

**SYNTHESIS OF SURVEY INFORMATION ON CLIFF-NESTING RAPTORS
AND THEIR HABITATS IN INTERIOR ALASKA**

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Synthesis of Survey Information on Cliff-nesting Raptors and their Habitats in Interior Alaska

Final Report

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INTRODUCTION

The U.S. Fish and Wildlife Service (USFWS) provides technical advice to the Bureau of Land Management (BLM), U.S. Geological Survey (USGS), and a variety of private entities on how to minimize the impacts of human activities on nesting raptors. Current and historical information on the abundance and distribution of nesting raptors is essential for assessment of potential impacts and for developing options for mitigation. Further, information on habitat characteristics in relation to requirements for cliff-nesting species is necessary to define areas of suitable habitat for future nesting as populations expand or traditional sites become unsuitable.

In interior Alaska (i.e., the region drained by the Yukon, Tanana, Kuskokwim, Susitna, and Upper Copper Rivers), numerous raptor surveys have been conducted since the mid-1900s. Unfortunately, information from many of these surveys has limited accessibility (e.g., resides in unpublished agency reports) and/or is incomplete. In addition, much of the information for Peregrine Falcons is outdated because surveys were conducted when peregrine populations were suffering the effects of organochlorine-induced reproductive failure. In order to make information from raptor surveys more available and to prioritize future raptor-survey efforts, the USFWS contracted ABR, Inc. to produce a synthesis of raptor-survey information for interior Alaska similar to a previous synthesis for northern Alaska (Wildman and Ritchie 2000). This report represents that synthesis, and includes the following topics:

- A summary of raptor surveys by region and river, including area surveyed, year, method, investigators, species observed, numbers of pairs and single adults, productivity, availability of nest-site information, and references;
- Brief descriptions of habitat characteristics relevant to cliff-nesting raptors for selected survey units;
- A bibliography of published and unpublished survey reports; and
- An assessment of further survey needs.

In addition, The following products accompany this report:

- A ProCite™ database of all survey reports that we reviewed ('interior raptor bibliography 2001.pdx' and 'interior raptor bibliography 2001.pdt');
- Copies of survey reports and maps, arranged alphabetically by author(s) in four 3-ring binders; and
- A Microsoft Excel™ spreadsheet representing a summary of details for each survey, including citation, methodology, and results ('interior raptor registry 2001.xls').

Peregrine Falcons (*Falco peregrinus*, primarily of the *anatum* subspecies) have been emphasized in this report because a large proportion of investigators specifically targeted peregrines, recording data on other species incidentally. Further, peregrines have had a pivotal role in influencing development of protection strategies for all raptors in interior Alaska. We have included information on several other raptor species (i.e., Bald Eagles [*Haliaeetus leucocephalus*], Golden Eagles [*Aquila chrysaetos*], Gyrfalcons [*Falco rusticolus*], American Kestrels [*Falco sparverius*], Merlins [*Falco columbarius*], Red-tailed Hawks [*Buteo jamaicensis*], Rough-legged Hawks [*Buteo lagopus*], and Great Horned Owls [*Bubo virginianus*]) where available.

STUDY AREA

Our study area was interior Alaska and northwestern coastal Alaska south of 68°N latitude. The majority of this region lies within the boundaries of Kessel and Gibson's (1978) "Central Region", with the addition of the northwest coast including Kotzebue Sound, the Seward Peninsula, and Norton Sound. The northern boundary of the region follows the crest of the Brooks Range, and the southern boundary includes portions of the Alaska Range, Chugach Mountains, and Wrangell Mountains (Wahrhaftig 1965). For purposes of cataloging raptor-survey efforts, we divided the study area into 7 sub-regions (hereafter referred to as "regions"), including 6 regions defined by their respective major drainages (Ritchie and Ambrose 1996), plus the West Coast region (Figure 1). The

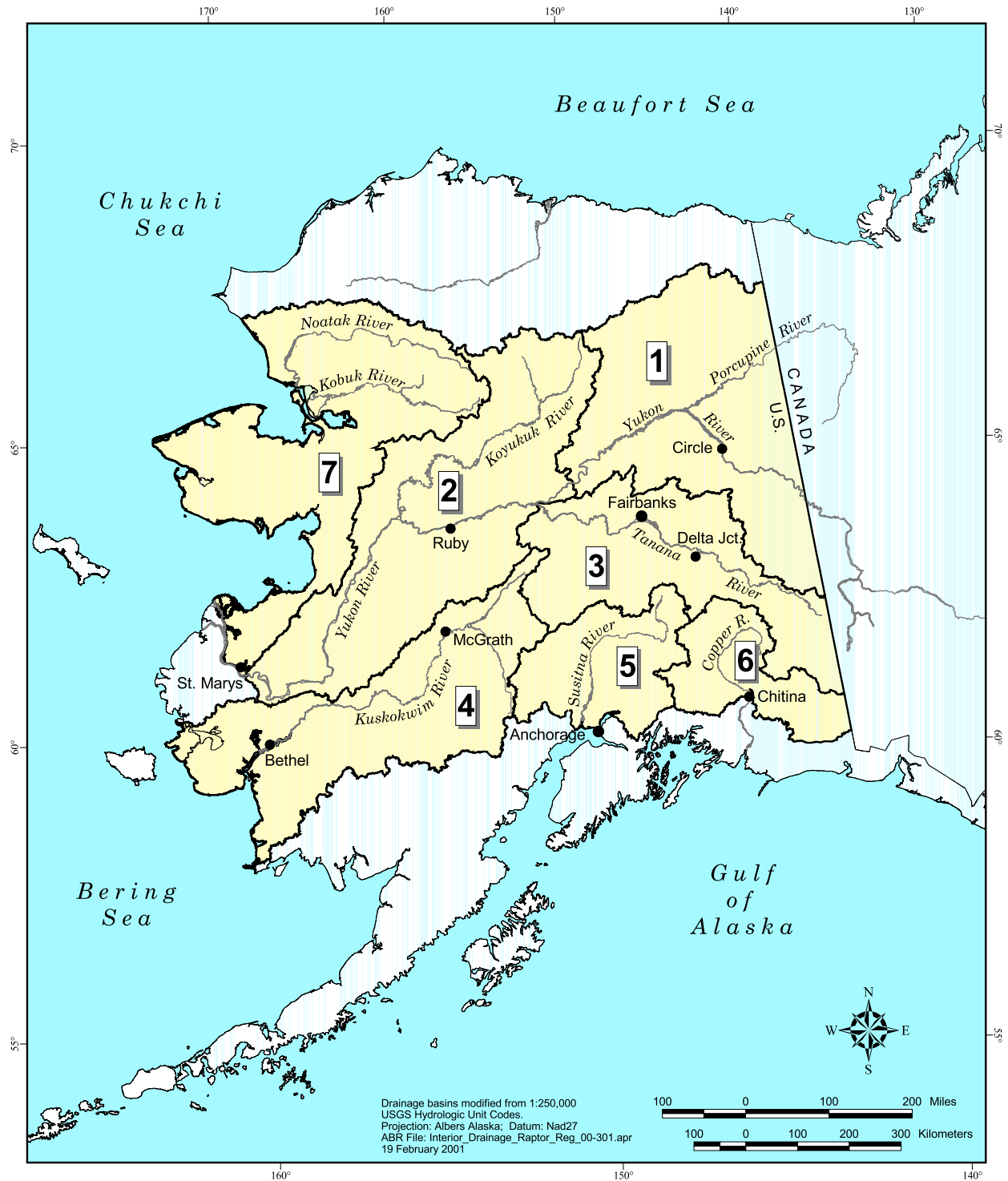


Figure 1. Seven regions in interior and western Alaska where raptor-survey efforts were summarized: 1) Upper Yukon; 2) Lower Yukon; 3) Tanana; 4) Kuskokwim; 5) Susitna; 6) Upper Copper; and 7) West Coast.

regions were specifically defined as follows (Gallant et al. 1995, Ritchie and Ambrose 1996):

- 1). Upper Yukon (~180,000 km²)—Upper Yukon River from the Yukon-Alaska border to Fort Hamlin, including the following rivers and their tributaries: Charley, Fortymile, Kandik, Nation, Porcupine, Seventymile, and Tatonduk Rivers, and Birch and Beaver Creeks. Major ecoregions include the Interior Highlands, Interior Forested Lowlands and Uplands, Yukon Flats, Ogilvie Mountains, and southern foothills of the Brooks Range.
- 2). Lower Yukon (~190,000 km²)—Middle (Fort Hamlin to Tanana) and lower (Tanana to St. Marys) Yukon River, including the following major rivers and their tributaries: Andreafsky, Anvik, Bonasila, Koyukuk, Melozitna, Nowitna, and Nulato Rivers. This region includes the Interior Bottomlands, Interior Forested Lowlands and Uplands, Interior Highlands, and southern foothills of the Brooks Range ecoregions.
- 3). Tanana (~118,000 km²)—Tanana River from its headwaters to the confluence with the Yukon River, and the following tributaries: Chena, Delta, Goodpaster, Healy, Nenana, and Salcha Rivers. Associated ecoregions include Interior Highlands, Interior Bottomlands, Alaska Range, and Interior Forested Lowlands and Uplands.
- 4). Kuskokwim (~95,000 km²)—Kuskokwim River from its headwaters to Aniak, including the following rivers and their tributaries: Eek, Fog, George, Holokuk, Kisaralik, Kwethluk, Oskawalik, Selatna, Stony, Swift, Tatlawiksuk, and Tuluksak Rivers. This region includes the Interior Forested Lowlands and Uplands, Interior Bottomlands, Alaska Range, and Ahklun and Kilbuck Mountains ecoregions.
- 5). Susitna (~60,000 km²)—Susitna River from its headwaters to Cook Inlet, including the Beluga, Chulitna, Kashwitna, Little Susitna, Maclaren, Matanuska, and Yentna Rivers and Willow Creek, and their tributaries. Major ecoregions include Cook Inlet and the Alaska Range.

- 6). Upper Copper (~50,000 km²)—Copper River from its headwaters to Chitina, including the Chitina, Gakona, and Gulkana Rivers and their tributaries. Associated ecoregions are the Copper Plateau, the Alaska Range, and the Wrangell Mountains.
- 7). West Coast (~178,000 km²)—The coasts of Kotzebue and Norton Sounds and inland areas of the Seward Peninsula, plus drainages of the Golsovia, Inglutalik, Kivalina, Kobuk, Kougarak, Noatak, Nuluk, North, Shaktoolik, Unalakleet, Ungalik, and Wulik Rivers and their tributaries. The Seward Peninsula, Subarctic Coastal Plains, Arctic Foothills, Brooks Range, Interior Highlands, and Interior Forested Lowlands and Uplands ecoregions are represented within this region.

As evidenced by the above descriptions, the study area covered a vast expanse and was highly diverse. Areas of high relief with an abundance of potential nesting sites for cliff-nesting raptors were interspersed with extensive areas of low relief with few riverine bluffs or mud banks, possibly offering nesting opportunities for tree-nesting species. Suitable habitats for cliff nesting raptors were most prevalent along major rivers within the Interior Highlands, Interior Bottomlands, Interior Forested Lowlands and Uplands, and Ogilvie Mountains ecoregions. Such habitats were by no means limited to these ecoregions, however, and substantial physiographic variability existed within and between individual rivers. The most mountainous ecoregions, i.e., the Brooks Range, the Alaska Range, and the Wrangell Mountains, included extensive cliff areas, but most cliff habitats were located above the elevation limit for nesting by Peregrine Falcons (approx. 800 m [Cade 1960]). We have provided descriptions of vegetation and landforms along selected rivers in the Results and Discussion section.

METHODS

We obtained information on the distribution, abundance, and productivity of raptors in interior Alaska from surveys and incidental sightings documented in published papers, unpublished reports, field notes, letters, maps, and raptor observation record cards. Sources were obtained

from USFWS and ABR, Inc. files, other agency repositories, and libraries. We contacted individuals that had conducted or were knowledgeable about raptor surveys to increase our chances of documenting major survey efforts in the region since 1960.

We compiled a complete set of survey reports and other supporting documents to accompany this report. All references were entered into a ProCite™ bibliographic database. This database was provided to the USFWS in electronic format ('interior raptor bibliography 2001.pdx' and 'interior raptor bibliography 2001.pdt'), and a printed version appears in Appendix A. Each reference was cross-referenced with keywords in 5 categories, i.e., region, river or specific area surveyed, survey method, species, and additional information provided (e.g., species abundance, food habits, habitat, nest locations) (Appendix B).

We reviewed each reference and extracted the following information regarding survey effort and results: region, specific river or area surveyed, dates, investigator(s), survey method(s), completeness of survey coverage, start and stop points, species, numbers of single adults, pairs, occupied territories, successful pairs, and young, format of nest-site information (if any), citation, and comments (see Appendix C for definitions of terms). A territory was considered occupied if observers recorded the presence of a pair, an incubating adult, eggs, or young. Likewise, number of pairs included observed pairs and cases where circumstantial evidence (e.g., incubating adult, eggs, or young) indicated that a pair was present on the territory. This information was entered into a Microsoft Excel™ spreadsheet ('interior raptor registry 2001.xls'), which was provided in electronic format to the USFWS. Each row (i.e., record) in the spreadsheet represented a unique combination of an individual survey and species; if multiple species were documented, results for each species composed a separate record. For all species except Peregrine Falcons, a record was only included if ≥ 1 individual was detected. A record for Peregrine Falcons was included for every survey, whether peregrines were observed or not (except in a few cases where surveys were designed to census Bald Eagles, and detection of peregrines was unlikely, e.g., Parker 1988). Results for Peregrine Falcons (Tables 1–6)

and all raptors (Appendices D–J) were summarized by region.

We reviewed physiography and characteristics of vegetation in relation to habitat requirements of cliff-nesting raptors along surveyed rivers. We also assessed needs for future raptor-survey efforts based on the historical distribution of survey efforts in interior Alaska.

RESULTS AND DISCUSSION

UPPER YUKON REGION

Raptor surveys have been conducted more intensively and consistently in the Upper Yukon region than in any other region of Alaska. Since the early 1970s, ≥ 222 Peregrine Falcon territories have been described here, with the highest densities occurring along the Yukon River above Circle and on major tributaries such as the Porcupine, Charley, and Fortymile Rivers (Table 1, Appendix D). Cliffs providing suitable nesting structure for peregrines and other cliff-nesting raptors are common along many of the rivers within this region, and isolated tors and granite outcrops in alpine areas between drainages provide additional habitat for Gyrfalcons and Golden Eagles. Much of the raptor habitat in this region occurs within the boundaries of the Yukon Military Operations Areas (MOAs), and numerous raptor surveys have been conducted since the mid-1990s to provide a basis for assessing effects of jet overflights on raptor productivity.

UPPER YUKON RIVER

Surveys—Complete surveys of the upper Yukon River between the Yukon-Alaska border and Circle occurred annually during 1977–2000 (Ambrose and Curatolo 1977, Curatolo and Ambrose 1978, Ambrose 1979, 1980; Ambrose and Riddle 1982, Ambrose et al. 1983, Ambrose 1989, 1990, 1995, 1998; S. Ambrose, National Park Service, Moab, Utah, personal communication). Additional complete surveys occurred in 1951, 1966 (Cade et al. 1968), 1968 (White and Cade 1975b), 1973, and 1975 (Ambrose and Ritchie 1975). Pesticide-related declines in peregrine populations during the mid-1970s may have been less marked here than in most other areas of North America. Despite this, the number of nesting pairs increased steadily through the mid-1990s, and may now be

Table 1. Number of territories occupied by pairs of Peregrine Falcons in the Upper Yukon region (survey coverage is complete unless otherwise noted).

Major Drainage	Minor Drainage	Area surveyed	1951	1966	1968	1970	1971	1972	1973	1974	1975	1976	1977	1978
Upper Yukon	Beaver Creek	Beaver Creek										0		
Upper Yukon	Birch Creek	Birch Creek										0		
Upper Yukon	Birch Creek	Caribou Creek												
Upper Yukon	Birch Creek	Preacher Creek												
Upper Yukon	Birch Creek	South Fork												
Upper Yukon	Birch Creek	Windy Fork												
Upper Yukon	Birch Creek	Yukon Fork												
Upper Yukon	Black	Black River												
Upper Yukon	Chandalar	Chandalar River						0 ^s						
Upper Yukon	Chandalar	East Fork						0						
Upper Yukon	Charley	Charley River									5	5		
Upper Yukon	Charley	Copper Creek												
Upper Yukon	Charley	Crescent Creek												
Upper Yukon	Charley	Godge Creek												
Upper Yukon	Coal Creek	Coal Creek												
Upper Yukon	Eagle Creek	Eagle Creek												
Upper Yukon	Fortymile	Fortymile River									1	0 ^p		
Upper Yukon	Fortymile	Joseph Creek												
Upper Yukon	Fortymile	Middle Fork									0			
Upper Yukon	Fortymile	Mosquito Fork												
Upper Yukon	Fortymile	North Fork									0 ^p			
Upper Yukon	Fortymile	South Fork									1 ^p			
Upper Yukon	Fortymile	Walker Fork												
Upper Yukon	Grapefruit Rocks	Grapefruit Rocks				0 ^s								
Upper Yukon	Kandik	Kandik River												
Upper Yukon	Mission Creek	Mission Creek												
Upper Yukon	N/A	Upper Yukon River	19	17	17			2 ^s	10	2 ^s	10		11	16
Upper Yukon	Nation	Cathedral Creek												
Upper Yukon	Nation	Hard Luck Creek												
Upper Yukon	Nation	Nation River												
Upper Yukon	Nation	Waterfall Creek												
Upper Yukon	Porcupine	Black River										0		
Upper Yukon	Porcupine	Christian River										0		
Upper Yukon	Porcupine	Coleen River										0		
Upper Yukon	Porcupine	Monument Creek										1		
Upper Yukon	Porcupine	Porcupine River												
Upper Yukon	Porcupine	Salmon Fork Black R												
Upper Yukon	Rock Creek	Rock Creek												
Upper Yukon	Schley Creek	Schley Creek												
Upper Yukon	Seventymile	Diamond Fork												
Upper Yukon	Seventymile	Seventymile River												
Upper Yukon	Tatonduk	Funnel Creek												
Upper Yukon	Tatonduk	Tatonduk River												
Upper Yukon	Woodchopper Ck	Woodchopper Ck												

Table 1. (Continued).

