

801.3-12
FILE CABINET

F

605.1

1

2

801.3-4.2

RAPTORS AND RAPTOR HABITAT ALONG THE
ALASKA PORTION OF THE
NORTHWEST ALASKAN GAS PIPELINE CORRIDOR

by

Brina Kessel
University of Alaska
Fairbanks, Alaska
99701

Library of the Pipeline Coordinator
450
State Street, 99701
Fairbanks, Alaska

Prepared for
Northwest Alaska Pipeline Company

NOT FOR DISTRIBUTION -- except on "need-to-know" basis

January 1978

19780101-1

TABLE OF CONTENTS

Introduction	1
Acknowledgments	2
Methods	3
Major Raptor Locations	4
Critical Factors in Maintenance of Raptor Populations	11
Habitat	11
Disturbance by Humans	13
Critical Times and Critical Distances	16
Other Concerns	18
References Cited	21
Recommendations	22

RAPTORS AND RAPTOR HABITAT ALONG THE
ALASKA PORTION OF THE
NORTHWEST ALASKAN GAS PIPELINE CORRIDOR

Brina Kessel

The route of the Northwest Alaskan Gas Pipeline passes either through or very close to several important raptor nesting areas between Prudhoe Bay and the Alaska-Canadian Border. Critical habitats along the pipeline alignment include river bluffs, upland cliffs and tors, and certain large nest trees near rivers and lakes. The sensitive species are the large, long-lived hawks that are the carnivores occupying the apex of regional food pyramids--Rough-legged Hawk, Golden and Bald eagles, Osprey, Gyrfalcon, and Peregrine Falcon. Of these, only the Peregrine Falcon is considered "endangered" in Alaska, although the Bald Eagle and Osprey are being carefully monitored as to status in the contiguous United States. Special attention and protection of all of these sensitive, "top of the line" predators is essential, however, if their populations are to remain healthy in the face of man's conquests for land and resource development.

The following report delineates the areas of critical habitat along the pipeline route and tabulates their use by the different species of large raptors. It is important to remember when reading these data that while some raptors are essentially traditionalists in their breeding sites, usually returning to the same nest year after year (Peregrine

Falcon, Bald Eagle, Osprey), many change sites between years--sometimes just using another nearby alternate site (Rough-legged Hawk, Golden Eagle, Gyrfalcon), but at other times, perhaps because of food failures, shifting to another area. In any event, a site unoccupied one year will more than likely be occupied in a subsequent year. The availability of alternate nest sites may be important to some raptor populations, allowing some nests to remain unused for a period and to provide space for increased populations caused by immigration due to cyclical increases in local food resources (e.g., high rodent, ptarmigan, or hare populations). Also, traditional sites deserted when a population level is low will doubtlessly be reoccupied if and when the population recovers (e.g., Peregrine Falcon).

ACKNOWLEDGMENTS

This report was prepared in large part from data obtained from unpublished file reports kindly made available by Jerry D. McGowan, Alaska Department of Fish and Game, and Roger Bolstad, U. S. Bureau of Land Management (ADF&G maps, Caprodice 1976, Haugh 1976, Haugh and Halperin 1976, White 1974a and 1974b, White and Cade 1975, White and Ray 1972, and White and Streater 1970) and from data provided by Robert J. Ritchie, Alaska Biological Research, who in turn was aided in his data collection by David L. Johnson, field assistant for ABR; R. E. "Skip" Ambrose, U. S. Bureau of Land Management; Kenneth Whitten and Daniel D. Roby, Alaska Department of Fish and Game, and Jerry D.

McGowan. Other data were obtained by Michael A. Spindler, who spent time in the Northway-Tetlin wetlands during the summer of 1977 under a contract between the Northwest Alaskan Pipeline Company and the University of Alaska Museum.

METHODS

Information about known raptor aeries along the proposed gas pipeline where this line traverses the same areas as the Trans-Alaska Oil Pipeline was gathered primarily through a search of published literature and unpublished agency reports and by interviewing knowledgeable federal and state biologists familiar with the raptors of the region. All 1977 data for the pipeline route between Prudhoe Bay and Big Delta were obtained through these biologists.

