		-	-	-
208a	-		-	nc	-	-	-	-		-	-	-
211	-		?	nc	-	-	-		]	pr w/3 yg	pr w/? yg	pr w/3 yg
212	-		-	-	lone adult	-		-	nc	-	-	-
215a	pr w/2 yg		[	[	[			-	nc			
216	-		pr	pr	pr		no	-	nc	-	-	pr w/3 yg
218.1	-		]	]	]			-	nc	-	pr w/no yg	-
220	-		[	[	[	[	survey		nc	pr w/2 yg	pr w/2 yg	pr w/2 yg
221	-		pr	pr	failed	pr w/ 2 yg		-	nc	-	-	-
222	-		nc	?	-	-		-	nc	-	-	-
223	-		nc	?	-	-		-	nc	pr w/4 yg	-	-
224	pr w/3 yg		-	nc	-	-		-	nc	-	-	-
225	?		nc	nc	nc	nc		-	nc	-	-	-
Totals	3 pair 5 young	-	2 pair ? young	2 pair ? young	3+ pair, 3 young, 1 single adult	3 pair, 2 young	1 pair, no young	3 pair, 1 young	1 pair, ? young	3 pair, 9 young	3 pair, 2 young	4 pair, 8 young

[1] Survey data is more incomplete than interior sites due to different survey methods and difficulty in specifying exact site locations based on unpublished reports; 1970 data from White and Streater (1970); 1972-1976 data from White and Cade (1975), Capodice (1976), unpublished maps at ADFG, Fairbanks (McGowan, pers. comm.); 1977 data from Whitten (pers. comm.), and Roseneau et al. (1981); 1978 1979 data Roseneau and Bente (1979); 1980 data from Roseneau and Bente (1980); 1981 data this study.

nc = not checked

? = unknown

Sagwon Bluffs

Two pairs were observed on Sagwon Bluffs. One pair (205) produced 3 young, while the other pair (196 or RLH 195) failed to complete incubation. Eggshell fragments located in the scrape and pellets suggested eggshell thinning induced by heavy pesticide loads (Newton 1979). Interestingly, a pair of rough-legged hawks had initiated the construction of a new stick nest at this site in late July.

There have been 5-7 sites designated as "historic" sites (Roseneau and Bente 1978; Roseneau et al. 1981), although no more than 2 pairs have ever been observed here (Table 3) (Roseneau et al. 1981). It is probable that the higher number of historic sites are a result of the same pairs using different locations over different years.

Slope Mountain

No peregrines were observed on Slope Mountain. This site is of questionable importance (Roseneau et al. 1981), since only a single "sighting" has ever been recorded for this location (Table 3).

Yukon River Crossing

Two pairs were observed near the Yukon River Crossing (Craighead pers. comm.). One pair (site 95a) produced 4 young, and the other pair (site 92.1) was a defensive pair without young. The other nearby site (site 97) was inactive. Only 2 of these 3 sites have been active in any one year since 1970 (Table 4) (Springer et al. 1979), suggesting that one site is used as an alternate location in some years.

Grapefruit Rocks

One pair with 4 young were observed on Grapefruit Rocks (site 88.1) on 12 July. Only 1 pair has been observed here, although there are at least 2 sites used alternately (Table 4).

Tanana River

Five pairs were observed along the Tanana River (sites 21a, 29b, 34a, 52, 73b). All pairs were successful, with a total of 12 young produced (2.4 large chicks/successful pair). Between 15 (Haugh 1976) and 26 (Roseneau et al. 1981) sites have been mapped along this portion of the Tanana River, with as many as 14 active in 1968 (Haugh 1976). Table 5 summarizes the history of use of these sites since 1970.

Table 4. History of use and productivity of peregrine falcon sites on the Middle Yukon, Chena and Salcha rivers and Grapefruit Rocks, Alaska, 1970-81.

NWA Location Number	Occupancy and Productivity											
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
80	pr ?	nc	-	nc	-	-	nc	nc	nc	-	-	-
79		nc	-	nc	-	-	nc	nc	nc	-	-	-
84	-	nc	-	nc	-	-	nc	nc	nc	nc	-	-
86	nc	nc	nc	nc	nc	nc	nc	nc	nc	pr w/3 yg	-	-
88.1	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	pr w/3 yg	pr w/4 yg
95a	pr w/1 yg	nc	nc	active	-	-	-	-	-	-	-	pr w/4 yg
92.1	nc	nc	nc	nc	pr w/2 yg	pr w/2 yg	pr w/3 yg	nc	nc	pr ?	pr	pr
97	nc	nc	nc	nc	nc?	nc?	nc?	nc?	nc?	nc?	pr w/2 yg	-
Totals	2 pair, 1 young	-	-	1 active site	1 pair, 2 young	1 pair, 2 young	1 pair, 3 young	-	-	2 pair, 3 young	3 pair, 5 young	3 pair, 8 young