Major Drainage	Minor Drainage	Area surveyed	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Upper Yukon	Beaver Creek	Beaver Creek								3 ^p			
Upper Yukon	Birch Creek	Birch Creek			2 ^u	0 ^u				1 ^u			
Upper Yukon	Birch Creek	Caribou Creek											
Upper Yukon	Birch Creek	Preacher Creek											
Upper Yukon	Birch Creek	South Fork											
Upper Yukon	Birch Creek	Windy Fork											
Upper Yukon	Birch Creek	Yukon Fork											
Upper Yukon	Black	Black River											
Upper Yukon	Chandalar	Chandalar River											
Upper Yukon	Chandalar	East Fork											
Upper Yukon	Charley	Charley River		3	4	2	3	6	5	8	8	7	9
Upper Yukon	Charley	Copper Creek											
Upper Yukon	Charley	Crescent Creek						0					
Upper Yukon	Charley	Godge Creek											
Upper Yukon	Coal Creek	Coal Creek											
Upper Yukon	Eagle Creek	Eagle Creek						1 ^p					
Upper Yukon	Fortymile	Fortymile River								2 ^p			
Upper Yukon	Fortymile	Joseph Creek											
Upper Yukon	Fortymile	Middle Fork											
Upper Yukon	Fortymile	Mosquito Fork											
Upper Yukon	Fortymile	North Fork											
Upper Yukon	Fortymile	South Fork											
Upper Yukon	Fortymile	Walker Fork											
Upper Yukon	Grapefruit Rocks	Grapefruit Rocks	1 ^s	1 ^s									
Upper Yukon	Kandik	Kandik River	1					3	5		1		4
Upper Yukon	Mission Creek	Mission Creek											
Upper Yukon	N/A	Upper Yukon River	19	17	18	23	27	25	25	27	31	33	33
Upper Yukon	Nation	Cathedral Creek											
Upper Yukon	Nation	Hard Luck Creek						0					
Upper Yukon	Nation	Nation River						0 ^p					
Upper Yukon	Nation	Waterfall Creek											
Upper Yukon	Porcupine	Black River											
Upper Yukon	Porcupine	Christian River											
Upper Yukon	Porcupine	Coleen River											
Upper Yukon	Porcupine	Monument Creek											
Upper Yukon	Porcupine	Porcupine River	9	9	11	14	11	13	14	13	15	16	16
Upper Yukon	Porcupine	Salmon Fork Black R						3					
Upper Yukon	Rock Creek	Rock Creek						0					
Upper Yukon	Schley Creek	Schley Creek											
Upper Yukon	Seventymile	Diamond Fork											
Upper Yukon	Seventymile	Seventymile River						1					
Upper Yukon	Tatonduk	Funnel Creek											
Upper Yukon	Tatonduk	Tatonduk River						1	1				
Upper Yukon	Woodchopper Ck	Woodchopper Ck											

Table 1. (Continued).

Major Drainage	Minor Drainage	Area surveyed	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Upper Yukon	Beaver Creek	Beaver Creek					1 ^u						
Upper Yukon	Birch Creek	Birch Creek				1 ^p	5 ^p	7 ^p	16 ^p	15 ^p	18 ^p	19 ^p	19 ^p
Upper Yukon	Birch Creek	Caribou Creek										1	1
Upper Yukon	Birch Creek	Preacher Creek					1 ^u						
Upper Yukon	Birch Creek	South Fork				1			1			1	1
Upper Yukon	Birch Creek	Windy Fork										1	1
Upper Yukon	Birch Creek	Yukon Fork				1							1
Upper Yukon	Black	Black River							6 ^p				
Upper Yukon	Chandalar	Chandalar River											
Upper Yukon	Chandalar	East Fork											
Upper Yukon	Charley	Charley River	10	9	10	11	14	13	16	3 ^p		5 ^p	8
Upper Yukon	Charley	Copper Creek		1								2	3
Upper Yukon	Charley	Crescent Creek											0
Upper Yukon	Charley	Godge Creek		1 ^s									
Upper Yukon	Coal Creek	Coal Creek										1	0
Upper Yukon	Eagle Creek	Eagle Creek											
Upper Yukon	Fortymile	Fortymile River				1 ^p	4 ^p	7 ^p	10 ^p	31 ^p	4 ^p		20 ^p
Upper Yukon	Fortymile	Joseph Creek					1 ^u						
Upper Yukon	Fortymile	Middle Fork				4	3	5	5	7			
Upper Yukon	Fortymile	Mosquito Fork					1 ^u						
Upper Yukon	Fortymile	North Fork			1		5	3	2	3	0		
Upper Yukon	Fortymile	South Fork					1	3	2	1	1		
Upper Yukon	Fortymile	Walker Fork				1 ^u							
Upper Yukon	Grapefruit Rocks	Grapefruit Rocks											
Upper Yukon	Kandik	Kandik River		8		5		1					
Upper Yukon	Mission Creek	Mission Creek					1 ^u						
Upper Yukon	N/A	Upper Yukon River	35	34	35	40	42	43	41	44	45	44	45
Upper Yukon	Nation	Cathedral Creek		2									
Upper Yukon	Nation	Hard Luck Creek		2									
Upper Yukon	Nation	Nation River						1 ^p		0 ^p			
Upper Yukon	Nation	Waterfall Creek		1 ^p									
Upper Yukon	Porcupine	Black River					6 ^p			0 ^p			
Upper Yukon	Porcupine	Christian River											
Upper Yukon	Porcupine	Coleen River											
Upper Yukon	Porcupine	Monument Creek											
Upper Yukon	Porcupine	Porcupine River	16	26	17	33	27	30	31	26	28	31	28
Upper Yukon	Porcupine	Salmon Fork Black R					1 ^u						
Upper Yukon	Rock Creek	Rock Creek											
Upper Yukon	Schley Creek	Schley Creek		1 ^p									
Upper Yukon	Seventymile	Diamond Fork		0									
Upper Yukon	Seventymile	Seventymile River		0 ^p			6	10	10	10			3 ^p
Upper Yukon	Tatonduk	Funnel Creek		0									
Upper Yukon	Tatonduk	Tatonduk River											
Upper Yukon	Woodchopper Ck	Woodchopper Ck									1	1	1

^p partial survey coverage^s selective survey coverage^u unknown survey coverage

leveling off at approximately 45 pairs/year (S. Ambrose, National Park Service, Moab, Utah, personal communication). Nesting Golden Eagles have also been documented along the river corridor (Ambrose and Riddle 1982).

BEAVER CREEK

Surveys—Beaver Creek was surveyed in 1976 (Haugh and Halperin 1976), 1986 (Kuropat 1986), and 1994 (Fadely 1995). Kuropat (1986) documented 3 occupied peregrine territories on the upper portion of the creek, and Red-tailed Hawks are known to nest here as well.

Habitat (Haugh and Halperin 1976)—Beaver Creek originates in the White Mountains, and flows generally north to cross the Yukon Flats and join the Yukon River at Beaver. The 75-mile stretch upstream of the flats includes scattered cliffs that provide occasional habitat for cliff-nesting raptors. The creek valley is frequently narrow with few lakes and little standing water, which limits hunting opportunities for Peregrine Falcons.

BIRCH CREEK AND TRIBUTARIES

Surveys—Surveys of the upper portion of Birch Creek were conducted in 1976 (Haugh and Halperin 1976), 1981, 1982 (USFWS 1997), 1986 (Kuropat 1986), and 1993-2000 (McIntyre 1993, Ritchie and Rose 1994, Ritchie and Rose 1997, Ritchie et al. 1998, Ritchie and Rose 1998, 1999; Ritchie et al. 2000, Ritchie et al. 2001). At least 19 active Peregrine Falcon aeries have been documented, and several Bald Eagle nest sites occur here as well.

Several tributaries of Birch Creek have also been surveyed for raptors. Complete surveys of Caribou Creek (Ritchie et al. 2000, Ritchie et al. 2001), Preacher Creek (Fadely 1995), the South Fork (Ritchie and Rose 1997, Ritchie et al. 2000, Ritchie et al. 2001), the Windy Fork (Ritchie et al. 2000, Ritchie et al. 2001), and the Yukon Fork (McIntyre 1993, Ritchie et al. 2001) suggest that each of these tributaries provides suitable habitat for peregrines, Gyrfalcons, and Golden Eagles

Habitat—Good to excellent cliff habitat occurs along much of Birch Creek and its main tributary, the South Fork. Cliffs (20 m to >100 m) are common from the junction of Thomas Creek to a

point where the river leaves the White Mountains (~10 mi north of the mouth of the South Fork) and along most of the South Fork. Smaller sections of rock and dirt bluffs occur along the Clums Fork, Yukon Fork, Big Windy Creek, and where the Crazy Mountain escarpment abuts lower Birch Creek. Excellent limestone cliffs occur along ridges in the Crazy Mountains and occasional rock outcrops occur in upland areas in the headwaters of the South Fork and its distributaries.

CHANDALAR RIVER AND EAST FORK CHANDALAR RIVER

Surveys—A partial survey of the Chandalar River (Roseneau 1974) and a complete survey of the East Fork of the Chandalar (Haugh 1972) were conducted in 1972. No peregrine aeries were located, although both investigators documented the presence of nesting Golden Eagles.

Habitat (Haugh 1972)—The lower portion of the East Fork, particularly near the confluence with the mainstem of the Chandalar, has the most favorable habitat conditions for cliff-nesting raptors within this drainage. Unlike the nearby Porcupine and Yukon Rivers, however, there are no extensive areas of muskeg or oxbow lakes that are important hunting habitats for Peregrine Falcons.

CHARLEY RIVER AND TRIBUTARIES

Surveys—Complete surveys of the Charley River from Gelvin's airstrip to the confluence with the Yukon River occurred in 1975 (White and Cade 1975b), 1976 (Haugh and Halperin 1976), 1980–1996 (Ambrose 1980, Amaral 1981, Swem 1984, Ulvi 1985, Britten et al. 1986, Ulvi 1987, 1989, 1990, 1991; Knuckles 1988, Olexa and Knuckles 1992, Fadely 1993, McIntyre 1996), and 2000 (Timm and McIntyre 2000). During 1997 (Ritchie and Rose 1998), 1999 (Ritchie et al. 2000), and 2000 (Ritchie et al. 2001), partial surveys of the upper portion of the river within Yukon MOA 1 were conducted. At least 16 Peregrine Falcon aeries have been documented along the main course of the Charley River. Other raptors that have been observed nesting along the river include American Kestrels, Bald Eagles, Golden Eagles, Gyrfalcons, and Red-tailed Hawks.

Copper Creek and Crescent Creek are major tributaries of the Charley River that flow through

the Yukon-Tanana Uplands and join the Charley near Gelvin's airstrip. Complete surveys of Crescent Creek occurred in 1984 (Swem 1984), 1997 (Ritchie and Rose 1998), and 2000 (Ritchie et al. 2001). A peregrine nest was recorded during the 2000 survey. Copper Creek was completely surveyed in 1991 (McIntyre 1992), 1999 (Ritchie et al. 2000), and 2000 (Ritchie et al. 2001). At least 4 active Peregrine Falcon aeries were observed.

Habitat—(White and Cade 1975, Haugh and Halperin 1976)—The Charley River is characterized by frequent, large cliffs ranging from 60-m to 300-m high that provide numerous suitable ledges for cliff-nesting raptors. Multi-tiered rock outcrops also occur on mountainsides within the river corridor, and provide additional nesting opportunities.

COAL CREEK AND WOODCHOPPER CREEK

Surveys—Coal and Woodchopper Creeks are small tributaries of the Yukon River that join the Yukon downstream of the Charley River. Both creeks were surveyed completely in 1999 (Ritchie et al. 2000) and 2000 (Ritchie et al. 2001), and Woodchopper Creek was additionally surveyed in 1998 (Ritchie and Rose 1999). One active peregrine aerie was located on each creek.

Habitat—Occasional dirt bluffs and riparian cliffs are found along both of these drainages. The most suitable habitat for cliff-nesting raptors occurs along the lower 20 km of each creek. A few upland, off-river tors occur in the upper Woodchopper Creek area.

EAGLE CREEK

Surveys—A partial survey of lower Eagle Creek was conducted by Swem (1984) in 1984. There was a successful Peregrine Falcon aerie on a bluff 1.5 km upstream from the Yukon River.

FORTYMILE RIVER AND TRIBUTARIES

Surveys—Portions of the Fortymile River and/or its tributaries were surveyed in 1975 (Haugh and Potter 1975), 1976 (Haugh and Halperin 1976), 1986 (Kuopat 1986), 1992, 1993 (Cooper 1999), 1994 (Ritchie and Rose 1994, Cooper 1999), 1995 (Ritchie et al. 1998, Cooper 1999), 1996 (Ritchie and Rose 1997, Cooper 1999), 1997 (Ritchie and

Rose 1998, Cooper 1999), 1998 (Cooper 1999), and 2000 (Jacobs 2000). At least 49 Peregrine Falcon aeries have been described within the drainage, including 20 active aeries along navigable sections designated as Wild and Scenic Rivers (Jacobs 2000). Nesting sites have also been documented for Gyrfalcons, Golden Eagles, and Red-tailed Hawks.

Habitat—Most of the Fortymile River and its tributaries, the Dennison Fork, Middle Fork, Mosquito Fork, North Fork, South Fork, and Walker Fork, flow through low mountains. Cliffs are common throughout the drainage, many of which provide suitable habitat for cliff-nesting raptors (Haugh and Potter 1975). Series of good to excellent cliffs occur along the Middle Fork, from approximately Joseph Creek to its confluence with the North Fork, along the South Fork between Taylor Highway crossings, and along most of the North Fork. Upland cliff sites are limited, but cliffs do occur along numerous smaller drainages including Joseph Creek, Butte Creek, Champion Creek, and Buckskin Creek. Good cliffs occur along the lower sections of the Walker, Mosquito, and Dennison forks of the Fortymile River.

KANDIK RIVER

Surveys—Complete surveys of the Kandik River were conducted in 1979 (Walker 1979), 1984 (Swem 1984), 1985 (McIntyre and Ratcliffe 1995), 1987 (Lettenberger 1987), 1989 (Ulvi 1989), 1991 (McIntyre 1992), 1993 (Fadely and Fadely 1993), and 1995 (Ritchie et al. 1998). At least 8 occupied Peregrine Falcon territories were documented between Big Sitdown Creek and the Yukon River. Other nesting raptors include Bald Eagles, Merlins, and Red-tailed Hawks.

MISSION CREEK AND EXCELSIOR CREEK

Surveys—Mission Creek was surveyed in 1994 (Cooper 1999), but survey details were not provided. One successful pair of Peregrine Falcons was recorded. Mission Creek and its tributary, Excelsior Creek, were completely surveyed in 1996 (Ritchie and Rose 1997) and 1997 (Ritchie and Rose 1998). One successful peregrine aerie was observed, and numerous Gyrfalcon and Golden Eagle nests were located.

Habitat—Mission Creek enters the Yukon River approximately 30 km above the Seventymile River. There is excellent habitat for cliff-nesting raptors, especially above the confluence with Excelsior Creek. Excelsior Creek also includes excellent cliff-nesting raptor habitat.

NATION RIVER AND TRIBUTARIES

Surveys—Partial surveys of the Nation River occurred during 1984 (Swem 1984), 1995 (Ritchie et al. 1998), and 1997 (Ritchie and Rose 1998). One Peregrine Falcon aerie was described. Hard Luck and Cathedral Creeks, tributaries of the Nation River, were completely surveyed in 1991 (McIntyre 1992); 2 active peregrine territories were located on each. No peregrine pairs were found during an earlier complete survey of Hard Luck Creek in 1984 (Swem 1984). Waterfall Creek, a tributary of Hard Luck Creek, was partially surveyed by McIntyre (1992) in 1991; 1 active peregrine territory was located. Other raptors that have been observed nesting within the drainage include American Kestrels and Bald Eagles.

Habitat (McIntyre 1992)—The headwaters of Waterfall, Cathedral, and Hard Luck Creeks are characterized by abundant cliffs and rock outcrops.

PORCUPINE RIVER AND TRIBUTARIES

Surveys—Complete surveys of the Porcupine River were conducted annually from 1979 to 2000 (Curatolo and Ritchie 1979, Ritchie and Curatolo 1980, 1981; Ritchie 1982, 1983, 1984, 1985, 1986; Mauer and Ritchie 1988, Mauer and Wilbor 1989, Mauer 1990, 1992, 1993, 1994, 1995, 1996, 2000; Mauer et al. 1991, USFWS 1997). Numerous riparian cliffs provide sufficient habitat for ≥ 33 Peregrine Falcon territories. Nest sites were also documented for American Kestrels, Golden Eagles, Merlins, and Red-tailed Hawks.

Tributaries of the Porcupine River include the Black River, Salmon Fork of the Black River, Christian River, Coleen River, and Monument Creek. Partial surveys of the Black River were conducted in 1994 (Ritchie and Rose 1994) and 1997 (Ritchie and Rose 1998), and a complete survey occurred in 1976 (Haugh and Halperin 1976). A maximum of 6 occupied Peregrine Falcon territories and numerous active Bald Eagle

nest sites were documented. The Salmon Fork of the Black River was surveyed in 1984 (Ritchie 1984) and 1994 (Fadely 1995); ≥ 3 peregrine aeries were located. In 1976, complete surveys were conducted on Monument Creek (1 active peregrine aerie), the Coleen River, and the Christian River (no peregrine aeries detected) (Haugh and Halperin 1976). Nesting Golden Eagles and Gyrfalcons were also observed during surveys of the Porcupine River tributaries.

Habitat—Good to excellent cliffs occur along the Porcupine River from the U.S.-Canada Border to approximately John Herbert's Village. Numerous cliffs (10 m to >100 m) occur in the lower Ramparts Canyon downriver from the Coleen River and in the upper Canyon from the Border to approximately Howling Dog Canyon. Other cliffs occur along tributaries including the lower Coleen River and Salmon Trout Creek.