Robert J. Ritchie made two float trips in 1977 along the Tanana River between the mouth of the Robertson River and Shaw Creek, the first between 5 and 8 June and the second between 14 and 16 July, and his observations have been compared with those of earlier observers (Haugh 1976, Haugh and Halperin 1976).

Michael A. Spindler canoed the wetlands area along Desper Creek to Scottie Creek and down the Chisana River to the Northway Road between 19 and 24 July 1977, and censused other wetlands along the proposed pipeline route between the Northway Road and Tetlin Junction between 6 and 19 July 1977. Added to his observations have been records from earlier years from Kessel's unpublished notes and from

James G. King, U. S. Fish and Wildlife Service, and Donald E. McKnight, Alaska Department of Fish and Game.

MAJOR RAPTOR LOCATIONS

The pipeline route can be subdivided into several units for the purposes of the presentation of raptor data: Franklin Bluffs, Sagwon, Lupine/Sagavanirktok River junction, Slope Mountain, Brooks Range, highlands between Grayling Lake and the mountains bordering the South Fork of the Koyukuk River, Yukon River crossing, Yukon River to Big Delta, and the upper Tanana River Valley from Big Delta to the Alaska-Canadian Border. Except for the stretch from the Yukon River to Big Delta, each of these units contain prime raptor habitat and hence are areas of major raptor concentrations along the proposed Northwest Alaskan Gas Pipeline. Special management attention will be necessary in these areas to avoid harming the resident raptor populations.

Franklin Bluffs

This northernmost location of river bluffs along the Sagvanirktok River used by nesting raptors is being considered for the designation of "critical habitat." Historically, five Peregrine nesting sites and seven Rough-legged Hawk nesting sites have been recorded along these bluffs. Only the Peregrine sites have been monitored with any regularity; there were two nesting attempts in 1974 (both failed), one or two in 1975, one in 1976, and one in 1977 (failed).

Sagwon Bluffs

This area of high-density raptor nesting has received considerable attention in recent years because of its close proximity to the route of the Trans-Alaska Oil Pipeline and the presence of breeding pairs of the endangered Peregrine Falcon. A detailed Habitat Management Plan for the area has been prepared by the U. S. Bureau of Land Management and submitted for approval through the Peregrine Recovery Team to the Endangered Species Office, U. S. Fish and Wildlife Service (Caprodice 1976). Table 1 lists the total number of sites in the region known to have been used by nesting raptors (ADF&G maps) and the number utilized in recent years.

Table 1. Raptor nest sites at Sagwon Bluffs, Sagvanirktok River, northern Alaska.

	Total # Sites	# of Sites Occupied			
		1974	1975	1976	1977
Peregrine Falcon	5	2 (successful)	2(failed)	1 (failed)	1(successful)
Rough-legged Hawk	9	7	8	6	?
Gyr Falcon	3 or 4	2	2	2	1

Lupine/Sagavanirktok River Junction

A total of five Rough-legged Hawk nests and three Gyrfalcon nests have been recorded in this area over recent years (one site used by both species).

Slope Mountain

Two Rough-legged Hawk nest sites and one Gyrfalcon site are present on this relatively isolated piece of upland cliff habitat. In spite of the fact that this mountain was used as a materials site during construction of the Trans-Alaska Oil Pipeline, both Gyrfalcons and Rough-legged Hawks appeared to be nesting here in 1977 (Roby; also, Kessel and Gibson). A Peregrine reportedly nested on this cliff in 1963 (White and Cade 1975), but it has not been recorded since.

Brooks Range

The route of the pipeline along the Middle Fork of the Koyukuk River, the Dietrich River, and the Atigun River passes through prime Golden Eagle habitat. Twenty-nine Golden Eagle nest sites and four Gyrfalcon nest sites have been recorded within two miles of the pipeline alignment along this section through the Brooks Range. Several of the Golden Eagle sites lie close enough to the alignment to deserve special attention: one across the Middle Fork of the Koyukuk between Nugget and Over creeks, one on Snowden Mountain, one on Table Mountain, and

one north of Atigun Camp at about MP 162. Most of these nests are above 3,000 feet elevation, 1500 feet above the pipeline route.