Some nest sites do not have a long or complete history of survey; 1970 data from White and Streater (1970), unpublished maps ADFG, Fairbanks (McGowan, pers. comm.); 1973 data (unpubl. maps, ADFG, Fairbanks (McGowan, pers. comm.); 1974-1979 data from Haugh and Halperin (1976), Springer et al. (1979); 1980 data from Roseneau and Bente (1980); 1981 data from this study and L. Craighead and D. Mindell (pers. comm.)

nc = not checked

? = unknown

Table 5. History of use and productivity of peregrine falcon sites along the Tanana River between Fairbanks and Tetlin Junction, Alaska, 1970-1981.

NWA Location Number	Occupancy and Productivity[1]											
	1970	1971	1972	1973	1974	1975[2]	1976[2]	1977[3]	1978	1979	1980	1981
16a	-	-	-	-	-	-	-	NC	-	-	-	-
19a	-	-	-	-	-	-	-	-	-	-	-	-
21a	pr w/3 yg	pr	pr w/2 yg	pr w/1 yg	pr w/1 yg	pr	single	pr	pr w/1 yg	pr w/2 yg	pr w/2 yg	pr w/3 yg
25	-	-	-	-	-	-	-	-	-	-	-	-
29b	pr w/3 yg	pr 2/3 yg	pr	pr w/1 yg	-	pr	-	pr w/1+ yg	pr w/4 yg	pr w/2 yg	pr w/3 yg	pr w/2 yg
34a	pr w/3 yg	-	-	pr w/3 yg	-	-	-	pr	pr w/3 yg deserted	-	-	pr w/3 yg
38a	-	pr w/3 yg	pr	-	-	-	-	-	-	-	-	-
35a	-	-	-	-	-	-	nc	-	-	single @ C	-	-
41a	-	-	-	-	-	-	nc	-	-	-	-	-
42a	-	-	-	-	-	[single]	nc	-	-	-	-	-
47a	-	-	-	-	-	-	nc	-	-	-	-	-
48a	pr w/1 yg	-	-	-	nc	nc	nc	-	-	-	-	-
50	-	-	-	-	-	-	nc	-	-	single	-	-
52	-	-	-	-	-	-	-	-	-	-	pr	pr w/2 yg
55	occupied	nc	-	nc	-	nc	-	-	-	-	-	-
60a	pr w/4 yg	pr w/3 yg	pr w/3 yg	pr w/3 yg	-	-	-	-	-	-	-	-
61	-	-	-	-	-	-	nc	-	-	single	-	-
63	-	-	-	-	-	-	-	-	-	-	-	-
63.1	nc	nc	nc	nc	nc	nc	nc	nc	nc	-	-	-
68a	pr w/2 yg	-	-	-	-	1 egg	-	nc	-	-	-	-
69a							-	nc	-	-	-	-
73b	-	-	-	-	-	-	-	nc	pr w/1 yg	pr	pr w/1 egg	pr w/2 yg
74a	-	-	-	-	-	-	single	nc	-	-	-	-
Totals	6 pair, 16 young, 1 unknown	4 pair 9 young	4 pair 5 young	4 pair 8 young	1 pair 1 young	2 pair, no young, 1 single adult	2 single adults, no young	3 pair, 1+ young	4 pair, 9 young	3 pair, 4 young, 3 single adults	4 pair, 4 young	5 pair, 12 young

[1] 1970-75 data from Haugh (1976); 1976 data from Haugh and Halperin (1976); 1977 data from Kessel (1978) and Ritchie (unpubl. notes); 1978 from Roseneau et al. (1981), Ritchie unpubl. notes, and Ambrose (pers. comm.); 1979 data from Roseneau and Bente (1979); 1980 data from Roseneau and Bente (1980); 1981 data from this survey.

[2] 1975 and 1976 data predominantly from fixed wing surveys.

[3] Young were probably at all three nests, but counts were not made.

nc = not checked.

Other Raptors

Gyrfalcons

Ten gyrfalcon (Falco rusticolus) sites have been recorded within 1 mile of the NWA gas pipeline route (Roseneau and Bente 1979). Five of these sites were checked in 1981. Activity by gyrfalcons was confirmed at two of these sites and at a rough-legged hawk nest (RLH 209); 2 pairs produced 5 young, while the productivity of the third eyrie was not determined. The 1981 status of all gyrfalcon sites are summarized in Appendix A.