The Main Fork of the Black River has occasional rock outcrops suitable for cliff-nesting raptors, particularly downstream from its junction with the Salmon Fork to the low cliffs above Chalkysik. Small creeks entering from the north side of the river have a few suitable dirt bluffs. Two areas suitable for cliff nesting raptors occur along the Grayling Fork, i.e., a large dirt bluff near the confluence of the Grayling Fork and the main Black, and a long (~5 km) series of limestone cliffs in its upper reaches. Similarly, cliff habitat is scattered on the Salmon Fork. A few cliffs, albeit excellent ones, occur at Pink Bluff and John Robert's cabin (>100 m) in the upper river, while a large cliff occurs near the junction of the Salmon Fork with the main Black. Additional cliffs occur in tributaries such as Drifting Snow Creek and Kevinjik Creek.

SEVENTYMILE RIVER AND DIAMOND FORK OF THE SEVENTYMILE

Surveys—Complete surveys of the Seventymile River were conducted during 1984 (Swem 1984), 1994 (Ritchie and Rose 1994), 1995 (Ritchie et al. 1998), 1996 (Ritchie and Rose 1997), and 1997 (Ritchie and Rose 1998). Additional partial surveys occurred in 1991 (McIntyre 1992) and 2000 (Ritchie et al. 2001). At least 10 peregrine territories and active nest sites of Bald Eagles, Gyrfalcons, and Merlins were documented.

The Diamond Fork is a steep tributary of the upper Seventymile River. No Peregrine Falcons were observed during a complete survey of this stream in 1991, although a successful Merlin nest was located (McIntyre 1992).

Habitat—Numerous large (>75 m) riparian cliffs occur along the main Seventymile River from near its confluence with the Yukon River to Alder Creek. Above Alder Creek there are occasional smaller cliffs that are used by Peregrine Falcons, Gyrfalcons, and Golden Eagles. Several tributaries also provide potential cliff-nesting raptor habitat, particularly in their lower reaches. These include the Diamond Fork and Granite, Mogul, and Bryant Creeks.

TATONDUK RIVER

Surveys—The Tatonduk River was surveyed completely in 1984 (Swem 1984) and 1985 (Ulvi 1985). One active Peregrine Falcon aerie was documented during each survey.

Habitat (McIntyre 1992)—The lower Tatonduk River from the Yukon-Alaska border to the Yukon River includes abundant areas of cliffs and rock outcrops.

LOWER YUKON REGION

There were ≥ 95 Peregrine Falcon territories documented within the Lower Yukon region between 1970 and 1998 (Table 2). Most of these territories were located along the lower Yukon River ($n \geq 69$) and the middle Yukon River ($n \geq 17$). Several peregrine territories were also located along the lower Koyukuk River ($n \geq 5$). The lower Yukon River in particular also hosts numerous pairs of Rough-legged Hawks (Appendix E).

With the exception of the Yukon and Koyukuk Rivers, most of the surveys in this region occurred during the late 1970's. Many rivers provide suitable habitat for cliff-nesting raptors, so it is likely that peregrines have expanded into these areas since surveys were conducted.

LOWER YUKON RIVER

Surveys—Complete surveys of the lower Yukon River were conducted annually between 1978 and 1991 (Springer et al. 1979a,b; Bente et al. 1983, Bente 1986, 1987, 1988, 1989, 1990, 1991;

USFWS 1997). At least 69 Peregrine Falcon territories have been documented here. Other nesting raptors include Golden Eagles, Rough-legged Hawks, Red-tailed Hawks, and Merlins.

Habitat (Springer et al. 1979b)—The lower Yukon River extends from Ruby to St. Marys. Numerous cliffs provide suitable habitat for cliff-nesting raptors.

MIDDLE YUKON RIVER

Surveys—Surveys of the middle Yukon River generally occurred in concert with surveys of the lower Yukon during 1979-1991 (Springer et al. 1979b, Roseneau et al. 1980, Mindell and Craighead 1981, Bente et al. 1983, Bente 1986, 1987, 1988, 1989, 1990, 1991; USFWS 1997). Complete surveys were also conducted during 1974-1976 (White and Cade 1975b, Ambrose and Ritchie 1975, Haugh and Halperin 1976). At least 17 peregrine territories have been documented, and American Kestrels, Golden Eagles, and Red-tailed Hawks also nest here.

Habitat (Haugh and Halperin 1976)—The middle Yukon River includes that portion of the river between Fort Hamlin and Tanana. The surrounding area is rolling to mountainous, and there are ≥ 17 cliffs that provide potential habitat for Peregrine Falcons and other cliff nesting raptors. A mosaic of wildfire influenced habitats and the presence of lakes provide suitable hunting habitat for peregrines.

ANDREAFSKY RIVER AND EAST FORK OF THE ANDREAFSKY RIVER

Surveys—The Andreafsky River and its East Fork were surveyed completely in 1977 (White and Boyce 1978). Although no peregrine aeries were found, Golden Eagles, Gyrfalcons, and Rough-legged Hawks nested there.

Habitat (White and Boyce 1978)—The lower sections of the main Andreafsky River and the East Fork of the Andreafsky River traverse muskeg and lack cliffs or bluffs. On the main river, widely scattered, 12–15 m bluffs occur between 40 km and 100 km from the mouth. The bluffs become more numerous further upstream. On the East Fork, bluffs are restricted to the upper 38 km of river.

Table 2. Number of territories occupied by pairs of Peregrine Falcons in the Lower Yukon region (survey coverage is complete unless otherwise noted).

Major Drainage	Minor Drainage	Area surveyed	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Lower Yukon	Andreafsky	Andreafsky River								0						
Lower Yukon	Andreafsky	East Fork								0						
Lower Yukon	Anvik	Anvik River								0						
Lower Yukon	Anvik	Canyon Creek										0 ^p				
Lower Yukon	Anvik	Otter Creek										0 ^p				
Lower Yukon	Bonasila	Bonasila River								0						
Lower Yukon	Bonasila	Stuyahok River											0			
Lower Yukon	Hess Creek	Hess Creek	0 ^s													
Lower Yukon	Koyukuk	Alatna River														
Lower Yukon	Koyukuk	Dietrich River	0 ^s													
Lower Yukon	Koyukuk	Gisasa River								0						
Lower Yukon	Koyukuk	John River														
Lower Yukon	Koyukuk	Kanuti River														
Lower Yukon	Koyukuk	Kateel River								0						
Lower Yukon	Koyukuk	Koyukuk River														
Lower Yukon	Koyukuk	Middle Fork														
Lower Yukon	Melozitna	Melozitna River														
Lower Yukon	N/A	Lower Yukon River								5 ⁱ	20	23	32	34	30	41
Lower Yukon	Nowitna	Nowitna River										0 ^p				
Lower Yukon	Nowitna	Sulukna										0				
Lower Yukon	Nowitna	Susulatna River										0 ^p				
Lower Yukon	Nowitna	White Mountain Creek										0				
Lower Yukon	Nulato	Nulato River								0						
Middle Yukon	N/A	Middle Yukon River					5	3	6			3	6	6	6	8

ⁱ incidental survey coverage

^p partial survey coverage

^s selective survey coverage

ANVIK RIVER AND TRIBUTARIES

Surveys—A complete survey of the Anvik River was conducted in 1977 (White and Boyce 1978), and partial surveys of its tributaries, Canyon and Otter Creek, occurred in 1979 (Mindell and Dotson 1980). Nesting pairs of Gyrfalcons, Golden Eagles, and Rough-legged Hawks were documented within the drainage.

Habitat (Mindell and Dotson 1980, White and Boyce 1978)—Above Otter Creek, the Anvik River is enclosed by hills that provide cliffs and bluffs. The river valley becomes wider and the hills farther offriver below that point. The lower portion of the river meanders through flat muskeg to its confluence with the Yukon River at Anvik. Spruce and balsam poplar stands are common along the river, and there are few willow or alder thickets.

Canyon and Otter Creeks are tributaries of the Anvik River that originate in the Nulato Hills. There are several rock outcroppings along Otter Creek that provide suitable habitat for cliff-nesting raptors. Potential cliff-nesting raptor habitat also occurs on Canyon Creek, where the creek has cut a narrow canyon characterized by 6–12 m-high walls on the north side and high cliffs composed of conglomerate rock on the south.

BONASILA RIVER

Surveys—The Bonasila River was completely surveyed in 1977 (White and Boyce 1978). No nesting raptors were documented.

Habitat (White and Boyce 1978)—The Bonasila River flows through a region of gentle topography characterized by dense spruce-birch forests and muskeg. There is one bluff suitable for cliff-nesting raptors at the confluence of Jackson Creek.

STUYAHOK RIVER

Surveys—A complete survey of the Stuyahok River occurred in 1980 (Mindell and Dotson 1980). There was no record of nesting raptors.

Habitat (Mindell and Dotson 1980)—The Stuyahok River flows through a wide, flat valley characterized by spruce/hardwood forests to its

confluence with the Bonasila River. Mindell and Dotson (1980) described only a single cliff suitable for cliff-nesting raptors.

ALATNA RIVER

Surveys—A partial survey of the Alatna River between Arrigetch Creek and Helpmejack Creek was conducted during 1991 (Swanson 1991). One successful peregrine aerie was located, and nesting pairs of American Kestrels and Red-tailed Hawks were observed.

Habitat—The Alatna River originates in the Endicott Mountains in Gates of the Arctic National Park, and flows through the Alatna hills to join the Koyukuk River at Alatna. Specific descriptions of potential raptor habitat are not available.

GISASA RIVER

Surveys—The Gisasa River was surveyed completely by White and Boyce (1978) in 1977. No Peregrine Falcons or other nesting raptors were noted.

Habitat (White and Boyce 1978)—The Gisasa River originates in the Nulato Hills, and flows northeast to the Koyukuk River. The lower 100 km has some bluffs, but most lack cliff faces and are covered with deciduous trees. There are only two bluffs suitable for cliff-nesting raptors in this section.

JOHN RIVER

Surveys—A survey of the John River was conducted in 1991 (Britten 1991), although survey details were not provided. A successful peregrine aerie with 3 young was documented.

Habitat—The John River originates in the Endicott Mountains within Gates of the Arctic National Park, and flows south to join the Koyukuk River at Bettles. Specific descriptions of potential raptor habitat are not available.

KANUTI RIVER

Surveys—The Kanuti Gorge section of the Kanuti River was surveyed in 1994 and 1998 (Maxwell 1998). Single peregrines were documented during both surveys, but nesting was not confirmed. The most significant feature of this drainage was an unusually high density of Great Horned Owls.

Habitat (Maxwell 1998)—Most of the Kanuti River traverses low-lying wetlands characterized by lowland spruce/hardwood forests, mesic tundra, and muskeg. Near its confluence with the Koyukuk River, the Kanuti River flows through a 14-km canyon in the Indian River Uplands. The canyon is characterized by steep walls ≤ 305 -m high.

KOYUKUK RIVER

Surveys—Partial surveys of the lower Koyukuk River occurred in 1987 (Osborne 1987), 1988 (Osborne 1988), and 1989 (Osborne 1989). Several active Peregrine Falcon aeries were observed.

Habitat—The Koyukuk River originates in the Endicott Mountains and flows south and west to join the lower Yukon River at Koyukuk. Specific descriptions of potential raptor habitat are not available.

NOWITNA RIVER

Surveys—Mindell and Dotson (1980) surveyed the middle portion of the Nowitna River from the mouth of the Susulatna River to Grand Creek in 1979. No nesting raptors were reported.

Habitat—The Nowitna River originates north of the Kuskokwim Mountains, and flows generally north to its confluence with the Yukon River upstream of Ruby. The lower portion of the Nowitna meanders through boggy terrain with little topography. Mindell and Dotson (1980) described potential cliff-nesting raptor habitat in the vicinity of Mastodon Mountain.

SULUKNA RIVER AND WHITE MOUNTAIN CREEK

Surveys—The Sulukna River and White Mountain Creek were completely surveyed in 1979 (Mindell and Dotson 1980). No nesting raptors were observed.

Habitat (Mindell and Dotson 1980)—White Mountain Creek, a tributary of the Sulukna River, originates in precipitous terrain on the north side of the Kuskokwim Mountains. The drainage provides potential habitat for cliff-nesting raptors such as Golden Eagles and Gyrfalcons. The Sulukna River

flows north through gentle terrain to its confluence with the Nowitna River. There are a few low cliffs along its course.

SUSULATNA RIVER

Surveys—A partial survey of the lower Susulatna River from the Nowitna River to Sunrise Creek occurred in 1979 (Mindell and Dotson 1980). No Peregrine Falcons or other cliff-nesting raptors were found.

Habitat (Mindell and Dotson 1980)—There are scattered low cliffs along the Susulatna River.

NULATO RIVER

Surveys—White and Boyce (1978) conducted a complete survey of the Nulato River in 1977. There was no record of nesting raptors.

Habitat (White and Boyce 1978)—This river originates in the Nulato Hills, flows northeast, then turns sharply south to join the Yukon River at Nulato. There are cliffs suitable for cliff-nesting raptors every 2.4-3.2 km along the upper third of the river.

TANANA REGION

At least 65 Peregrine Falcon territories were documented in the Tanana Region during 1970-2000 (Table 3). Most of these territories ($n \geq 39$) occurred along the upper Tanana River between Tetlin and Nenana, where peregrines have shown a remarkable recovery since the mid-1970s. Bald Eagles are also common within the drainage (Appendix F).

Suitable habitat for peregrines, Golden Eagles, and Gyrfalcons occurs along tributaries of the Tanana River within the Yukon-Tanana Uplands. Many of these rivers have been surveyed regularly since the mid-1990s, and several ($n \geq 26$) active peregrine aeries have been documented (Table 3).

TANANA RIVER

Surveys—The upper Tanana River was surveyed annually during 1970–2000 (Appendix F). Complete surveys of the section from the Tetlin Bridge to Nenana were conducted from 1991 to 2000 (Bente and Wright 1992, 1993, 1994, 1995; Bente 1995, Ritchie and Rose 1997, 1998, 1999, Ritchie et al. 2000, Ritchie et al. 2001). Frequent

Table 3. Number of territories occupied by pairs of Peregrine Falcons in the Tanana region (survey coverage is complete unless otherwise noted).

Major Drainage	Minor Drainage	Area surveyed	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Lower Tanana	N/A	Lower Tanana River									0							
Upper Tanana	Chena	Chena River																
Upper Tanana	Delta	Delta River	0 ^p		0			0 ^p		0 ^p								
Upper Tanana	Goodpaster	Goodpaster River								0								
Upper Tanana	Healy	Healy River																
Upper Tanana	N/A	Upper Tanana River	7	7	4	4 ^p	1	2	0 ^p	3 ^p	4 ^p	3 ^p	4 ^p	5 ^p	4 ^p	5 ^p	4 ^p	4 ^p
Upper Tanana	Nenana	Antler Creek																
Upper Tanana	Nenana	Bison Gulch																
Upper Tanana	Nenana	Carlo Creek						0 ^s										
Upper Tanana	Nenana	Copeland Creek																
Upper Tanana	Nenana	Healy Creek																
Upper Tanana	Nenana	Lignite Creek																
Upper Tanana	Nenana	Moody Creek																
Upper Tanana	Nenana	Nenana River						0 ^p										
Upper Tanana	Salcha	North Fork																
Upper Tanana	Salcha	Salcha River								0 ^p			0 ^p					

Major Drainage	Minor Drainage	Area surveyed	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Lower Tanana	N/A	Lower Tanana River															
Upper Tanana	Chena	Chena River									0 ^p		1 ^p			2 ^p	3 ^p
Upper Tanana	Delta	Delta River															
Upper Tanana	Goodpaster	Goodpaster River									2	1	3	5	6	5	7
Upper Tanana	Healy	Healy River										0	0				
Upper Tanana	N/A	Upper Tanana River	5 ^p	8 ^p	12 ^p	15 ^p	15 ^p	19	25	26	27	34	26	33	38	39	38
Upper Tanana	Nenana	Antler Creek						0									
Upper Tanana	Nenana	Bison Gulch						0									
Upper Tanana	Nenana	Carlo Creek															
Upper Tanana	Nenana	Copeland Creek						0									
Upper Tanana	Nenana	Healy Creek						0 ^p									
Upper Tanana	Nenana	Lignite Creek						0 ^p									
Upper Tanana	Nenana	Moody Creek						0 ^p									
Upper Tanana	Nenana	Nenana River						0 ^p									
Upper Tanana	Salcha	North Fork								1							
Upper Tanana	Salcha	Salcha River								1 ^p	2 ^p	4 ^p	4 ^p	9	11	14	15

^p partial survey coverage

^s selective survey coverage

cliffs along the river's course were occupied by Peregrine Falcons, Golden Eagles, and Merlins. In recent years, increasing numbers of Peregrine Falcon pairs have been observed nesting on road cuts within the river corridor (Ritchie et al. 1998; J. Shooke, pers. comm.). Riparian forests provide nesting opportunities for Bald Eagles, Red-tailed Hawks, and Ospreys.

The lower section of the Tanana River between Manley Hot Springs and the Yukon River was surveyed in 1978 (Springer et al. 1979a). No nesting raptors were documented.

Habitat (Ritchie et al. 2000)—Numerous riverine cliffs of granite and schist rise 10 m to >150 m above the outwash plains along the Tanana River. Good to excellent cliff habitats occur from approximately Porcupine Creek near the Tetlin Bridge crossing to the Salcha River, and between Fairbanks and Nenana. A few cliffs also occur along the upper Tanana River above the Tetlin Bridge and at offriver locations (e.g., Tetlin Lake). Large groves of balsam poplar and white spruce on the floodplains are regularly used by Bald Eagles.

CHENA RIVER

Surveys—Partial surveys of the Chena River within Yukon MOA 1 were conducted in 1994 (Ritchie and Rose 1994), 1996 (Ritchie and Rose 1997), 1999 (Ritchie et al. 2000), and 2000 (Ritchie et al. 2001). In addition, portions of the river west of the MOA boundary were surveyed in 1999 and 2000. At least 3 active peregrine aeries have been located along this river.