Highlands along the South Fork of
Koyukuk River and to Grayling Lake

A limited area of raptor nesting habitat occurs at the crossing of the South Fork of the Koyukuk River, and a possible Gyrfalcon (or Raven?) nest site and a possible Golden Eagle nest site near MP 255 are close enough to the alignment to be of possible concern. Another Golden Eagle site north of Grayling Lake at about MP 260 falls in the same category.

Old Man Camp

A Gyrfalcon aerie within one-half mile of Old Man Camp was occupied in 1972 (failed) and 1974 (successful), but not in 1975 (White and Cade 1975).

Yukon River Crossing

River bluffs both above and below the Yukon River bridge have been used for nesting by Peregrine Falcons and Golden Eagles. The closest bluff is about four miles downriver; historically, it has supported Peregrine and Golden Eagle nest sites, but Peregrines have not nested there since 1974--and the nest failed in that year.

Yukon River to Big Delta

There are no major areas of raptor habitat in this section of the proposed gas pipeline, although there are a few nest sites that should be mentioned:

- 1) There is a Peregrine nest site about 1.8 miles downstream from the pipeline crossing of the Salcha River, Pipeline Mile 493.5. This site has not been used for several years, but it should be treated as "critical habitat" and checked for possible occupancy before construction activities are undertaken at the crossing. Timing could be an important factor at this site.
- 2) A Bald Eagle nest site has been present across Vault Creek, about three miles east of MP 439. It was not checked in 1977.
- 3) Golden Eagles have nested at the Globe Creek crossing, southwest of the Elliot Highway, at about Pipeline Mile 416.5.
- 4) There is a Golden Eagle site on Hess Creek, about 3.5 miles upriver from the mouth of Troublesome Creek and 2.7 miles southwest of MP 369.

Big Delta to Tetlin Junction

A river bluff system occurs along the Tanana River between Big Delta and Tetlin Junction, the river roughly paralleling the proposed gas pipeline but never approaching it closer than one mile. This section of the Tanana River contains critical habitat for raptors, including the endangered Peregrine Falcon. John R. Haugh, working for various state and federal agencies, has monitored the Peregrines in this area since 1970, and Robert J. Ritchie checked it in 1977. Beginning in 1970, there appear to have been about seven Peregrine nesting sites present along this stretch of river, several apparently serving as alternate sites. Four pairs nested successfully in this area in 1973, but only one in 1974, and none in 1975; three, however, may have been successful in 1977. The nest with the best occupancy history is a mile from the Robertson River crossing of the pipeline and needs ultra-careful protection! Table 2, adapted from Haugh (1976), shows the recent history of Peregrine Falcon nesting along the Tanana River.

In addition to Peregrines, other raptors utilize the river bluffs and some of the larger trees of the valley for nesting. Several Golden Eagles were seen in 1977, and they have been known to nest on Tower Bluffs near the mouth of the Robertson River. Six Bald Eagle nest sites have been recorded along this stretch of river (at least four active in 1977), and an Osprey nest was located in 1977.

Table 2. Site occupancy and reproduction by Peregrine Falcons along the upper Tanana River
(adapted from Haugh 1976). x = site occupied, no data on reproduction;
- = site unoccupied; # = number of young.

Site Number	Miles from Alaska Highway	1968	1970	1971	1972	1973	1974	1975	1976 ¹	1977 ²
2	1.4	3	3	0	2	1	1	0	x	x
3	3.5	1	3	3	2	1	-	0	-	1+
4	2.6	1	3	3	0	3	-	-	-	x
6	1.9	2	1	-	-	-	-	-	-	-
9	5.0	3	4	3	3	3	-	-	-	-

¹Data from Haugh and Halperin (1976).

²Data from R. J. Ritchie.

Tetlin Junction to the Alaska-Canadian Border

There is no important cliff-nesting habitat along this stretch of the pipeline, but Bald Eagles and Osprey nest at scattered locations throughout the Tetlin-Northway Wetlands. Most of these nests are more than a mile from potential pipeline activity, the exceptions being several Bald Eagle nests: one at Fish Lake near Northway is about a mile from the Northway Road, not far from the Northway Airport; one on a gravel pit bluff, active in 1976 but not in 1977, within 0.4 miles of the alignment near Riverside¹; and one about a mile north of the Alaska-Canadian Border crossing in the Little Scottie Creek area.