Franklin Bluffs

Roseneau et al. (1981) stated that gyrfalcons have never been recorded in Franklin Bluffs. Although a nest was not found in 1981 surveys, an adult gyrfalcon was observed on 6 June near P 216 (active this year), and a recently fledged gyrfalcon was observed on the Dalton Highway 1.5 miles west of this location on 31 July.

Sagwon Bluffs

Two gyrfalcon pairs occupied cliffs in the Sagwon area (204, RLH 209). RLH 209 produced 3 young nearly fledged by 31 July; this site is probably an alternate to 208. The productivity of 204 was not determined.

Ice Cut (M.P. 98)

Gyrfalcon site 187b was occupied. Two large chicks were observed in mid-June; fledged young were not observed on 29 July.

Rough-legged Hawk

At least 28 rough-legged hawk (Buteo lagopus) nests occurred within 1 mile of the NWA gas pipeline route (Roseneau and Bente 1979) (Appendix B). Seventeen were located and visited in 1981, including 5 nest sites not previously recorded by Roseneau and Bente (1979). Ten of these sites had pairs attending or incubating young; only 2 (RLH 219 and 190.2) are definately known to have produced young.

Franklin Bluffs

Four rough-legged hawk nests were occupied in June on Franklin Bluffs (214, 219, 218.1, 224.1). RLH 219 produced 2 young which had fledged by 31 July. RLH 214 could not be relocated in July and may have collapsed while the reproductive success of 224.1 and 218.1 were not determined.

Sagwon Bluffs

Four rough-legged hawk nests were occupied in June (RLH 197, RLH 203.1, RLH 207, GYR 208). Sites 197 and 203.1 were not resurveyed in July; defensive pairs were present at GYR 208 and 207 but young were not observed. Birds at these sites as well as RLH 195 (earlier occupied by peregrine falcons) were involved in courtship displays. RLH 202 was not located and probably no longer exists.

Ice Cut

RLH 187 was occupied in June; no adults or fledged young were observed on 30 July.

Happy Valley

A rough-legged hawk nest (190.2) was observed on a vent in a sheet metal building at Happy Valley Camp in June (Kuropat pers. comm.). Two nearly fledged young were observed there on 30 July.

Slope Mountain

At least three rough-legged hawk nests were located in the Slope Mountain vicinity; no specific nest locations were identified by Roseneau and Bente (1979). A single adult was observed in June.

Golden Eagles

Thirty-eight golden eagle (*Aquila chrysaetos*) nest sites were surveyed by late July, including 2 sites not recorded by Roseneau and Bente (1979) [21C, 183]. Nine others were not located. The lateness of the survey precluded an evaluation of activity; five nest sites, however, were definitely active (6 young and 2 eggs) and nine others may have been active earlier in the season (Appendix C).

Slope Mountain

A previously unidentified site (183e) was found active in June. Two recently fledged young were observed there on 28 July.

Atigun River to Atigun Pass

Three golden eagle sites showed sign of recent use in late July and adults were present at all of these (175, 176, 181.1).

Atigun Pass to Grayling Lake

An extensive survey of golden eagle nests in the Koyukuk and Dietrich River valleys proved to be impractical and ineffective in

determining activity in late July. Two fledged young were observed (160). Adults and subadults were observed near 6 other nests (Appendix C).

Yukon River to Delta Junction

All golden eagle nests between Delta Junction and the Yukon River were inactive (78, 87, 88, 96b).

Tanana River

Three golden eagle nests (19b, 21c, 27) were active; 21c and 27 each produced one young, while 19b failed (2 broken eggs found in the nest). Site 21c was not previously recorded by Roseneau and Bente (1979), but has had use since 1977 (unpubl. notes).

Survey Effectiveness

Surveys in 1981 were designed primarily to determine the status and productivity of historic peregrine sites. This objective was successfully accomplished. Identification of other raptor nests was obtained through more extensive searches which were not as effective and cannot be used to reflect trends, adequately describe 1981 status and productivity, or be compared realistically with other surveys. The lateness of golden eagle surveys between Grayling Lake and Atigun River, for instance, preclude a discussion of activity and comparison with previous years. The shortcomings of single survey investigations, including their failure to estimate failed breeding pairs, have been summarized by Postupalsky (1974). The difference between active and empty rough-legged hawk nests, on the other hand, may actually suggest a low reproductive success for the population, which is not unusual for the species (Zarn 1974). In order to better describe the status of other raptor populations, more intensive surveys, similar to those used for peregrines, would be necessary.