Habitat—Most cliff habitat is limited to the Middle and East Forks of the Chena River. Small (<50 m) schist bluffs and talus slopes occur along the Middle Fork from near its junction with the main Chena. These provide limited substrates, but some have potential for use by Peregrine Falcons. Off-river cliffs and granite tors occur in the middle to upper sections of this drainage, providing potential nesting habitat for Gyrfalcons and Golden Eagles. A few good cliffs are found on other tributaries, i.e., a large (>75m) cliff occurs above the flood control dam site on the main Chena, a series of good cliffs occurs near the junction of the South Fork and main Chena, and numerous granite

outcrops occur south of the Chena River along Munson Creek. No habitat suitable for cliff-nesting raptors exists along the North Fork.

DELTA RIVER

Surveys—Partial surveys of the upper Delta River occurred in 1970 (White and Streater 1970), 1975 (White and Cade 1975b), and 1977 (White and Boyce 1978). White and Ray (1972) conducted a complete survey in 1972. No active raptor nests were reported, although a single Peregrine Falcon was sighted in the river's canyon in 1977, and Gyrfalcons have nested there (White and Boyce 1978). These surveys were conducted from the air; no reports of boat-based surveys along this Wild and Scenic River were located.

Habitat (White and Boyce 1978)—Most of the Delta River flows through wet tundra and there are few cliffs. North of Lower Tangle Lake there is a narrow canyon lined with steep cliffs.

GOODPASTER RIVER

Surveys—Complete surveys of the Goodpaster River were conducted during 1977 (White and Boyce 1978), and annually during 1994-2000 as part of raptor-survey efforts in Yukon MOAs 1-2 (Ritchie and Rose 1994, Ritchie and Rose 1997, 1998, 1999; Ritchie et al. 1998, Ritchie et al. 2000, Ritchie et al. 2001). At least 7 active peregrine aeries have been recorded within this drainage. Other raptors, including Bald Eagles, Gyrfalcons, and Red-tailed Hawks, also nest here.

Habitat—The majority of cliff habitat along the Goodpaster River occurs along the main stem of the river and the North Fork above the junction with the South Fork. A few small (<50 m) riparian bluffs occur downriver from Slate Creek, and there are a few cliffs along Central Creek. Upland habitats that provide potential nesting habitat for Gyrfalcons and Golden Eagles are scattered throughout the drainage, particularly in the Goodpaster's headwaters, in alpine areas between Slate and Indian Creeks, and near Tenmile Creek.

HEALY RIVER

Surveys—The Healy River was surveyed completely in 1995 (Ritchie et al. 1998) and 1996 (Ritchie and Rose 1997). One successful Peregrine

Falcon aerie was documented. Golden Eagle and Gyrfalcon aeries have also been recorded in the drainage of the upper Healy River.

Habitat—There are a few riparian cliffs suitable for cliff-nesting raptors along the lower Healy River northeast of Healy Lake. Additional cliff-nesting habitat is found along the upper reaches of the river and in upland areas near the river's source.

NENANA RIVER AND TRIBUTARIES

Surveys—Portions of the Nenana River and several tributaries (i.e., Antler Creek, Bison Gulch, Copeland Creek, Healy Creek, Lignite Creek, and Moody Creek) within 8.0 km of the proposed Healy Clean Coal Project site were surveyed during 1991 (Roseneau and Springer 1991). Portions of the Nenana River and Carlo Creek were previously surveyed during 1975 (White and Cade 1975b). No active peregrine aeries were located during these surveys, although suitable habitat exists. Several inactive Golden Eagle aeries were observed (Roseneau and Springer 1991).

SALCHA RIVER

Surveys—Partial surveys of the lower Salcha River were conducted in 1977 (White and Boyce 1978) and 1980 (Roseneau and Bente 1980). There was no record of occupied cliff-nesting-raptor territories. More recently, partial surveys of the Salcha River within Yukon MOA 1 occurred during 1993-1996 (McIntyre 1993, Ritchie and Rose 1994, 1997; Ritchie et al. 1998), and complete surveys of cliff habitats from the headwaters to the Tanana River occurred from 1997 to 2000 (Ritchie and Rose 1998, 1999; Ritchie et al. 2000, Ritchie et al. 2001). At least 15 Peregrine Falcon territories and ≥ 9 Bald Eagle nests were located.

Habitat—Excellent series of riparian cliffs, many >75 m in height, occur on the main stem of the Salcha River from its junction with the Tanana River to Porcupine Creek. Numerous Peregrine Falcon and Bald Eagle sites have been described along this stretch. Above the North Fork, cliffs are more scattered and more limited in size (generally <35 m). Exceptions include cliffs near the mouth of Dan Creek and Cottonwood Creek, and on Lost, Stone Boy, and Porcupine Creeks. The North and

South Forks have some suitable cliffs ranging from 15 m to 75 m in height, particularly along their upper stretches. There are records of peregrines, Gyrfalcons, and Golden Eagles in these drainages and along tributaries such as Bonanza Creek. Good rock-outcrops and cliffs occur in alpine areas within the drainage of the Salcha River, particularly between the North and Main Forks of the Salcha, and between the Main Fork of the Salcha and the upper Goodpaster River.

KUSKOKWIM REGION

Between 1976 and 1991, ≥ 17 occupied Peregrine Falcon territories were identified within the Kuskokwim region (Table 4). The greatest number of territories were located on the Kuskokwim ($n \geq 9$) and the Stony ($n \geq 5$) Rivers. The Kuskokwim River also hosted a relatively large population of Rough-legged Hawks (≥ 15 territories between McGrath and Aniak). Although no peregrines were documented on the Kisaralik River during 1976-1991, this river provides good habitat for other cliff-nesting raptors. Golden Eagles, Gyrfalcons, and Rough-legged Hawks were all documented where the river dissects the Kilbuck Mountains (Appendix G).

KUSKOKWIM RIVER

Surveys—The section of the Kuskokwim River between McGrath and Aniak was surveyed during most years from 1976 to 1991 (Ritchie and Ambrose 1976, Mindell and Dotson 1980, Mindell 1981, Waggoner 1987, 1988, 1989, 1991). In addition, a complete survey of the Nixon Fork of the Kuskokwim was conducted in 1979 (Mindell and Dotson 1980).

Habitat (Dotson and Mindell 1979)—Below McGrath, the Kuskokwim River flows through a wide valley with few cliffs. The river then dissects the Kuskokwim Mountains below Sleetmute, forming a gorge 30–120 m deep. After the gorge, there are intermittent cliffs and steep, rocky slopes to Aniak. Vegetation includes floodplain forests of white spruce, balsam poplar, and paper birch with dense shrub understories. Alder and willow thickets are common along the river banks.

Table 4. Number of territories occupied by pairs of Peregrine Falcons in the Kuskokwim region (survey coverage is complete unless otherwise noted).

Major Drainage	Minor Drainage	Area surveyed	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Kuskokwim	Eek	Eek River		0														
Kuskokwim	Fog	Fog River		0														
Kuskokwim	George	East Fork George River				0												
Kuskokwim	Holokuk	Holokuk River					1 ^s											
Kuskokwim	Kisaralik	Kisaralik River		0					0		0			0 ^p	0 ^p			
Kuskokwim	Kisaralik	Quicksilver Creek							0									
Kuskokwim	Kwethluk	Kwethluk River		0 ^p														
Kuskokwim	N/A	Kuskokwim River	1 ^p			2 ^p	2 ^p	4 ^p	5 ^p	5 ^p		5 ^p	8 ^p	9 ^p	8 ^p	9 ^p		6 ^p
Kuskokwim	Nixon Fork Kuskokwim	Nixon Fork				0												
Kuskokwim	Oskawalik	Oskawalik River					0 ^p											
Kuskokwim	Selatna	Selatna River				0 ^p												
Kuskokwim	Stony	Stony River												5 ^s				
Kuskokwim	Swift	Cheeneetnuk River				0												
Kuskokwim	Swift	Gagaryah River					0											
Kuskokwim	Tatlawiksuk	Tatlawiksuk River				1 ^p	1 ^s							1 ^s				
Kuskokwim	Tuluksak	Tuluksak River		0 ^p			0 ^p						1 ⁱ					

ⁱ incidental survey coverage

^p partial survey coverage

^s selective survey coverage

EEK RIVER

Surveys—A complete survey of the Eek River was conducted in 1977. Although no peregrines were observed, White and Boyce (1978) documented active nest sites for Golden Eagles and Gyrfalcons.

Habitat (White and Boyce 1978)—The main and middle forks of the Eek River flow through glacial valleys in the Eek mountains, then cross moist tundra to their confluence and, eventually, Kuskokwim Bay. There are 4 large cliffs on the main fork and 1 large cliff on the middle fork in the vicinity of the Great Ridge.

FOG RIVER

Surveys—The Fog River was also surveyed once, by White and Boyce (1978) in 1977. No peregrines were noted, although there were nesting pairs of Gyrfalcons and Golden Eagles.

Habitat (White and Boyce 1978)—The Fog River flows through a wide, U-shaped glacial valley in the Kilbuck Mountains. There are rock outcrops high on the hillsides, and some areas of scree close to the river. Northwest of the mountains, the river crosses moist tundra to the Kuskokwim River delta.

GEORGE RIVER

Surveys—A complete survey of the East Fork of the George River occurred in 1979 (Mindell and Dotson 1980). No cliff-nesting raptors were documented, although 2 successful Red-tailed Hawk nests were observed.

Habitat (Mindell 1981)—The George River flows through the Kuskokwim Mountains, joining the Kuskokwim River below Sleetmute. The valley of the East Fork of the George River is predominantly wide and flat with few cliffs. Vegetation includes white spruce, birch, and balsam poplar forests. Willow and alder thickets are common.

HOLOKUK RIVER

Surveys—Mindell and Dotson (1980) conducted a selective survey of rock outcrops along the Holokuk River during 1980. One successful peregrine aerie was located.

Habitat—The Holokuk River originates in the Kuskokwim Mountains and flows north to join the Kuskokwim River. Specific descriptions of potential raptor habitat are not available.

KISARALIK RIVER

Surveys—Complete surveys of the Kisaralik River occurred in 1977 (White and Boyce 1978), 1982 (Mindell 1982), and 1984 (Boyce and Fristensky 1984). Partial surveys including the most promising habitat for cliff-nesting raptors were conducted in 1987 and 1988 (McCaffery and Ernst 1989). Although no peregrines were noted, other cliff-nesting raptors were relatively abundant.

Habitat (Boyce and Fristensky 1984)—The upper 25 km of the Kisaralik River flows through alpine and moist tundra, and lacks habitat for cliff-nesting raptors. The river then dissects the Kilbuck Mountains. This 83-km stretch has numerous cliffs and cut banks ≤ 40 m high. There is additional cliff habitat on nearby mountainsides. Spruce and hardwood forests line the river in some areas. Northwest of the mountains, the river meanders for 75 km through low-lying tundra to its confluence with the Kuskokwim River. Riparian stands of spruce and birch occur in this section.

KWETHLUK RIVER

Surveys—We found records of one partial survey of the Kwethluk River during 1977 (White and Boyce 1978). No peregrines or other cliff-nesting raptors were located, although 3 unoccupied Golden Eagle nests were described.

Habitat (White and Boyce 1978)—The Kwethluk River originates in the Kilbuck Mountains and enters a broad valley, where rounded hills abut the river. White and Boyce (1978) described 7 cliffs along the river that provide potential nesting habitat for cliff-nesting raptors.

OSKAWALIK RIVER

Surveys—A partial survey of the lower Oskawalik River was conducted by Mindell and Dotson (1980) in 1980. Five pairs of Rough-legged Hawks and 7 pairs of Red-tailed Hawks were observed.

Habitat (Mindell and Dotson 1980)—The Oskawalik River originates in the Kuskokwim Mountains near Henderson Mountain and flows

north to the Kuskokwim River. The lower half of the river is characterized by frequent limestone, siltstone, and conglomerate cliffs that are 20-75 m high. These cliffs are similar to those that provide nesting habitat for peregrines along the Kuskokwim River. Riparian forests include stands of black spruce and mixed stands of white spruce, balsam poplar, and birch.

SELATNA RIVER

Surveys—Mindell and Dotson (1980) conducted a partial survey of the Selatna River in 1979. Nesting pairs of Rough-legged Hawks and Red-tailed Hawks were observed.

Habitat (Mindell and Dotson 1980)—The Selatna River begins as a narrow stream with high banks. Steep banks occur where the river flows south of a large hill; rock slides are common, and a few small cliffs provide marginal habitat for cliff-nesting raptors. The lower section of the river is wide and lacks cliffs or bluffs. Streamside vegetation includes upland and lowland spruce/hardwood forests.

STONY RIVER

Surveys—A selective helicopter survey of the Stony River was conducted in 1987 (Waggoner 1987). Five active Peregrine Falcon aeries were located.

Habitat—The Stony River originates in the Alaska Range northwest of Lake Clark National Preserve. After leaving the mountains, the river flows west to the Kuskokwim River. Except for its upper reaches, the river valley is low-lying and wide.

CHEENEETNUK RIVER

Surveys—We found records for one complete survey of the Cheeneetnuk River during 1979 (Mindell and Dotson 1980). One pair of Rough-legged Hawks and 4 pairs of Red-tailed Hawks were recorded.

Habitat (Mindell and Dotson 1980)—The Cheeneetnuk River flows southwest out of the Limestone Mountains, follows the Farewell Fault, and joins the Swift River northeast of Sleetmute. Cliffs that are suitable for cliff-nesting raptors are common along the river and on adjacent mountainsides. The lower 24 km of river is flat to its confluence with the Swift.

GAGARYAH RIVER

Surveys—The only recorded survey of the Gagaryah River occurred in 1980 (Mindell and Dotson 1980). Active nest sites were recorded for Rough-legged Hawks and Red-tailed Hawks.

Habitat (Mindell and Dotson 1980)—The Gagaryah River is also a tributary of the Swift River. It originates in the Lyman Hills, which are characterized by graywacke, sandstone, and shale. Cliffs are common along the upper section of the river, although the valley is often wide and many cliffs are set back 0.5 km or more. Similar to the Cheeneetnuk River, topography in the lower section of river is flat. Streamside vegetation includes black spruce bogs and spruce/hardwood forests, grading to alpine tundra in the upper reaches.

TATLAWIKSUK RIVER

Surveys—A partial survey of the Tatlawiksuk River was conducted in 1979 (Mindell and Dotson 1980), and selective surveys occurred in 1980 (Mindell and Dotson 1980) and 1987 (Waggoner 1987). One active peregrine aerie was located during each survey.

Habitat (Dotson and Mindell 1979)—The Tatlawiksuk River originates northwest of the limestone mountains, and flows south and west to the Kuskokwim River. The middle section of the river flows through a wide valley with large hills on the northwest side; there are a few cliffs and steep banks along the river in this area. Riparian vegetation includes stands of white spruce and balsam poplar, and dense willow and alder thickets. The lower section of the river traverses muskeg and lacks cliffs or bluffs.

TULUKSAK RIVER

Surveys—Partial surveys of the Tuluksak River were conducted in 1977 (White and Boyce 1978) and 1980 (Mindell and Dotson 1980). No Peregrine Falcons were located, although Golden Eagles and Gyrfalcons nested here. An active peregrine aerie was documented during a selective survey in 1986 (Amaral 1986)

Habitat (White and Boyce 1978, Mindell and Dotson 1980)—The Tuluksak River originates near Mt. Hamilton in the Kilbuck Mountains, and joins

the Kuskokwim between Aniak and Bethel. The upper section of river follows the Tuluksak fault, which creates several 15-27-m cliffs. In the Nyac area, the river flows through foothills with scattered bluffs and granitic outcrops on high ridges. The river has been extensively dredged, and gravel tailings are common. The river enters the Kuskokwim delta approximately 20 km below Nyac. Vegetation includes white spruce/balsam poplar in undisturbed areas, and willows and alders where dredging has occurred.

SUSITNA REGION

We located records for 2 cliff-nesting raptor surveys for this region (White 1974c, White and Cade 1975b); both surveys occurred during the mid-1970s as part of an assessment for a proposed dam on the Susitna River. There was no record of territory occupancy for Peregrine Falcons. A major survey effort in this region during 1988 (Parker 1988) specifically targeted Bald Eagles. These fixed-wing surveys were probably inadequate for detection of cliff-nesting raptors. All survey results are presented in Appendix H.

BELUGA RIVER

Surveys—Nine pairs of Bald Eagles were recorded during a complete fixed-wing survey of the Beluga River in 1988 (Parker 1988).

CHULITNA RIVER

Surveys—No nesting raptors were observed during a complete fixed-wing survey of the Chulitna River in 1988 (Parker 1988).

LITTLE SUSITNA RIVER AND LAKE CREEK

Surveys—One active Bald Eagle nest was observed during a complete survey of the Little Susitna River in 1988 (Parker 1988).

SUSITNA RIVER AND TRIBUTARIES

Surveys—Parker (1988) conducted a partial fixed-wing survey of the Susitna River below Talkeetna during 1988. The following tributaries were also surveyed: Kashwitna River (complete), Yentna River (partial), Kahiltna River (complete), Skwentna River (partial), Willow Creek (complete), and Peters Creek (partial). The Susitna

River was an important Bald Eagle nesting area, and Bald Eagle nests were found along most of the tributaries as well (Appendix H).

Nesting gyrfalcons were observed in 1974 during a partial helicopter survey of the Susitna River from Devil's Canyon to the Susitna Glacier (White 1974c). In 1975, a Gyrfalcon nest was also observed during a selective helicopter survey of the Maclaren River (White and Cade 1975b).

UPPER COPPER REGION

The majority of sources that we reviewed for the Upper Copper region reported on aerial surveys between 1972 and 1988 that targeted Bald Eagles; other raptors were recorded opportunistically (Appendix I). Only a single active Peregrine Falcon territory was located (Table 5), although there were several records of nesting Golden Eagles. Bald Eagles were common.

COPPER RIVER

Surveys—Selected sections of the Copper River above Chitina were surveyed during 1975 (White and Cade 1975b), 1987, and 1988 (Amaral 1988). A complete survey of the upper Copper River between Slana and Chitina occurred in 1973 (Alder and Ludlow 1973). There were few observations of cliff-nesting raptors, but Bald Eagles were common.