Table 3 tabulates the location of known Bald Eagle and Osprey nests along the upper Tanana River between Big Delta and the Alaska-Canadian Border.

CRITICAL FACTORS IN MAINTENANCE OF RAPTOR POPULATIONS

Habitat

As can be seen from the distribution of raptors given above, river bluffs and upland cliffs and tors compose a critical nesting habitat for Alaska's raptors. Not only are these essential for the endangered Peregrine Falcon, but they are equally important to other sensitive,

¹Reported by a local resident; attempts are being made to confirm identification.

Table 3. Eagle and Osprey aeries along the upper Tanana River.

Species/Location	Miles from Alaska Highway	History of Use	1977 Status
Bald Eagle			
Last Tetlin Village (ADF&G maps)	18	1974	active
64°12'N, 145°42'W	5	?	ad + 2 yg
64°07'N, 145°35'W	6	?	ad + 2 yg
64°04'N, 145°18'W	10	?	ad + 1 yg
63°53'N, 144°45'W (ADF&G maps)	6	1971	ad seen
63°47'N, 144°42'W	0.7	?	pr + 2 yg
63°44'N, 144°02'W (ADF&G maps)	4.5	1974	?
Riverside	0.4	1976	inactive
Fish Lake near Northway	1.0 from Northway Road	?	active
West of Tenmile Lake	2.5	?	active
Alaska-Canadian Border @62°38'N	1.0	?	active
Golden Eagle			
63°43'N, 143°59'N	5.2	?	eagle observed
63°36'N, 143°47'N	3.5	?	eagle observed
Tower Bluff (ADF&G maps)	2.5	1971	inactive
Osprey			
63°43'N, 144°28'W	2.0	?	pair
Tlocogn Lake	3.2	?	2 active nests
Tetlin lakes	12	1955	1 active, 4 inactive nests

long-lived raptors. In fact, these habitats draw a complex of birds that David G. Roseneau, Renewable Resources, has called a "Community of large cliff-nesters"--Peregrine Falcon, Gyrfalcon, Golden Eagle, Rough-legged Hawk, and the Raven. Protection or management of any one or all of these species involves the protection and preservation of this unique and restricted habitat. Large raptors may range 10 miles or more from their nesting sites in search of food, especially in open country, but generally, biologists agree that if the cliff-nesting habitat and immediate vicinity (the Peregrine Falcon Recovery Team recommends one mile) is not destroyed and if prey species are not destroyed across its feeding range (habitat destruction, poisoning, etc.), that the habitat is satisfactorily protected.

Disturbance by Humans

Disturbance by various types of human activity during the nesting season constitutes a major threat to the breeding success and survival of raptors. Disturbance during this period can result in (1) abandonment or failure of a nesting attempt, (2) decreased clutch size, (3) reduced hatching success, (4) a reduced number of young which fledge, (5) a higher post-fledging mortality, and (6) failure to return to the disturbed site in subsequent seasons, even if young did successfully fledge. The behavior of different species of raptors and of different individuals of the same species varies considerably in response to various types of disturbance. Reactions also differ seasonally, with

the most sensitive period being from courtship and establishment at the nest site, through egg-laying and incubation, and into the first week or two after hatching. Figure 1 summarizes the summer chronologies of major raptors that nest along the Northwest Alaskan Gas Pipeline route and highlights the dates of the most critical period in which disturbance should be avoided.

It is generally conceded that the most disruptive type of disturbance for nesting raptors is the close approach to nest sites by individuals on foot or on small motorized vehicles, such as various types of all-terrain vehicles. Approaching nest sites from above, clambering about cliff faces, camping or landing helicopters on the tops of bluffs, shooting firearms or attempting photography near the nest constitutes the worst disturbances of this type.