CONCLUSIONS AND RECOMMENDATIONS

Peregrine "sites" have been a primary concern of those involved with the NWA gas pipeline route. A site, conservatively, has evolved to include any cliff on which a peregrine has been observed, due to its traditional use of sites. If a peregrine is observed at a cliff, it is said to have an "affinity" for that cliff and may in subsequent years return and nest there. In some instances, it may even include a cliff with no specific use (e.g., P 80) that is in close proximity to another historic site. Nesting activity is a prerequisite for enumerating all other raptor locations. Although this pattern has been in the best interest of the peregrine, it may reduce the overall effectiveness of a program which should be reasonable as well as accurate. Such conservative inconsistencies complicate any discussion of historical use of cliff sites. For instance, sites within 2 miles of the NWA pipeline route which have little documentation of use include P 19a, P 63.1, P 183a P 25, P 61, and P 80. Specifically, a single bird was observed at P 61 in 1979 and although alone this record is important, it does not warrant its being recorded as a peregrine site. If this were the case, all golden eagle cliff sightings should be considered probable golden eagle nesting habitat, and therefore logical sites. Soon these discrepancies in nomination will allow even "potential" habitat to receive the attention warranted a historic site. This may have already happened.

In 1970 a peregrine pair was observed on either P 79 or P 80; no record (White and Streater 1970; Roseneau pers. comm.) adequately describes which cliff was used. As each survey year is completed, one's interpretation of these "grey sites" becomes less clear.

The system would be improved by defining cliff habitat units as discrete habitat blocks. A history of use could more easily be applied to each of these "communities", as opposed to each site on a cliff face. For example, east Sagwon has a number of such nests and ledges used concurrently by peregrines, gyrfalcons, rough-legged hawks, and ravens. A history of each specific nest site may not be possible or necessary; a history of use of the entire bluff, however, might be possible and more practical. Questionable areas should be afforded the care given any potential habitat but not necessarily site protection.

Finally, surveys over such a broad area have been incomplete, occurred at different stages of the nesting cycle (references to downy chicks and fledged young are included in discussions of productivity), and employed different techniques (aerial vs. ground). All these factors influence the degree of comparability of results and should be considered in any analysis of occupancy and productivity.

APPENDIX A

1981 status of gyrfalcon nests within one mile of the NWA gas pipeline route, Alaska.

Species	Active Nest Sites		Unoccupied Nest Sites		Nest Sites Status Unknown[1]		New Nest Sites	
	site number	total sites	site number	total sites	site number	total sites	site number	total sites
Gyrfalcon	204		183d		102			
	RLH 209		198		174			
	187b		208b		180			
					187b			
					190b			
		3		3		5		0
					Total Sites	11		

[1] These sites were not checked.

APPENDIX B

1981 status of rough-legged hawk nest within one mile of the NWA gas pipeline route, Alaska.

Species	Active Nest Sites		Unoccupied Nest Sites		Nest Sites Status Unknown[1]		New Nest Sites	
	site number	total sites	site number	total sites	site number	total sites	site number	total sites
Rough-legged hawk	187		183b		185		190.2	
	190.2		195[2]		186		203a	
	197		199		188		218.1	
	203		203a		189		221a	
	207		217		190a		224.1	
	GYR 208b		221a		191			
	214*				193			
	218.1				202.1			
	219				202*			
	224.1				213*			
					218			
		10		7		11		5
				Total Sites	28			

* Probably collapsed.
[1] Not checked or could not be located
[2] RLH 195 occupied by peregrines in June; RLH initiating nest construction in late July.
[3] RLH 209 occupied by gyrfalcons.

APPENDIX C

1981 status of golden eagle nests within one mile of the NWA gas pipeline route, Alaska.

Species	Active Nest Sites		Occupied Nest Sites		Nest Sites Status Unknown[1]		New Nest Sites	
	site number	total sites	site number	total sites	site number	total sites	site number	total sites
Golden eagle	19b		16b		22 nc		21c	
	21c		18b		42c nc		183d	
	27		26		49			
	160		32		78			
	183e		41b		87			
			88		96b			
			108		107 nc			
			109		112			
			113		126b			
			143a		129			
			144		131*			
			151		132***			
			158		139***			
			164		142 nc			
					145**			
					146 nc			
					148 nc			
					149*			
					150 nc			
					153*			
					154 nc			
					159			
					168**			
					173*			
					175**			
					176**			
					181			
					181.1***			
		5		14		28		2
				Total Sites	47			

* Could not locate, may have collapsed.
** Adults nearby, but no young at nest.
*** Adults nearby, young and/or recent use of nest (e.g. prey in nest).
nc = not observed.

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