Habitat (Amaral 1988)—There is little habitat suitable for cliff-nesting raptors along the Copper River between Slana and Chitina. Although there are a few large cliffs, they are composed of unstable sandstone and suitable ledges are rare. Extensive riparian stands of balsam poplar and white spruce provide habitat for a major breeding population of Bald Eagles.

CHITINA RIVER

Surveys—A complete survey of the Chitina River and the Tana River (a tributary) was conducted in 1973 (Alder and Ludlow 1973). Results were similar to the upper Copper River, i.e., Bald Eagles were common, and a few nesting Golden Eagles and single Gyrfalcons were observed. There was an incidental observation of a Peregrine Falcon pair on the Chitina River in 1987 (Amaral 1988).

Table 5. Number of territories occupied by pairs of Peregrine Falcons in the Upper Copper region (survey coverage is complete unless otherwise noted).

Major Drainage	Minor Drainage	Area surveyed	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Copper	Chitina	Chitina River																1 ⁱ	
Copper	Gakona	Gakona River				0	0												
Copper	Gulkana	Gulkana River	0					0 ^p											
Copper	Gulkana	West Fork						0 ^p											
Copper	N/A	Copper River		0		0 ^p												0 ^p	0 ^p

ⁱ incidental survey coverage

^p partial survey coverage

GAKONA RIVER

Surveys—Complete surveys of the Gakona River occurred during 1975 (White and Cade 1975b) and 1976 (Haugh and Halperin 1976). Bald Eagles were the only raptors recorded.

Habitat (Haugh and Halperin 1976)—There are occasional bluffs along the Gakona River, but these are generally composed of sand and silt, and therefore lack ledges suitable for cliff-nesting raptors. The river valley is forested, which provides nesting opportunities for tree-nesting species.

GULKANA RIVER AND TRIBUTARIES

Surveys—White and Ray (1972) conducted a complete survey of the Gulkana River in 1972. A partial survey of the lower Gulkana and its West Fork occurred in 1977 (White and Boyce 1978). During 1989 and 1990, surveys were conducted on the main stem (complete) and the Middle and West Forks (partial) as part of a Bald Eagle disturbance study (Anthony et al. 1991). Bald Eagles were common within the drainage, but observations of cliff-nesting raptors were limited to 2 pairs of Golden Eagles and 1 pair of Gyrfalcons in 1972 (White and Ray 1972).

Habitat (Haugh and Halperin 1976)—The Gulkana River is similar in character to the Gakona River. There are occasional riparian bluffs, but they are generally unstable. Nesting opportunities for cliff-nesting species are therefore limited. Riparian forests offer nesting opportunities for tree-nesting raptors.

WEST COAST REGION

At least 43 Peregrine Falcon territories were located on the coasts of Norton and Kotzebue Sounds and along coastal rivers in the West Coast region between 1986 and 1992 (Table 6, Appendix J). Surveys of several additional rivers during 1977, 1979, and 1980 failed to detect peregrines, but this coincided with the organochlorine-related decline of peregrine populations throughout their range. Most of these rivers have not been resurveyed since populations recovered.

GOLSOVIA RIVER

Surveys—A partial survey of the Golsovia River occurred in 1979 (Mindell and Dotson 1980). Although no Peregrine Falcons were observed, active nests were documented for Golden Eagles, Gyrfalcons, Merlins, and Rough-legged Hawks.

Habitat (Dotson and Mindell 1979)—The Golsovia River flows north from the Nulato Hills to Norton Sound. A portion of the river cuts through lava and ash deposits; potential habitat for cliff-nesting raptors occurs adjacent to the river on lava formations. Riparian vegetation includes willow, alder, balsam poplar, white spruce, and black spruce. The lower portion of the river crosses tundra on the coastal plain.

INGLUTALIK RIVER

Surveys—This river was completely surveyed by Morkill (1992) in 1991. One active peregrine aerie was encountered. Other nesting raptors included Rough-legged Hawks, Golden Eagles, and Bald Eagles.

Habitat—The Inglutalik River originates in the Nulato Hills, and flows west then south to Norton Bay. A description of habitat for cliff-nesting raptors is not available.

KIVALINA RIVER

Surveys—A partial survey of the Kivalina River was conducted in 1977 (White and Boyce 1978). No peregrines occurred here at that time, although nest sites were documented for Golden Eagles, Gyrfalcons, and Rough-legged Hawks.

Habitat (White and Boyce 1978)—The upper third of the Kivalina River flows through a wide glacial valley in the DeLong Mountains. Cliffs through this section are located well back from the river on mountainsides. In the middle third there are cliffs immediately adjacent to the river, and a large ridge on the northwest side provides larger cliff areas. The best habitat on the river for cliff-nesting raptors occurs here. There are more cliffs on the lower third of the Kivalina, where the river flows through hills before emptying into the Chukchi Sea.

Table 6. Number of territories occupied by pairs of Peregrine Falcons in the West Coast region (survey coverage is complete unless otherwise noted).

Major Drainage	Minor Drainage	Area surveyed	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Coco Creek	N/A	Coco Creek											
Golsovia	N/A	Golsovia River									0 ^p		
Inglutalik	N/A	Inglutalik River											
Kivalina	N/A	Kivalina River							0 ^p				
Kobuk	N/A	Kobuk River											
Kotzebue Sound	N/A	Kotzebue Sound											
Kougarok	N/A	Kougarok River											
N/A	N/A	Seward Peninsula											
N/A	N/A	Ingakslugwat Hills											
Noatak	N/A	Noatak River	0 ^u				0 ^p						
Noatak	Nushralutak Creek	Nushralutak Creek											
Norton Sound	N/A	Norton Sound											
Nuluk	N/A	Nuluk River											
Shaktoolik	N/A	Shaktoolik River							0				
Unalakleet	Chiroskey	Chiroskey River									0 ^p		
Unalakleet	North	North River							0			0	
Unalakleet	North Fork	North Fork							0 ^p				
Unalakleet	Old Woman	Old Woman River										0 ^p	
Unalakleet	South	South River									0		
Ungalik	N/A	Ungalik River							0				
Wulik	N/A	Wulik River							0				

Major Drainage	Minor Drainage	Area surveyed	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Coco Creek	N/A	Coco Creek											0 ^u
Golsovia	N/A	Golsovia River											
Inglutalik	N/A	Inglutalik River											1
Kivalina	N/A	Kivalina River											
Kobuk	N/A	Kobuk River										0 ^p	
Kotzebue Sound	N/A	Kotzebue Sound									3 ^u		
Kougarok	N/A	Kougarok River											0 ^u
N/A	N/A	Seward Peninsula						6 ^s					
N/A	N/A	Ingakslugwat Hills							0 ^p				
Noatak	N/A	Noatak River					4	4	4	3	2	4	
Noatak	Nushralutak Creek	Nushralutak Creek									0 ^p	0 ^p	
Norton Sound	N/A	Norton Sound							19	23	24	27	
Nuluk	N/A	Nuluk River											0 ^u
Shaktoolik	N/A	Shaktoolik River						2 ^u					
Unalakleet	Chiroskey	Chiroskey River											
Unalakleet	North	North River											
Unalakleet	North Fork	North Fork											
Unalakleet	Old Woman	Old Woman River											
Unalakleet	South	South River											
Ungalik	N/A	Ungalik River											
Wulik	N/A	Wulik River											

^p partial survey coverage^s selective survey coverage^u unknown survey coverage

KOBUK RIVER

Surveys—Swanson (1991) surveyed the upper Kobuk River in 1991. No nest sites were documented for cliff-nesting raptors.

Habitat—The Kobuk River originates on the south side of the Endicott Mountains and flows west to Hotham Inlet in Kotzebue Sound. Specific descriptions of habitat for cliff-nesting raptors are not available.

KOUGAROK RIVER

Surveys—The Kougarok River was surveyed in 1992 (McIntyre and Adams 1992). A successful Gyrfalcon aerie was documented.

Habitat—The headwaters of this river are located near Taylor on the Seward Peninsula. Specific descriptions of habitat for cliff-nesting raptors are not available.

NOATAK RIVER

Surveys—More cliff-nesting raptors have been documented along the Noatak River than along any other river in this region. Complete annual surveys during 1986-1991 (Amaral 1986, Ball 1987, Ellis et al. 1988, Ambrose 1989, Wildman 1990, 1991) resulted in identification of ≥ 4 active peregrine territories. Other nesting raptors included Golden Eagles, Gyrfalcons, Merlins, and Rough-legged Hawks. During earlier, partial surveys in 1971 (McGowan 1973) and 1975 (Haugh and Potter 1975), no Peregrine Falcon aeries were observed.

Habitat (Haugh and Potter 1975)—The Noatak River originates in the western Endicott Mountains and flows west along the Schwatka Mountain Range. The river winds through a large, U-shaped valley for 130 km. A few low dirt bluffs occur in this section, but large cliffs are found only on mountainsides approximately 1–3 km from the river. The Noatak then traverses 130 km of low, rolling foothills, with only scattered dirt bluffs. The next section of river, again 130 km long, is known as the Grand Canyon of the Noatak. Small cliffs and rock outcrops, generally ≤ 60 m high, are found along the river, and 600–1200 m mountains rise from the valley floor. Larger cliffs (≤ 120 -m high) occur at the lower end of this section. The Grand Canyon provides the best habitat on the

Noatak for cliff-nesting raptors. Below the Grand Canyon, there are few cliffs as the Noatak Valley becomes broad and flat.

NORTON SOUND, KOTZEBUE SOUND, AND THE COAST OF THE SEWARD PENINSULA

Surveys—At least 30 active Peregrine Falcon territories were documented along the coast and coastal islands during complete, annual surveys in 1988-1991 (Wright and Hughes 1988, Ambrose 1990, Wright 1990, Bente and Wright 1992).

Habitat—Numerous cliffs along the coast and coastal islands from Cape Krusenstern to Shaktoolik provide potential nesting habitat for cliff-nesting raptors.

SHAKTOOLIK RIVER

Surveys—Complete surveys of the Shaktoolik River occurred during 1977 (White and Boyce 1978) and 1987 (Bolstadt 1987). Two successful Peregrine Falcon aeries were located during the latter survey. Golden Eagles and Gyrfalcons also nested here.

Habitat (White and Boyce 1978)—The upper section of the Shaktoolik, from its headwaters in the Nulato Hills to Brass Pan Creek, flows through tundra and lacks cliffs. The 18-km section below Brass Pan Creek is lined with 9–14 m-high cliffs and large cutbanks. The river banks then become gentler, followed by a 11-km section where cliffs or cutbanks occur every 2.5 km.

CHIROSKY RIVER

Surveys—Mindell and Dotson (1980) conducted a partial survey of the Chirosky River in 1979. Rough-legged Hawks were the only cliff-nesting raptor reported.

Habitat (Mindell and Dotson 1980)—The Chirosky river originates in the Nulato Hills and joins the Unalakleet River. Cliffs are limited to the region of the confluence of the river with the Unalakleet valley. Vegetation includes willow and alder thickets, with moist tundra and scattered stands of spruce and poplar in the lower reaches.

NORTH RIVER

Surveys—Complete surveys of the North River occurred during 1977 (White and Boyce 1978) and 1980 (Mindell and Dotson 1980). Although no

Peregrine Falcon aeries were located, White and Boyce (1978) described nest sites for Gyrfalcons and Rough-legged Hawks.

Habitat (White and Boyce 1978)—The only habitat for cliff nesting raptors on the North River occurs in the upper reaches (120–150-m elevation) within a gorge that is approximately 8-km long.

NORTH FORK OF THE UNALAKLEET RIVER

Surveys—We located records for a partial survey of the North Fork of the Unalakleet in 1977 (White and Boyce 1978). These investigators reported the presence of nesting Gyrfalcons and Golden Eagles.

Habitat (White and Boyce 1978)—The North Fork of the Unalakleet River flows through a wide valley that is heavily forested with spruce and poplar. Cliffs providing nesting habitat for raptors occur along a 19-km stretch that begins 8 km upriver from Old Woman Mountain.

OLD WOMAN RIVER

Surveys—In 1980, a partial survey of the Old Woman River revealed nesting Rough-legged Hawks, but no Peregrine Falcons (Mindell and Dotson 1980).

Habitat (Mindell and Dotson 1980)—The Old Woman River flows through the Nulato Hills to the Unalakleet River. Cliffs suitable for cliff-nesting raptors occur irregularly throughout the river's course.

UNGALIK RIVER

Surveys—A complete survey of the Ungalik River was conducted in 1977 (White and Boyce 1978). Despite the presence of favorable habitat, no peregrines were found. There were nesting pairs of Golden Eagles, Gyrfalcons, and Rough-legged Hawks, however.

Habitat (White and Boyce 1978)—The Ungalik River flows southwest from the Nulato Hills to Norton Bay. The river has abundant cliffs throughout its length and the valley is wide, providing favorable hunting habitat for peregrines. The habitat along the lower third of the river is particularly favorable for cliff-nesting raptors.

WULIK RIVER

Surveys—The entire Wulik River was surveyed by White and Boyce (1978) in 1977. Golden Eagles, Gyrfalcons, and Rough-legged Hawks nested along the upper river.

Habitat (White and Boyce 1978)—The Wulik River originates in the DeLong Mountains and flows southwest to the Chukchi Sea at Kivalina. Most of the river lacks habitat suitable for cliff-nesting raptors. The exception occurs on the upper third of the river, where 7 suitable cliffs and a canyon are found.

SOUTH RIVER

Surveys—A complete survey of the South river occurred in 1979 (Mindell and Dotson 1980). Active aeries were documented for Golden Eagles and Rough-legged Hawks.

Habitat (Mindell and Dotson 1980)—The South River rises in the Nulato Hills and flows north to the Unalakleet River. The river passes through hills of sandstone, conglomerate, and shale. The action of the river and nearby faults provide numerous rock outcroppings. Large cliffs occur where the river leaves the foothills and joins the Unalakleet Valley.

SURVEY ASSESSMENT AND NEEDS

Within the past decade, the majority of major cliff complexes along large rivers in western and interior Alaska have been evaluated for habitat suitability and occupancy by cliff-nesting raptors, particularly Peregrine Falcons. This includes large cliffs on the Yukon, Tanana, and Kuskokwim Rivers. Most of the important habitats for peregrines have therefore been described in these areas. Unfortunately, the identification and mapping of specific cliffs and nest sites for other cliff-nesting species, as well as intensive surveys for tree-nesting raptors, have not been as thorough. Knowledge of these sites therefore varies greatly within and among regions. In particular, there is limited information on cliff-nesting raptors in the Upper Copper and Susitna regions. There is also little information on raptor use of upland areas on the south slope of the Brooks Range, along much of the Alaska Range, and between the Yukon and Kuskokwim rivers. Additional information for

some of these areas may be available through local agency offices. For example, extensive surveys for cliff-nesting and tree-nesting raptors are conducted annually in Denali National Park (C. McIntyre, National Park Service, Denali National Park, Alaska, personal communication), and raptor surveys have been conducted in Wrangell-St. Elias National Park (Kozie and Bouton 1993, Kozie et al. 1993). It was beyond the scope of this project to locate and review all of these sources, and we encourage future additions to the report and databases we have prepared.

Many of the surveys that we reviewed coincided with population lows for Peregrine Falcons during the mid to late 1970s. In several cases, subsequent surveys have not been conducted, leading to outdated and potentially inaccurate information for the population status of peregrines. For example, suitable cliff habitats were described on many rivers within the Kuskowkim, Lower Yukon, and West Coast regions, but these rivers may not have been surveyed more intensively or more regularly because peregrines were not found during initial surveys. This may also be the case for drainages in other regions of the interior and, consequently, recent information on all raptors is not available.

Surveys should be conducted regularly in representative drainages throughout interior and western Alaska to monitor raptor population status and trends. In addition to rivers that are currently surveyed annually, (i.e., Upper Yukon, Tanana, and Porcupine Rivers, and drainages within Denali National Park), the Middle and Lower Yukon River (Peregrine Falcons), portions of the Tanana, Black, Susitna, and Gulkana Rivers (Bald Eagles), and the TAPS corridor in the upper Koyukuk area should be monitored. To improve regional and species diversity in monitoring programs, the monitoring value of additional areas should be assessed. Further, although ≥ 443 Peregrine Falcon territories have been identified along rivers in interior and western Alaska, nests sites for other species such as Golden Eagles have not been consistently reported. Future survey protocols should be standardized to include information on all raptors, thereby improving our understanding of raptor abundance, distribution, and population status.

Appendix A. Reference list for raptor surveys in interior Alaska. (Keywords are in *italics*; see Appendix B for complete keyword list).

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Interior Alaska /Tanana region /Tanana River /boat survey /Peregrine Falcon /Bald Eagle /Golden Eagle /Red-tailed Hawk /American Kestrel /Common Raven /Sharp-shinned Hawk /Goshawk /Northern Harrier /abundance /banding /behavior /disturbance /phenology /food habits /habitat /prey remains / productivity /nest location /river kilometer / descriptive
- Amaral, M. 1986. Conversation Record. Letter to Unknown from Amaral, M. U.S. Fish and Wildlife Service, Division of Endangered Species 1 p.
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Interior Alaska /Upper Copper region /Copper River /boat survey /Peregrine Falcon /Bald Eagle / Red-Tailed Hawk /Sharp-Shinned Hawk /Common Raven /abundance /distribution /habitat / management /nesting /prey remains /nest location / map /river kilometer
- Amaral, M. and Gardner, C. 1986. A survey for cliff-nesting birds of prey along the Noatak River, Alaska. U.S. Fish and Wildlife Service, Anchorage Fish and Wildlife Enhancement, Endangered Species, Anchorage, Alaska. 22 pp.
Interior Alaska /West Coast region /Noatak River / boat survey /helicopter survey /Peregrine Falcon / Rough-Legged Hawk /Gyr Falcon /Golden Eagle / Northern Harrier /abundance /banding /management /nesting /phenology /prey remains /productivity /nest location /river kilometer /map
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Interior Alaska /Upper Yukon region /Charley River / boat survey /Peregrine Falcon /Gyr Falcon /Golden Eagle /Bald Eagle /Red-Tailed Hawk /Goshawk / American Kestrel /Common Raven /abundance / banding /behavior /disturbance /food habits /nesting / phenology /prey remains /productivity /nest location / descriptive /map
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NPR-A /Interior Alaska /Upper Yukon region / Colville River /Upper Yukon River /Charley River / Peregrine Falcon /nesting /productivity /banding / prey remains /nest location /river mile /cliff number / descriptive

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Appendix B. Keywords for Interior Raptor Registry reference list.