There have been a number of situations described (Hickey 1969; Cade and White 1976; Cade, in litt) in which routine traffic within a half mile of raptor aeries has apparently had no effect--foot traffic, highway traffic, and airplane traffic. Irregular movement and loud noises are disruptive, however, and these are the disturbance factors created by heavy construction activities.

White and Cade (1975), who use helicopters and fixed-wing aircraft in raptor survey work, believe that "prudent and routine use of aircraft," even helicopters, has no adverse effect on nesting raptors; at least they state that there is no known effect, and they present some behavioral observations of birds to aircraft to support their view. On the other

/// = Most critical period
 ooo = Present at nest sites
 D = Approx. fall departure

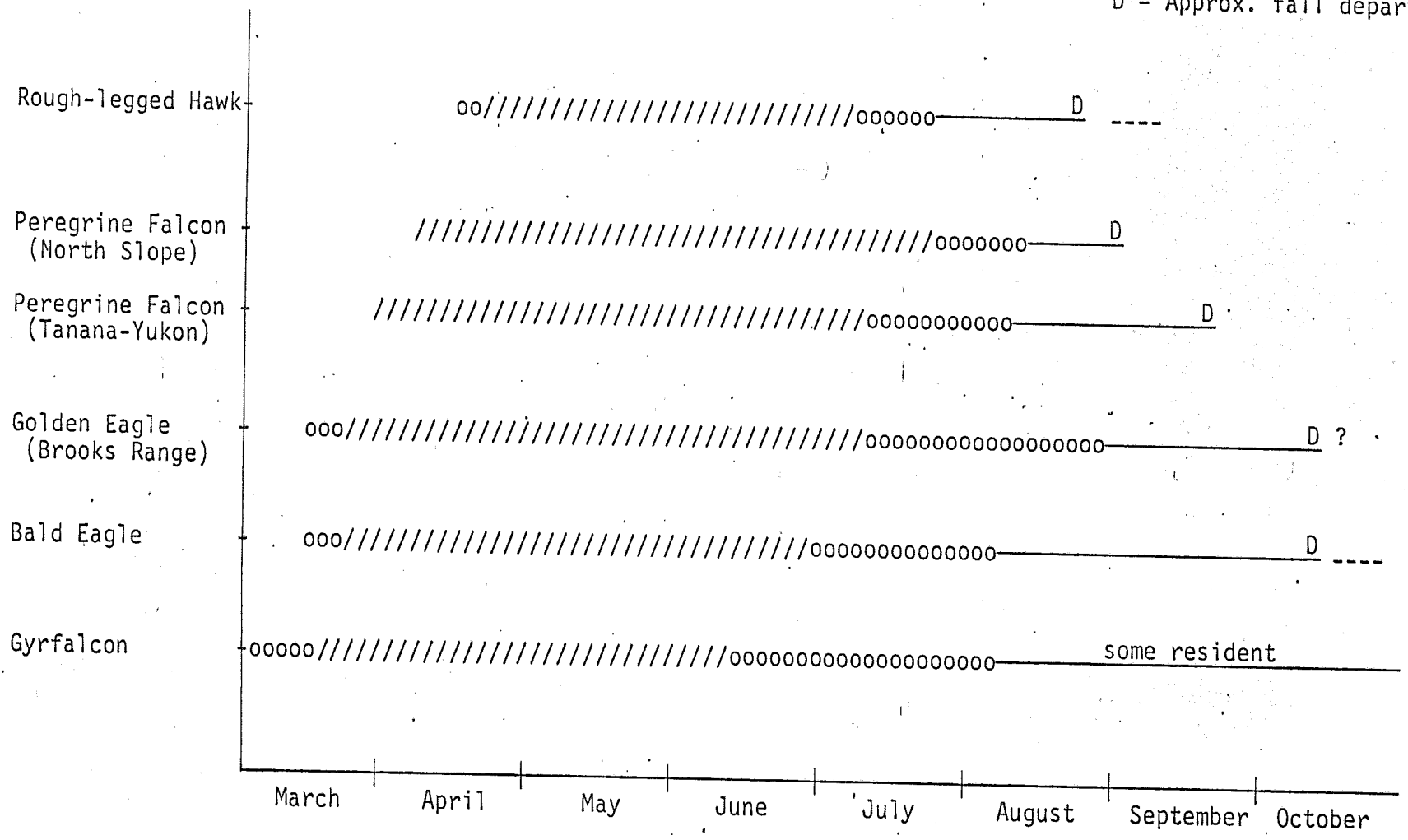


Figure 1. Summer chronologies of major raptors that nest along the Northwest Alaskan Gas Pipeline.