REGION:

Kuskokwim region, Interior Alaska, Lower Yukon region, North Slope, Northeast Arctic, Northwest Arctic, NPR-A, Southeast Alaska, Southwest Alaska, Susitna region, Tanana region, Upper Copper region, Upper Yukon region, West Coast region, Western Alaska.

RIVER OR SPECIFIC AREA SURVEYED:

Aichilik River, Akmalik River, Alatna River, Aleutian Islands, Anaktuvuk River, Andreafsky River, Antler Creek, Anvik River, Awuna River;

Beaver Creek, Beluga River, Birch Creek, Bison Gulch, Black River, Bonanza Creek, Bonasila River;

Canning River, Canyon Creek, Caribou Creek, Carlo Creek, Carter River, Cathedral Creek, Central Brooks Range, Chandalar River, Chandler River, Charley River, Cheeneetnuk River, Chena River, Chiroskey River, Chitina River, Chulitna River, Clarence River, Coal Creek, Coal River, Cobblestone River, Coco Creek, Colville River, Copeland Creek, Copper Creek, Copper River, Crescent Creek;

Delta River, Dietrich River;

Eagle Creek, East Fork Andreafsky River, East Fork Etivluk River, East Fork George River, Easter River, Echooka River, Eek River, Egaksrak River, Ekaluakat River, Etivluk River;

Fay River, Fog River, Fortymile River;

Gagaryah River, Gakona River, Gates of the Arctic National Park and Preserve, George River, Gisasa River, Golsovia River, Goodpaster River, Gulkana River;

Hard Luck Creek, Healy Creek, Healy River, Holokuk River, Hulahula River;

Ikpikpuk River, Ingakslugwat Hills, Inglutalik River, Ipewik River, Ipnarik River, Iteriak River, Itikmalak River, Itkillik River, Itkilyariak River, Ivishak River;

Jago River, John River, Joseph Creek;

Kahiltna River, Kanayut River, Kandik River, Kanetok River, Kanuti River, Kashwitna River, Katakaturuk River, Kateel River, Kavik River, Kikiakrorak River, Killik River, Kisaralik River, Kivalina River, Kobuk River, Kogosukruk River, Kokolik River, Kolmakof River, Kongakut River, Kotzebue Sound, Kougarok River, Koyukuk River, Kukpowruk River, Kukpuk River, Kuna River, Kurupa River, Kuskokwim River, Kutchaurak River, Kwethluk River;

Lake Creek, Lignite Creek, Little Susitna River, Lower Tanana River, Lower Yukon River;

Maclaren River, Marsh Creek, Matanuska River, May River, Middle Fork Fortymile River, Middle Fork Gulkana River, Middle Fork Koyukuk River, Middle Yukon River, Mission Creek, Moody Creek, Mosquito Fork Fortymile River;

Nanushuk River, Nation River, Nenana River, Nigu River, Nixon Fork Kuskokwim River, Nixon River, Noatak River, North Fork Fortymile River, North Fork Unalakleet River, North River, Norton Sound, Nowitna River, Nulato River, Nuluk River, Nushagak River, NWA Pipeline Route;

Okerokovik River, Okokmilaga River, Okpikruak River, Okpilak River, Old Woman River, Oolamnagavik River, Oskawalik River, Otter Creek, Otuk River, Owhat River;

Paxson Lake, Peregrine Creek, Peters Creek, Pitmegea River, Porcupine River, Preacher Creek;

Quicksilver Creek;

Rock Creek;

Sadlerochit River, Sagavanirktok River, Salcha River, Salmon Fork Black River, Selatna River, Seventymile River, Seward Peninsula, Shaktoolik River, Siksikpuk River, Silalinigun River, Skwentna River, South Fork Birch Creek, South Fork Fortymile River, South River, Southern Brooks Range, Stony River, Stuyahok River, Sulukna River, Sunflower Creek, Susitna River, Susulatna River;

Tamayariak River, Tanana River, Tangle Lakes, Tatlawiksuk River, Tatonduk River, Tonsona River, Toolik River, Trans-Alaska Pipeline Corridor, Tuluksak River, Turner River;

Ungalik River, Upper Colville River, Upper Tanana River, Upper Yukon region, Upper Yukon River, Utukok River;

Walker Fork Fortymile River, Waterfall Creek, West Fork Gulkana River, Willow Creek, Windy Fork Birch Creek, Woodchopper Creek, Wulik River;

Yentna River, Yukon Fork Birch Creek, Yukon River.

SURVEY METHOD:

aerial survey, boat survey, fixed-wing survey, foot survey, ground survey, helicopter survey, vehicle survey.

SPECIES:

American Kestrel, Bald Eagle, Boreal Owl, Common Raven, Golden Eagle, Goshawk, Great Gray Owl, Great Horned Owl, Gyrfalcon, Hawk Owl, Kestrel, Merlin, Northern Goshawk, Northern Harrier, Northern Hawk Owl, Osprey, Peregrine Falcon, Red-tailed Hawk, Rough-legged Hawk, Sharp-shinned Hawk, Short-eared Owl, Swainson's Hawk.

CONTENT:

Abundance, banding, behavior, breeding biology, contaminants, distribution, disturbance, food habits, habitat, management, migration, nest location, nesting, phenology, prey remains, productivity.

Nest location format: cliff number, descriptive, latitude-longitude, map, NPS nest number, NWA location number, raptor observation record card, river kilometer, river mile, township-range.

Appendix C. Descriptions of data fields in the "interior raptor registry 2001.xls" data file.

Field Name	Description of data
Region	Regions of interior Alaska defined by their respective major drainages, and used to catalogue raptor-survey efforts.
Major Drainage	The major drainage within a region; usually empties into the ocean.
Minor Drainage	A primary tributary of the major drainage.
Tributary1	A drainage that is once removed from the minor drainage.
Tributary2	A drainage that is twice removed from the minor drainage.
Area surveyed	The specific river, creek, or land area surveyed.
Year	Year in which the survey was conducted.
Surveyor(s)	Names of individuals that conducted the survey.
Survey Method	Aerial, boat, foot, helicopter, plane, unknown, vehicle.
Dates	Specific dates within year that the survey was conducted.
Survey coverage	Complete = the majority of the "area surveyed" was surveyed, included all potential cliff-nesting raptor habitat; Incidental = an observation that occurred during an activity other than a raptor survey; Partial = a continuous section of river was surveyed, but not the majority of the river; Selective = a very small area, or selected sites within the area, were surveyed; Unknown = survey details were not available.
Survey Details	Specific description of the area surveyed, including start and stop points if available.
Species	The 4-letter AOU species code.
Single Adults	The number of single adults observed.
No. Pairs	The number of pairs observed, or the number known to occur, based on the presence of incubating adults, eggs, or young.
No. Occupied Territories	The number of territories or nest sites occupied by a pair or an incubating adult, or where eggs or young were present. Generally the same as "No. Pairs".
Min. No. Successful Nests	The minimum number of occupied territories with ≥ 1 live young.
Min. No. Young	The minimum number of young within all occupied territories.
Nest Site Format	The format used by surveyors for recording the location of nest sites: CLF = cliff number; DES = narrative description of cliff site; LAL = latitude-longitude; MAP = map; RKM = river kilometer; ROC = raptor observation record card; TWR = township-range; None = nest site locations not recorded.
Reference	Citation in accompanying ProCite™ database.
Comments	Comments, e.g., one or two surveys, limited information provided, late in season (after fledging), etc.

Appendix D. Details and results of raptor surveys in the Upper Yukon region.

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
American Kestrel													
Upper Yukon	Charley	Charley River	1984	boat	11-17 July	complete	Gelvin's strip to Yukon River	12	0	0	0	None	Swem 1984
Upper Yukon	Charley	Charley River	1990	boat	24-30 July	complete	Gelvin's strip to Yukon River	1	2	1	2	RKM; MAP; ROC	Ulvi 1990
Upper Yukon	Charley	Charley River	1991	boat	7-13 July	complete	Gelvin's strip to Yukon River	0	1	U	U	RKM; MAP	Ulvi 1991
Upper Yukon	Kandik	Kandik River	1979	boat	29 June-5 July	complete	Yukon-Alaska border to Yukon River	2	0	0	0	None	Walker 1979
Upper Yukon	Kandik	Kandik River	1984	boat	25-29 July	complete	7 km above Indian Grave Creek to Yukon River	3	0	0	0	None	Swem 1984
Upper Yukon	Nation	Hard Luck Creek	1991	heli	30 July	complete	See map in report	0	1	1	2	RKM; ROC; DES	McIntyre 1992
Upper Yukon	Nation	Nation River	1984	boat	4-5 August	partial	Preserve boundary to Yukon River	2	1	1	4	DES	Swem 1984
Upper Yukon	Porcupine	Porcupine River	1993	boat	14-20 July	complete	Yukon-Alaska border to 166-km downstream	1	0	0	0	RKM	Mauer 1993
Upper Yukon	Porcupine	Porcupine River	1994	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	3	1	U	U	RKM	Mauer 1994
Upper Yukon	Porcupine	Porcupine River	1995	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	2	0	0	0	None	Mauer 1995
Upper Yukon	Seventymile	Seventymile River	1984	heli	21 August	complete	Headwaters to Phoenix Creek	1	0	0	0	None	Swem 1984
Upper Yukon	Tatonduk	Tatonduk River	1984	boat	2-3 August	complete	Yukon-Alaska border to Yukon River	0	1	1	3	DES	Swem 1984

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Bald Eagle													
Upper Yukon	Birch Creek	Birch Creek	1994	aerial	16 May, 18 July	partial	MOA surveys	U	4	0	0	LAL	Ritchie and Rose 1994
Upper Yukon	Birch Creek	Birch Creek	1995	heli	May-July	partial	Segment within Yukon MOA 2	U	2	U	U	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Birch Creek	Birch Creek	1996	heli	May, 12-17 July	partial	Segment within Yukon MOA 2	U	4	3	8	LAL	Ritchie and Rose 1997
Upper Yukon	Birch Creek	Birch Creek	1997	heli	May, July	partial	Segment within Yukon MOA 2	U	3	1	1	LAL	Ritchie and Rose 1998
Upper Yukon	Birch Creek	Birch Creek	1998	heli	May-August	partial	Segment within Yukon MOA 2	U	1	1	1	LAL	Ritchie and Rose 1999
Upper Yukon	Birch Creek	Birch Creek	1999	heli	May, July	partial	Segment within Yukon MOA 2	U	3	0	0	LAL	Ritchie et al. 2000
Upper Yukon	Birch Creek	Birch Creek	2000	heli	27-30 May, 16-17 July	partial	Segment within Yukon MOA 2	U	3	0	0	LAL	Ritchie, Payer, and Shook 2000
Upper Yukon	Black	Black River	1996	heli	May, 12-17 July	partial	Segment within Yukon MOAs 4, 5	U	14	3	3	LAL	Ritchie and Rose 1997
Upper Yukon	Charley	Charley River	1976	boat	17-29 July	complete	Crescent Creek to Yukon River	4	1	1	U	DES	Haugh and Halperin 1976
Upper Yukon	Charley	Charley River	1980	boat	17-22 July	complete	Crescent Creek to Yukon River	4	2	U	U	DES	Ambrose 1980
Upper Yukon	Charley	Charley River	1981	boat	23 June-9 July	complete	Above Copper Creek to Yukon River	4	3	2	3	DES; MAP	Amaral 1981
Upper Yukon	Charley	Charley River	1984	boat	11-17 July	complete	Gelvin's strip to Yukon River	12	1	1	1	RKM	Swem 1984
Upper Yukon	Charley	Charley River	1986	boat	13-24 July	complete	Gelvin's strip to Yukon River	U	1	1	1	RKM; MAP	Britten et al. 1986

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Charley	Charley River	1990	boat	24-30 July	complete	Gelvin's strip to Yukon River	3	3	2	3	RKM; MAP; ROC	Ulvi 1990
Upper Yukon	Charley	Charley River	1991	boat	7-13 July	complete	Gelvin's strip to Yukon River	4	2	1	1	RKM; MAP; ROC	Ulvi 1991
Upper Yukon	Charley	Charley River	2000	heli	27-30 May, 16-17 July	partial	Segments within Yukon MOAs 1, 4	0	1	1	2	LAL	Ritchie, Payer, and Shook 2000
Upper Yukon	Fortymile	Fortymile River	1994	aerial	17-18 May, 21-22 July	partial	MOA surveys	U	4	1	1	LAL	Ritchie and Rose 1994
Upper Yukon	Fortymile	Fortymile River	1995	heli	May-July	partial	Segment within Yukon MOA 3	U	1	U	U	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Fortymile	Fortymile River	1996	heli	May, 12-17 July	partial	Segment within Yukon MOA 3	U	1	1	2	LAL	Ritchie and Rose 1997
Upper Yukon	Fortymile	Fortymile River	1997	heli	May, July	partial	Segment within Yukon MOA 3	U	1	1	1	LAL	Ritchie and Rose 1998
Upper Yukon	Kandik	Kandik River	1979	boat	29 June-5 July	complete	Yukon-Alaska border to Yukon River	3	1	1	2	DES; MAP	Walker 1979
Upper Yukon	Kandik	Kandik River	1984	boat	25-29 July	complete	7 km above Indian Grave Creek to Yukon River	3	1	1	2	DES	Swem 1984
Upper Yukon	Kandik	Kandik River	1993	boat	9-16 July	complete	Big Sitdown Creek to Yukon River	6	1	1	1	RKM; MAP; ROC	Fadely and Fadely 1993
Upper Yukon	Nation	Nation River	1995	heli	May-July	partial	Segment within Yukon MOA 4	U	1	U	U	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Nation	Nation River	1997	plane	May, August	partial	Segment within Yukon MOA 4	U	1	0	0	LAL	Ritchie and Rose 1998
Upper Yukon	Porcupine	Black River	1994	plane	19 May, 23 July	partial	Segment within Yukon MOAs 4, 5	U	14	0	0	LAL	Ritchie and Rose 1994

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Porcupine	Black River	1997	plane	May, August	partial	Segment within Yukon MOAs 4, 5	U	16	3	3	LAL	Ritchie and Rose 1998
Upper Yukon	Porcupine	Porcupine River	1993	boat	14-20 July	complete	Yukon-Alaska border to 166-km downstream	4	0	0	0	RKM	Mauer 1993
Upper Yukon	Porcupine	Porcupine River	1994	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	4	0	0	0	RKM	Mauer 1994
Upper Yukon	Porcupine	Porcupine River	1995	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	2	0	0	0	None	Mauer 1995
Upper Yukon	Porcupine	Porcupine River	1996	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	1	0	0	0	None	Mauer 1996
Upper Yukon	Seventymile	Seventymile River	1996	heli	May, 12-17 July	complete	Segment within Yukon MOA 3	U	0	0	0	LAL	Ritchie and Rose 1997
Upper Yukon	Seventymile	Seventymile River	1997	heli	May, July	complete	Segment within Yukon MOA 3	U	0	0	0	LAL	Ritchie and Rose 1998
Upper Yukon	Seventymile	Seventymile River	2000	heli	27-30 May, 16-17 July	partial	Segment within Yukon MOA 3	0	1	1	1	LAL	Ritchie, Payer, and Shook 2000
Golden Eagle													
Upper Yukon	Chandalar	Chandalar River	1972	heli	June	selective	Adjacent to proposed pipeline route	U	1	U	U	LAL	Roseneau 1974
Upper Yukon	Chandalar	East Fork	1972	boat	8-12 July	complete	Little Rock Mtn to confluence with main Chandalar: 50 mi.	U	3	3	6	DES	Haugh 1972
Upper Yukon	Charley	Charley River	1980	boat	17-22 July	complete	Crescent Creek to Yukon River	U	U	U	U	DES	Ambrose 1980
Upper Yukon	Charley	Charley River	1981	boat	23 June-9 July	complete	Above Copper Creek to Yukon River	U	3	1	1	DES; MAP	Amaral 1981

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Charley	Charley River	1991	boat	7-13 July	complete	Gelvin's strip to Yukon River	1	0	0	0	RKM; MAP	Ulvi 1991
Upper Yukon	N/A	Grapefruit Rocks	1970	aerial	Unknown	selective	Survey of proposed TAPS route	U	1	1	1	DES	White and Streater 1970
Upper Yukon	N/A	Upper Yukon River	1972	heli	11-21 July	selective	TAPS route, Fairbanks to Yukon River	U	1	U	U	None	White and Ray 1972
Upper Yukon	N/A	Upper Yukon River	1974	heli	13-18 July	selective	TAPS route, Fairbanks to Yukon River	U	2	U	U	None	White et al. 1975
Upper Yukon	N/A	Upper Yukon River	1972	heli	11-21 July	selective	TAPS route crossing	U	1	U	U	None	White and Ray 1972
Upper Yukon	N/A	Upper Yukon River	1981	boat	5-12 June, 3-17 July	complete	Yukon-Alaska border to Circle	1	4	4	4	DES	Ambrose and Riddle 1982
Upper Yukon	Porcupine	Coleen River	1976	plane	30 June-2 July	complete	Entire river surveyed	U	1	1	2	DES	Haugh and Halperin 1976
Upper Yukon	Porcupine	Monument Creek	1976	plane	30 June-2 July	complete	Monument Creek only	U	1	1	1	DES	Haugh and Halperin 1976
Upper Yukon	Porcupine	Porcupine River	1979	boat	24 June-13 July	complete	Yukon-Alaska border to Yukon River	U	U	5	7	RKM, MAP	Curatolo and Ritchie 1979
Upper Yukon	Porcupine	Porcupine River	1980	boat	8-18 July	complete	Yukon-Alaska border to Yukon River	U	U	3	4	RKM, MAP	Ritchie and Curatolo 1980
Upper Yukon	Porcupine	Porcupine River	1981	boat	23-30 June, 16-19 July	complete	Yukon-Alaska border to John Herbert's Village	2	8	8	13	RKM, MAP	Ritchie and Curatolo 1981
Upper Yukon	Porcupine	Porcupine River	1982	boat	25 June-1 July, 14-18 July	complete	Yukon-Alaska border to John Herbert's Village	U	9	9	14	RKM, MAP	Ritchie 1982
Upper Yukon	Porcupine	Porcupine River	1983	boat	3-11, 17 July	complete	Yukon-Alaska border to John Herbert's Village	U	10	8	11	MAP	Ritchie 1983

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Porcupine	Porcupine River	1984	boat	9-18 July	complete	Yukon-Alaska border to Yukon River	U	U	4	4	MAP	Ritchie 1984
Upper Yukon	Porcupine	Porcupine River	1985	boat	14-19 July	complete	Yukon-Alaska border to John Herbert's Village	4	4	4	4	RKM; MAP	Ritchie 1985
Upper Yukon	Porcupine	Porcupine River	1988	boat	22-24 July	complete	Yukon-Alaska border to 153-km downstream	U	6	6	9	RKM; MAP; ROC	Mauer and Ritchie 1988
Upper Yukon	Porcupine	Porcupine River	1989	boat	13-18 July	complete	Yukon-Alaska border to 153-km downstream	U	3	3	5	RKM; MAP; ROC	Mauer and Wilbor 1989
Upper Yukon	Porcupine	Porcupine River	1990	boat	15-19 July	complete	Yukon-Alaska border to 153-km downstream	1	4	4	7	RKM; MAP; ROC	Mauer 1990
Upper Yukon	Porcupine	Porcupine River	1991	boat	22-28 May, 13-16 July	complete	Yukon-Alaska border to 166-km downstream	U	10	2	2	RKM; MAP; ROC	Mauer et al. 1991
Upper Yukon	Porcupine	Porcupine River	1992	boat	15-18 July	complete	Yukon-Alaska border to 166-km downstream	2	2	1	1	RKM; ROC; MAP	Mauer 1992
Upper Yukon	Porcupine	Porcupine River	1993	boat	14-20 July	complete	Yukon-Alaska border to 166-km downstream	1	1	1	1	RKM; ROC; MAP	Mauer 1993
Upper Yukon	Porcupine	Porcupine River	1994	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	0	1	U	U	RKM	Mauer 1994
Upper Yukon	Porcupine	Porcupine River	1995	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	U	U	1	1	RKM	Mauer 1995
Upper Yukon	Porcupine	Porcupine River	1996	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	3	9	7	9	RKM; ROC; MAP	Mauer 1996
Upper Yukon	Porcupine	Rat Creek	1981	boat	Unknown	incidental	None provided	U	U	1	1	None	Ritchie and Curatolo 1981
Upper Yukon	Tatonduk	Funnel Creek	1991	heli	28 July	complete	See map in report	1	0	0	0	RKM; DES	McIntyre 1992

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Gyr Falcon													
Upper Yukon	Birch Creek	Birch Creek	1995	heli	May-July	partial	Segment within Yukon MOA 2	0	1	U	U	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Charley	Charley River	1976	boat	17-29 July	complete	Crescent Creek to Yukon River	0	1	1	3	DES	Haugh and Halperin 1976
Upper Yukon	Charley	Charley River	1981	boat	23 June-9 July	complete	Above Copper Creek to Yukon River	1	2	2	4	DES; MAP	Amaral 1981
Upper Yukon	Charley	Charley River	1986	boat	13-24 July	complete	Gelvin's strip to Yukon River	U	1	1	2	RKM; MAP	Britten et al. 1986
Upper Yukon	Charley	Charley River	1987	boat	8-14 July	complete	Gelvin's strip to Yukon River	U	1	1	1	RKM; MAP; ROC	Ulvi 1987
Upper Yukon	Charley	Charley River	1988	boat	7-12 July	complete	Gelvin's strip to Yukon River	0	1	1	2	RKM	McIntyre 1996; Knuckles 1988
Upper Yukon	Fortymile	Fortymile River	1995	heli	May-July	partial	Segment within Yukon MOA 3	0	1	U	U	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Fortymile	Middle Fork Fortymile River	1994	boat	13-15 July	complete	Mile 0-40	0	1	U	U	RKM	Cooper 1999
Upper Yukon	Porcupine	Monument Creek	1976	plane	30 June-2 July	complete	Monument Creek only	U	1	U	U	None	Haugh and Halperin 1976
Upper Yukon	Seventymile	Seventymile River	1991	heli	31 July	partial	See map in report	0	1	1	2	RKM; ROC; DES	McIntyre 1992
Upper Yukon	Charley	Charley River	1980	boat	17-22 July	complete	Crescent Creek to Yukon River	0	1	1	2	DES	Ambrose 1980

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
						Merlin							
Upper Yukon	Charley	Charley River	1980	boat	17-22 July	complete	Crescent Creek to Yukon River	U	U	U	U	DES	Ambrose 1980
Upper Yukon	Charley	Charley River	1991	boat	7-13 July	complete	Gelvin's strip to Yukon River	0	1	1	1	RKM; MAP; ROC	Ulvi 1991
Upper Yukon	Kandik	Kandik River	1993	boat	9-16 July	complete	Big Sitdown Creek to Yukon River	0	1	U	U	RKM; MAP; ROC	Fadely and Fadely 1993
Upper Yukon	Porcupine	Porcupine River	1983	boat	3-11, 17 July	complete	Yukon-Alaska border to John Herbert's Village	U	4	4	16	RKM, MAP	Ritchie 1983
Upper Yukon	Porcupine	Porcupine River	1984	boat	9-18 July	complete	Yukon-Alaska border to Yukon River	U	1	1	2	MAP	Ritchie 1984
Upper Yukon	Porcupine	Porcupine River	1985	boat	14-19 July	complete	Yukon-Alaska border to John Herbert's Village	0	2	2	6	RKM; MAP	Ritchie 1985
Upper Yukon	Porcupine	Porcupine River	1992	boat	15-18 July	complete	Yukon-Alaska border to 166-km downstream	1	2	U	U	RKM	Mauer 1992
Upper Yukon	Porcupine	Porcupine River	1994	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	0	2	U	U	RKM	Mauer 1994
Upper Yukon	Porcupine	Porcupine River	1996	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	2	0	0	0	None	Mauer 1996
Upper Yukon	Seventymile	Diamond Fork	1991	heli	31 July	complete	See map in report	0	1	1	3	RKM; ROC; DES	McIntyre 1992
Upper Yukon	Seventymile	Seventymile River	1991	heli	31 July	partial	See map in report	0	1	1	2	RKM; ROC; DES	McIntyre 1992

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Peregrine Falcon													
Upper Yukon	Beaver Creek	Beaver Creek	1976	plane	2 Aug	complete	Entire drainage	0	0	0	0	None	Haugh and Halperin 1976
Upper Yukon	Beaver Creek	Beaver Creek	1986	boat	Unknown (June-August)	partial	Unknown section of river surveyed	1	3	U	U	None	Kuropat 1986
Upper Yukon	Beaver Creek	Beaver Creek	1994	unknown	Unknown	unknown	None provided	U	1	U	U	LAL	Fadely 1995
Upper Yukon	Birch Creek	Birch Creek	1976	plane	2 Aug	complete	Entire drainage	1	0	0	0	None	Haugh and Halperin 1976
Upper Yukon	Birch Creek	Birch Creek	1981	unknown	Unknown	unknown	None provided	0	2	U	U	None	USFWS 1997
Upper Yukon	Birch Creek	Birch Creek	1982	unknown	Unknown	unknown	None provided	0	0	0	0	None	USFWS 1997
Upper Yukon	Birch Creek	Birch Creek	1986	boat	Unknown (June-August)	unknown	Unknown section of river surveyed	U	1	U	U	None	Kuropat 1986
Upper Yukon	Birch Creek	Birch Creek	1993	heli	23 June	partial	MOA survey	0	1	1	2	ROC	McIntyre 1993
Upper Yukon	Birch Creek	Birch Creek	1994	aerial	16 May, 18 July	partial	MOA surveys	3	5	3	5	LAL	Ritchie and Rose 1994
Upper Yukon	Birch Creek	Birch Creek	1995	heli	May-July	partial	Segment within Yukon MOA 2	2	7	6	17	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Birch Creek	Birch Creek	1996	heli	26 May-2 June, 12-17 July	partial	Segment within Yukon MOA 2	2	16	10	26	MAP; ROC; LAL	Ritchie and Rose 1997
Upper Yukon	Birch Creek	Birch Creek	1997	heli	26 May-1 June, 13-17 July	partial	Segment within Yukon MOA 2	5	15	13	30	MAP; ROC; LAL	Ritchie and Rose 1998
Upper Yukon	Birch Creek	Birch Creek	1998	heli	May-August	partial	Segment within Yukon MOA 2	0	18	14	33	LAL; ROC	Ritchie and Rose 1999

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Birch Creek	Birch Creek	1999	heli	May, July	partial	Segment within Yukon MOA 2	3	19	13	32	LAL; ROC	Ritchie et al. 2000
Upper Yukon	Birch Creek	Birch Creek	2000	heli	27-30 May, 16-17 July	partial	Segment within Yukon MOA 2	1	19	6	14	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Birch Creek	Caribou Creek	1999	heli	May, July	complete	Segment within Yukon MOA 2	0	1	0	0	LAL; ROC	Ritchie et al. 2000
Upper Yukon	Birch Creek	Caribou Creek	2000	heli	27-30 May, 16-17 July	complete	Segment within Yukon MOA 2	0	1	0	0	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Birch Creek	Preacher Creek	1994	unknown	Unknown	unknown	None provided	U	1	1	3	LAL	Fadely 1995
Upper Yukon	Birch Creek	South Fork	1993	heli	22 June	complete	MOA survey	0	1	U	U	ROC	McIntyre 1993
Upper Yukon	Birch Creek	South Fork	1996	heli	26 May-2 June, 12-17 July	complete	Headwaters to Birch Creek	2	1	1	2	MAP; ROC; LAL	Ritchie and Rose 1997
Upper Yukon	Birch Creek	South Fork	1999	heli	May, July	complete	Segment within Yukon MOA 2	0	1	1	4	LAL; ROC	Ritchie et al. 2000
Upper Yukon	Birch Creek	South Fork	2000	heli	27-30 May, 16-17 July	complete	Segment within Yukon MOA 2	0	1	0	0	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Birch Creek	Windy Fork	1999	heli	May, July	complete	Segment within Yukon MOA 2	0	1	1	3	LAL; ROC	Ritchie et al. 2000
Upper Yukon	Birch Creek	Windy Fork	2000	heli	27-30 May, 16-17 July	complete	Segment within Yukon MOA 2	0	1	1	3	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Birch Creek	Yukon Fork	1993	heli	22 June	complete	MOA survey	0	1	U	U	ROC	McIntyre 1993
Upper Yukon	Birch Creek	Yukon Fork	2000	heli	27-30 May, 16-17 July	complete	Segment within Yukon MOA 2	0	1	1	2	LAL; ROC	Ritchie, Payer, and Shook 2000

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Upper Yukon	Black	Black River	1996	heli	12-17 July	partial	Segment within Yukon MOAs 4, 5	0	6	6	13	MAP; ROC; LAL	Ritchie and Rose 1997
Upper Yukon	Chandalar	Chandalar River	1972	heli	June	selective	Adjacent to proposed pipeline route	0	0	0	0	None	Roseneau 1974
Upper Yukon	Chandalar	East Fork	1972	boat	8-12 July	complete	Little Rock Mtn to confluence with main Chandalar: 50 mi. Mouth to 78-mi upriver	U	0	0	0	None	Haugh 1972
Upper Yukon	Charley	Charley River	1975	heli	Unknown	complete		2	2	1	1	DES	White and Cade 1975b
Upper Yukon	Charley	Charley River	1976	boat	17-29 July	complete	Crescent Creek to Yukon River	0	5	3	8	DES	Haugh and Halperin 1976
Upper Yukon	Charley	Charley River	1980	boat	17-22 July	complete	Crescent Creek to Yukon River	2	3	2	3	DES	Ambrose 1980
Upper Yukon	Charley	Charley River	1981	boat	23 June-9 July	complete	Above Copper Creek to Yukon River	U	4	3	8	DES; MAP	Amaral 1981
Upper Yukon	Charley	Charley River	1982	boat	Unknown	complete	Unknown section of river surveyed	2	2	1	1	None	Ulvi, unpublished data, cited in Swem 1984
Upper Yukon	Charley	Charley River	1983	boat	Unknown	complete	Unspecified section of river surveyed, but likely complete	1	3	3	7	None	Ulvi and Hunter 1983, cited in Swem 1984
Upper Yukon	Charley	Charley River	1984	boat	11-17 July	complete	Gelvin's strip to Yukon River	0	6	6	16	RKM	Swem 1984
Upper Yukon	Charley	Charley River	1985	boat	9-12 July	complete	Unknown (prob. Gelvin's to Yukon River)	0	5	5	14	RKM	Ulvi 1985
Upper Yukon	Charley	Charley River	1986	boat	13-24 July	complete	Gelvin's strip to Yukon River	0	8	8	27	RKM; MAP; DES	Britten et al. 1986
Upper Yukon	Charley	Charley River	1987	boat	8-14 July	complete	Gelvin's strip to Yukon River	U	8	7	23	RKM; MAP; ROC	Ulvi 1987

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Charley	Charley River	1988	boat	7-12 July	complete	Gelvin's strip to Yukon River	0	7	5	15	RKM	McIntyre 1996; Knuckles 1988
Upper Yukon	Charley	Charley River	1989	boat	5-13 July	complete	Copper Ck to Yukon R	2	9	9	24	RKM; ROC; MAP	Ulvi 1989
Upper Yukon	Charley	Charley River	1990	boat	24-30 July	complete	Copper Ck to Yukon River	0	10	7	17	ROC; MAP; RKM	Ambrose 1990; Ulvi 1990
Upper Yukon	Charley	Charley River	1991	boat	7-13 July	complete	Gelvin's strip to Yukon River	0	9	7	15	RKM; MAP; ROC	Ulvi 1991
Upper Yukon	Charley	Charley River	1992	boat	27 June-2 July	complete	Gelvin's strip to Yukon River	1	10	2	4	RKM; ROC; MAP	Olexa and Knuckles 1992
Upper Yukon	Charley	Charley River	1993	boat	27 May-4 June, 2-10 July	complete	Gelvin's strip to Yukon River	0	11	9	20	RKM; ROC	Fadely 1993, Knuckles et al. 1993
Upper Yukon	Charley	Charley River	1994	unknown	Unknown	complete	Unknown (prob. Gelvin's to Yukon River)	0	14	7	17	None	McIntyre 1996
Upper Yukon	Charley	Charley River	1995	unknown	Unknown	complete	Unknown (prob. Gelvin's to Yukon River)	1	13	9	24	None	McIntyre 1996
Upper Yukon	Charley	Charley River	1996	boat	17-24 July	complete	Gelvin's strip to Yukon River	1	16	14	32	MAP; ROC	McIntyre 1996
Upper Yukon	Charley	Charley River	1997	heli	26 May-1 June, 13-17 July	partial	Segment within Yukon MOA 1	2	3	2	6	MAP; ROC; LAL	Ritchie and Rose 1998
Upper Yukon	Charley	Charley River	1999	heli	May, July	partial	Segments within Yukon MOAs 1, 4	1	5	4	8	LAL; ROC	Ritchie et al. 2000
Upper Yukon	Charley	Charley River	2000	heli	27-30 May, 16-17 July	partial	Segments within Yukon MOAs 1, 4	0	6	2	6	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Charley	Charley River	2000	boat	22-29 June	complete	Gelvin's strip to Yukon River	4	8	6	17	ROC	Timm and McIntyre 2000

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Charley	Copper Creek	1991	heli	31 July	complete	See map in report	0	1	1	2	RKM; ROC; DES	McIntyre 1992
Upper Yukon	Charley	Copper Creek	1999	heli	May, July	complete	Within Yukon MOA 1	0	2	1	2	LAL; ROC	Ritchie et al. 2000
Upper Yukon	Charley	Copper Creek	2000	heli	27-30 May, 16-17 July	complete	Within Yukon MOA 1	0	3	0	0	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Charley	Crescent Creek	1984	foot	26 June-1 July	partial	Foot survey of headwaters	0	0	0	0	None	Swem 1984
Upper Yukon	Charley	Crescent Creek	2000	heli	27-30 May, 16-17 July	complete	Within Yukon MOA 1	1	0	0	0	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Charley	Godge Creek	1991	heli	31 July	selective	Aerial survey of confluence with Copper Creek	0	1	1	2	RKM; ROC; DES	McIntyre 1992
Upper Yukon	Coal Creek	Coal Creek	1999	heli	May, July	complete	Within Yukon MOA 2	0	1	0	0	LAL; ROC	Ritchie et al. 2000
Upper Yukon	Coal Creek	Coal Creek	2000	heli	27-30 May, 16-17 July	complete	Within Yukon MOA 2	0	0	0	0	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Eagle Creek	Eagle Creek	1984	foot	13, 22 August	partial	Walk to bluff 1.5 km from mouth	0	1	1	2	DES	Swem 1984
Upper Yukon	Fortymile	Fortymile River	1975	boat	10-16 July	complete	South Fork at Chicken to Fortymile to Yukon River	0	1	0	0	None	Haugh and Potter 1975
Upper Yukon	Fortymile	Fortymile River	1976	plane, boat	15 June, 17-26 June	partial	Middle Fork to North Fork to confluence with South Fork	0	0	0	0	None	Haugh and Halperin 1976
Upper Yukon	Fortymile	Fortymile River	1986	boat	Unknown (June-August)	partial	Unknown (Middle and North Forks)	1	2	U	U	None	Kuropat 1986
Upper Yukon	Fortymile	Fortymile River	1993	unknown	June-September	complete	Mile 0-44	0	1	U	U	RKM; ROC; LAL	Cooper 1999