hand, no quantitative data on tolerable disturbance levels in raptors is available (and it is unlikely that there soon will be, in view of the effect disturbance studies could have on raptor breeding success), and even White and Cade (op. cit) state that, "Any adverse effects of low-flying aircraft, etc., would be hard to demonstrate without long-term controlled reproductive and population studies." With inadequate knowledge, it seems foolhardy, with respect to the survival of endangered or sensitive raptor species, not to discourage this potential type of disruption until we know more of its effects.

Critical Times and Critical Distances

As can be seen from Figure 1, raptors are on their breeding grounds from at least mid-March through October, the exact dates varying with different species and different latitudes. Gyrfalcons and Golden Eagles are the first to arrive on the nesting grounds; in fact, a few Gyrfalcons apparently spend the winter at cliffs in the Brooks Range. Roseneau (pers. comm.) has seen Golden Eagles in the Brooks Range as early as 15 March and has seen courtship activity in Gyrfalcons near Arctic Village as early as mid-March. Nesting activities, and hence the beginning of the raptor's most sensitive period, begin about as soon as the birds arrive at their breeding grounds. As stated above, this most sensitive period extends into the first week or two of the nesting period, which is about mid-July for most of the species in question--although a bit earlier for the Gyrfalcon and for the more

southern Bald Eagle. Disturbance after mid-July could still be detrimental to the young, however, especially if hunting and feeding behavior are disrupted. By mid-August most raptor young have fledged, even though they may still be in the vicinity of the nest site. Fall departure from the breeding grounds varies somewhat from year to year, being earlier in years of early snowfall.

The minimum distance beyond which human activity has no effect on breeding raptors is not well-documented. Recommendations for a horizontal buffer zone around Peregrine nesting habitat have ranged from half a mile (White and Cade 1975) to three miles (LGL Ltd., Canad. Arctic Gas Study). There appears, however, to be a general concensus among Alaskan raptor biologists that a one mile radius is a reasonable "safe" distance for most activities, both from the viewpoint of raptor protection and of feasible inconvenience for human activities (Roseneau, Haugh, McGowan, Reynolds, Frickie, in litts) although Cade (in litt) feels there is no need to restrict foot traffic up to within one-half mile radius of nesting areas.

Recommendations for a vertical buffer zone above raptor nesting areas have ranged from none (White and Cade 1975) and 1000 feet (Roseneau, in litt) to perhaps 2000 feet (Haugh, in litt). To be safe, in the face of limited information, 1500 feet above ground level has been adopted by most managers as a minimum height to be maintained above raptor nesting areas.

The Alaskan Peregrine Falcon Recovery Team and the Sagwon Bluff Peregrine Falcon Habitat Management Plan (Capodice 1976) have both recommended a restrictive zone of one mile minimum horizontal distance from breeding sites and a vertical distance of 1500 feet above the ground, but for "human activity," only one-half mile and three-quarters of a mile, respectively. The Peregrine Recovery Team recommends restrictions between 1 April and 15 August, whereas the Sagwon Bluff HMP recommends restrictions between 15 April and 15 August. Haugh (in litt) feels that 15 August is a bit too soon to lift restrictions and prefers 30 August, instead.

OTHER CONCERNS

There is a need to have a code of conduct for people working on the construction of the Northwest Alaskan Gas Pipeline and to educate them, as well as the public, concerning their potential detrimental impact on critical wildlife habitat and its occupants. The manner in which this is done, however, is extremely important. Haugh and Halperin (1976), for example, feel that while protecting raptors from human disturbance, it is important to avoid drawing attention to the fact: "The human animal, being somewhat curious and daring, is likely to investigate once something attracts its attention." Also, there are still many people that believe that the only good hawk is a dead hawk. Another problem with too much publicity is the possible stimulation of interest in nest-robbing, either by would-be falconers or for trade in

the lucrative, illegal market, especially for Peregrine Falcons and Gyrfalcons. One suggestion made by Haugh and Halperin (op. cit) is that it might be better to restrict areas as "critical wildlife habitat," rather than as critical areas for "nesting falcons." With this approach, it would also be feasible, for management purposes, to include other "critical wildlife habitat" in this category, such as the sensitive wetland areas.

Another need, relative to the problem of raptor management, is for a central repository for raptor data, not just for the endangered Peregrine Falcon, but for all raptors. Such an office should serve as a source of information on all aspects of raptor biology and management, current rules and regulations, recommended management procedures, etc. This office could serve another much-needed function, that of communication and coordination relative to activities concerning raptors throughout Alaska. The Alaska Peregrine Falcon Recovery Team and the Endangered Species Office serve as focal points for information and coordination of programs for the Peregrine Falcon. Since, however, the Peregrine is only one of a community of cliff-nesting raptors within the same habitat and with similar requirements, all these raptors should be taken together when study and management plans are developed. Inclusion of these additional species would cost next to nothing, and the dividends would be numerous. Field activities of raptor biologists could be coordinated so as to reduce the traffic into areas of critical raptor habitat, data on these other species could be gathered and

centrally filed at the same time that Peregrine surveys are being made, land managers would have a place to go for information on potential conflicts before they occur, biologists would save innumerable hours searching for needed data, etc. Such an office is a permanent need for Alaska, not just during pipeline construction activities. Because of the mixture of State and Federal responsibilities in these matters, the organization of such an office may be a bit complicated, but its establishment could go a long way toward the eventual preservation of Alaska's large raptors.

REFERENCES CITED

- Alaska Department of Fish and Game. No date. Maps, raptor observations. Plotted on 1:250,000 USGS maps. ADF&G files, Fairbanks.
- Cade, T. J., and C. M. White. 1976. Alaska's falcons: The issue of survival. *Living Wilderness*, Jan.-Mar. 1976:35-47.
- Capodice, J. A. 1976. Sagwon Bluff Peregrine Falcon habitat management plan. U. S. Bureau of Land Management, Fairbanks. Draft report to Endangered Species Office, U. S. Fish and Wildlife Service. 46 p.
- Haugh, J. R. 1976. The Tanana River of Alaska, p. 254-256. In: R. W. Fyfe, S. A. Temple, and T. J. Cade, "The 1975 North American Peregrine Falcon survey," *Canad. Field-Naturalist* 90:228-273.
- Haugh, J. R., and K. C. Halperin. 1976. Evaluation of raptor populations: Portage Glacier area, Denali Highway area, Yukon River pipeline crossing area, and Yukon River and Procupine River tributaries. Unpubl. report, BLM. 57 p.
- Hickey, J. J., ed. 1969. Peregrine Falcon populations, their biology and decline. Univ. of Wisconsin Press, Milwaukee.
- White, C. M. 1974a. The 1974 raptor survey of the Alaska pipeline between Franklin Bluffs and Big Delta. Interim report. 9 p.
- White, C. M. 1974b. The Peregrine Falcon in the region of the Alaska Pipeline Yukon River crossing--Stevens Village to Tanana, Yukon River. Interim report, U. S. Fish and Wildlife Service. 6 p.
- White, C. M., and T. J. Cade. 1975. Raptor studies along the proposed Susitna Powerline corridors, oil pipeline and in the Yukon and Colville River regions of Alaska. Combined report for 1975 for USFWS, BLM, NPS, AINA, and Am. Mus. Nat. History. 28 p.
- White, C. M., and T. D. Ray. 1972. Survey of cliff-nesting raptors along the Trans-Alaska pipeline corridor, Alaska (1972). Interim report, U. S. Fish and Wildlife Service. 9 p.
- White, C. M., and J. H. Streater. 1970. Survey of cliff-nesting raptors along the Trans-Alaska Pipeline corridor, Alaska (1970). Interim report, U. S. Fish and Wildlife Service. 8 p.