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Upper Yukon	Fortymile	Fortymile River	1994	unknown	July-August	complete	Mile 0-44	2	2	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Fortymile River	1994	aerial	17-18 May, 21-22 July	partial	MOA surveys	0	4	2	4	LAL	Ritchie and Rose 1994
Upper Yukon	Fortymile	Fortymile River	1995	unknown	June-August	complete	Mile 0-44	5	2	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Fortymile River	1995	heli	May-July	partial	Segment within Yukon MOA 3	2	7	2	4	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Fortymile	Fortymile River	1996	unknown	May-July	complete	Mile 0-44	4	4	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Fortymile River	1996	heli	26 May-2 June, 12-17 July	partial	Segment within Yukon MOA 3	1	10	10	20	MAP; ROC; LAL	Ritchie and Rose 1997
Upper Yukon	Fortymile	Fortymile River	1997	unknown	May-September	complete	Mile 0-44	1	2	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Fortymile River	1997	heli	26 May-1 June, 13-17 July	partial	Segment within Yukon MOA 3	1	31	20	41	MAP; ROC; LAL	Ritchie and Rose 1998
Upper Yukon	Fortymile	Fortymile River	1998	unknown	June-September	complete	Mile 0-44	1	4	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Fortymile River	2000	boat	19 May-16 June, 6-25 July	complete	Floatable sections of wild and scenic river corridor (see comments)	U	20	11	16	None	Jacobs 2000
Upper Yukon	Fortymile	Joseph Creek	1994	heli	21 July	unknown	None provided	0	1	U	U	None	Cooper 1999
Upper Yukon	Fortymile	Middle Fork	1975	plane	9 July	complete	Upstream of confluence with North Fork	0	0	0	0	None	Haugh and Potter 1975
Upper Yukon	Fortymile	Middle Fork	1980	unknown	Unknown	unknown	None provided	0	U	U	U	None	Ambrose 1980

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Upper Yukon	Fortymile	Middle Fork	1993	unknown	14 July	complete	Mile 0-40	0	1	U	U	RKM; ROC	Cooper 1999
Upper Yukon	Fortymile	Middle Fork	1993	heli	24 June	complete	MOA survey; Molly Creek to North Fork	0	4	U	U	ROC	McIntyre 1993
Upper Yukon	Fortymile	Middle Fork	1994	boat	13-15 July	complete	Mile 0-40	0	3	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Middle Fork	1995	unknown	June-August	complete	Mile 0-40	2	5	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Middle Fork	1996	unknown	11 July	complete	Mile 0-40	2	5	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Middle Fork	1997	unknown	June-August	complete	Mile 0-40	4	7	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Mosquito Fork	1994	heli	21 July	unknown	None provided	0	1	U	U	RKM; ROC	Cooper 1999
Upper Yukon	Fortymile	North Fork	1975	plane	9 July	partial	Upstream of confluence with Middle Fork	0	0	0	0	None	Haugh and Potter 1975
Upper Yukon	Fortymile	North Fork	1992	unknown	21 July	complete	None provided	0	1	U	U	RKM; ROC	Cooper 1999
Upper Yukon	Fortymile	North Fork	1994	unknown	16-18 July	complete	Mile 25-54	0	5	3	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	North Fork	1995	unknown	June-August	complete	Mile 25-54	5	3	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	North Fork	1996	unknown	12-13 July	complete	Mile 25-54	1	2	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	North Fork	1997	unknown	June-August	complete	Mile 25-54	5	3	U	U	RKM; ROC; LAL	Cooper 1999

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Upper Yukon	Fortymile	North Fork	1998	unknown	12-13 July	complete	Mile 25-54	2	0	0	0	RKM; ROC	Cooper 1999
Upper Yukon	Fortymile	South Fork	1975	boat	July	partial	South Fork and Fortymile to Yukon River	U	1	0	0	None	Fyfe et al. 1976
Upper Yukon	Fortymile	South Fork	1994	unknown	3 August	complete	Approx. Mile 7-26	2	1	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	South Fork	1995	unknown	June-August	complete	Approx. Mile 7-26, based on recorded sightings	3	3	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	South Fork	1996	unknown	May-September	complete	Approx. Mile 7-26, based on recorded sightings	4	2	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	South Fork	1997	unknown	May-September	complete	Approx. Mile 7-26, based on recorded sightings	4	1	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	South Fork	1998	unknown	June-August	complete	Approx. Mile 7-26, based on recorded sightings	4	1	U	U	RKM; ROC; LAL	Cooper 1999
Upper Yukon	Fortymile	Walker Fork	1993	unknown	4 August	unknown	None provided	0	1	U	0	RKM; ROC	Cooper 1999
Upper Yukon	Kandik	Kandik River	1979	boat	29 June-5 July	complete	Yukon-Alaska border to Yukon River	0	1	U	U	TWR; MAP	Walker 1979
Upper Yukon	Kandik	Kandik River	1984	boat	25-29 July	complete	7 km above Indian Grave Creek to Yukon River	0	3	2	3	DES	Swem 1984
Upper Yukon	Kandik	Kandik River	1985	boat	12-17 July	complete	3 mi. below Indian Grave Creek to Yukon river	0	5	5	14	TWR; RKM	McIntyre and Ratcliffe 1995
Upper Yukon	Kandik	Kandik River	1987	boat	30 July-6 August	complete	5-mi downstream of Indian Grave Creek to Yukon River	2	1	U	U	MAP; ROC	Lettenberger 1987
Upper Yukon	Kandik	Kandik River	1989	boat	31 July-4 August	complete	Km 94.3 to Yukon River	U	4	3	4	RKM; ROC	Ulvi 1989

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Upper Yukon	Kandik	Kandik River	1991	boat	18-23 July	complete	Big Sitdown Creek to Easy Moose Creek	3	8	4	8	RKM; ROC; MAP	McIntyre 1992
Upper Yukon	Kandik	Kandik River	1993	boat	9-16 July	complete	Big Sitdown Creek to Yukon River	1	5	4	11	RKM; MAP; ROC	Fadely and Fadely 1993
Upper Yukon	Kandik	Kandik River	1995	heli	May-July	complete	Segment within Yukon MOA 4	1	1	1	3	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Mission Creek	Mission Creek	1994	heli	21 July	unknown	None provided	0	1	1	U	RKM; ROC	Cooper 1999
Upper Yukon	Mission Creek	Mission Creek	1996	boat	26 May-2 June, 12-17 July	complete	Yukon MOA3 survey	1	0	0	0	LAL; ROC	Ritchie and Rose 1997
Upper Yukon	Mission Creek	Mission Creek	1997	boat	26 May-1 June, 13-17 July	complete	Yukon MOA3 survey	0	0	0	0	LAL; ROC	Ritchie and Rose 1998
Upper Yukon	N/A	Grapefruit Rocks	1970	aerial	Unknown	selective	Survey of proposed TAPS route	U	0	0	0	None	White and Streater 1970
Upper Yukon	N/A	Grapefruit Rocks	1979	foot	20 July	selective	39 mi, Elliot Highway	U	1	1	3	CLF, MAP	Roseneau and Bente 1980
Upper Yukon	N/A	Grapefruit Rocks	1980	foot	8 June, 23 July	selective	39 mi, Elliot Highway	U	1	1	3	CLF, MAP	Roseneau and Bente 1980
Upper Yukon	N/A	Upper Yukon River	1951	unknown	July	complete	Fortymile to Circle	U	19	12	20	CLF	White and Cade 1975b, Cade et al. 1968
Upper Yukon	N/A	Upper Yukon River	1966	unknown	Unknown	complete	Pedro Dome to Circle	U	17	14	30	CLF	Cade, White, and Haugh 1968
Upper Yukon	N/A	Upper Yukon River	1968	unknown	Unknown	complete	Eagle to Circle	U	17	9	16	CLF	White and Cade 1975b
Upper Yukon	N/A	Upper Yukon River	1970	unknown	Unknown	complete	Fortymile to Circle	U	U	7	18	CLF	White and Cade 1975b

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Upper Yukon	N/A	Upper Yukon River	1971	unknown	Unknown	complete	Fortymile to Circle	U	U	9	15	CLF	White and Cade 1975b
Upper Yukon	N/A	Upper Yukon River	1972	heli	11-21 July	selective	TAPS route crossing	U	2	U	U	None	White and Ray 1972
Upper Yukon	N/A	Upper Yukon River	1973	boat	June, July	complete	Eagle to Circle	0	10	6	16	DES	Ritchie and Ambrose 1975
Upper Yukon	N/A	Upper Yukon River	1974	heli	13-18 July	selective	TAPS route crossing	U	2	U	U	None	White et al. 1975
Upper Yukon	N/A	Upper Yukon River	1975	boat	16-22 July, 12-19 August	complete	Eagle to Circle	1	10	8	14	DES	Ritchie and Ambrose 1975
Upper Yukon	N/A	Upper Yukon River	1975	aerial	8-10 July	complete	Fortymile to Circle	U	U	10	16	DES	White and Cade 1975b
Upper Yukon	N/A	Upper Yukon River	1977	boat	20 May-30 July	complete	Eagle to Circle	3	11	8	21	RKM; DES	Ambrose and Curatolo 1977
Upper Yukon	N/A	Upper Yukon River	1978	boat	May-August	complete	Yukon-Alaska border to Circle	3	16	14	28	RKM, DES	Curatolo and Ambrose 1978
Upper Yukon	N/A	Upper Yukon River	1979	boat	June, July	complete	Yukon-Alaska border to Circle	0	19	15	41	RKM; DES	Ambrose 1979
Upper Yukon	N/A	Upper Yukon River	1980	boat	25-30 May, 3-8 June, 9-16 July	complete	Yukon-Alaska border to Circle	3	17	16	44	RKM	Ambrose 1980
Upper Yukon	N/A	Upper Yukon River	1981	boat	5-12 June, 3-17 July	complete	Yukon-Alaska border to Circle	2	18	17	54	CLF; DES	Ambrose and Riddle 1982
Upper Yukon	N/A	Upper Yukon River	1981	boat	2-6 June, 1-5 July	selective	Yukon River crossing of NWA pipeline route	U	2	1	4	DES	Ritchie and Curatolo 1981
Upper Yukon	N/A	Upper Yukon River	1982	boat	Unknown	complete	Yukon-Alaska border to Circle	2	23	16	40	None	Ambrose 1995

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Upper Yukon	N/A	Upper Yukon River	1983	boat	June, July, September	complete	Yukon-Alaska border to Circle	2	27	21	56	RKM; DES	Ambrose, Schempf, and Hunter 1983
Upper Yukon	N/A	Upper Yukon River	1984	boat	Unknown	complete	Yukon-Alaska border to Circle	2	25	21	48	None	Ambrose 1995
Upper Yukon	N/A	Upper Yukon River	1985	boat	Unknown	complete	Yukon-Alaska border to Circle	2	25	16	40	None	Ambrose 1995
Upper Yukon	N/A	Upper Yukon River	1986	boat	Unknown	complete	Yukon-Alaska border to Circle	0	27	18	48	None	Ambrose 1995
Upper Yukon	N/A	Upper Yukon River	1987	boat	Unknown	complete	Yukon-Alaska border to Circle	2	31	25	61	None	Ambrose 1995
Upper Yukon	N/A	Upper Yukon River	1987	boat	16-18 July	partial	Eagle to 70 km downstream of Eagle	U	4	3	8	RKM; MAP; ROC	Ulvi 1987
Upper Yukon	N/A	Upper Yukon River	1988	boat	Unknown	complete	Yukon-Alaska border to Circle	1	33	24	57	None	Ambrose 1995
Upper Yukon	N/A	Upper Yukon River	1989	boat	Unknown	complete	Yukon-Alaska border to Circle	2	33	23	54	ROC	Ambrose 1989
Upper Yukon	N/A	Upper Yukon River	1990	boat	Unknown	complete	Yukon-Alaska border to Circle	1	35	28	29	ROC	Ambrose 1990
Upper Yukon	N/A	Upper Yukon River	1991	boat	Unknown	complete	Yukon-Alaska border to Circle	1	34	26	55	None	Ambrose 1995
Upper Yukon	N/A	Upper Yukon River	1991	heli	29 July	selective	"3M S Montauk Bluff, SW Yukon"	0	1	1	2	RKM; ROC; DES	McIntyre 1992
Upper Yukon	N/A	Upper Yukon River	1992	boat	Unknown	complete	Yukon-Alaska border to Circle	5	35	18	41	None	Ambrose 1995
Upper Yukon	N/A	Upper Yukon River	1993	boat	Unknown	complete	Yukon-Alaska border to Circle	1	40	30	80	None	Ambrose 1995

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Upper Yukon	N/A	Upper Yukon River	1994	boat	Unknown	complete	Yukon-Alaska border to Circle	1	42	24	55	None	Ambrose 1995
Upper Yukon	N/A	Upper Yukon River	1995	boat	25 May-10 June, 1-18 July, 26, 29 July	complete	Yukon-Alaska border to Circle	3	43	30	71	ROC; MAP	Ambrose 1995
Upper Yukon	N/A	Upper Yukon River	1996	boat	May-July	complete	Yukon-Alaska border to Circle	4	41	26	66	None	Ambrose 1998
Upper Yukon	N/A	Upper Yukon River	1997	boat	May-July	complete	Yukon-Alaska border to Circle	3	44	27	60	None	Ambrose 1998
Upper Yukon	N/A	Upper Yukon River	1998	boat	May-July	complete	Yukon-Alaska border to Circle	1	45	34	75	RKM; ROC; MAP	Ambrose 1998
Upper Yukon	N/A	Upper Yukon River	1998	heli	May-August	selective	Within Yukon MOA 2	0	1	0	0	LAL; ROC	Ritchie and Rose 1999
Upper Yukon	N/A	Upper Yukon River	1999	boat	May-July	complete	Yukon-Alaska border to Circle	9	44	29	66	None	Ambrose pers. Commun.
Upper Yukon	N/A	Upper Yukon River	2000	boat	May-July	complete	Yukon-Alaska border to Circle	8	45	17	35	None	Ambrose pers. Commun.
Upper Yukon	N/A	Upper Yukon River	2000	heli	27-30 May, 16-17 July	selective	Within Yukon MOA 2	0	1	1	1	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Nation	Cathedral Creek	1991	heli	28 July	complete	See map in report	0	2	2	6	RKM; ROC; DES	McIntyre 1992
Upper Yukon	Nation	Hard Luck Creek	1984	heli	21 August	complete	Yukon-Alaska border to Nation River	3	0	0	0	None	Swem 1984
Upper Yukon	Nation	Hard Luck Creek	1991	heli	28 July	complete	See map in report	0	2	1	3	RKM; ROC; DES	McIntyre 1992
Upper Yukon	Nation	Nation River	1984	boat	4-5 August	partial	Preserve boundary to Yukon River	0	0	0	0	None	Swem 1984

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Nation	Nation River	1995	heli	May-July	partial	Segment within Yukon MOA 4	2	1	1	2	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Nation	Nation River	1997	plane	May, August	partial	Segment within Yukon MOA 4	0	0	0	0	None	Ritchie and Rose 1998
Upper Yukon	Nation	Waterfall Creek	1991	heli	30 July	partial	See map in report	0	1	1	2	RKM; ROC; DES	McIntyre 1992
Upper Yukon	Porcupine	Black River	1976	plane	30 June-2 July	complete	Black River and Tributaries	0	0	0	0	None	Haugh and Halperin 1976
Upper Yukon	Porcupine	Black River	1994	plane	19 May, 23 July	partial	Segment within Yukon MOAs 4, 5	1	6	6	13	LAL	Ritchie and Rose 1994
Upper Yukon	Porcupine	Black River	1997	plane	May, August	partial	Segment within Yukon MOAs 4, 5	0	0	0	0	None	Ritchie and Rose 1998
Upper Yukon	Porcupine	Christian River	1976	plane	30 June-2 July	complete	Entire river surveyed	0	0	0	0	None	Haugh and Halperin 1976
Upper Yukon	Porcupine	Coleen River	1976	plane	30 June-2 July	complete	Entire river surveyed	0	0	0	0	None	Haugh and Halperin 1976
Upper Yukon	Porcupine	Monument Creek	1976	plane	30 June-2 July	complete	Monument Creek only	U	1	U	U	None	Haugh and Halperin 1976
Upper Yukon	Porcupine	Porcupine River	1979	boat	24 June-13 July	complete	Yukon-Alaska border to Yukon River	4	9	7	19	RKM, MAP	Curatolo and Ritchie 1979
Upper Yukon	Porcupine	Porcupine River	1980	boat	8-18 July	complete	Yukon-Alaska border to Yukon River	4	9	6	13	RKM, MAP	Ritchie and Curatolo 1980
Upper Yukon	Porcupine	Porcupine River	1981	boat	23-30 June, 16-19 July	complete	Yukon-Alaska border to John Herbert's Village	1	11	10	23	RKM, MAP	Ritchie and Curatolo 1981
Upper Yukon	Porcupine	Porcupine River	1982	boat	25 June-1 July, 14-18 July	complete	Yukon-Alaska border to John Herbert's Village	1	14	12	30	RKM, MAP	Ritchie 1982

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Porcupine	Porcupine River	1983	boat	3-11, 17 July	complete	Yukon-Alaska border to John Herbert's Village	2	11	7	15	RKM, MAP	Ritchie 1983
Upper Yukon	Porcupine	Porcupine River	1984	boat	9-18 July	complete	Yukon-Alaska border to Yukon River	U	13	9	22	RKM, MAP	Ritchie 1984
Upper Yukon	Porcupine	Porcupine River	1985	boat	14-19 July	complete	Yukon-Alaska border to John Herbert's Village	0	14	11	24	RKM; MAP	Ritchie 1985
Upper Yukon	Porcupine	Porcupine River	1986	boat	16-21 July	complete	Yukon-Alaska border to John Herbert's Village	0	13	9	21	RKM	Ritchie 1986
Upper Yukon	Porcupine	Porcupine River	1987	boat	Unknown	complete	Yukon-Alaska border to John Herbert's Village	1	15	12	29	None	USFWS 1997
Upper Yukon	Porcupine	Porcupine River	1988	boat	22-24 July	complete	Yukon-Alaska border to 153-km downstream	1	16	14	39	RKM; MAP; ROC	Mauer and Ritchie 1988
Upper Yukon	Porcupine	Porcupine River	1989	boat	13-18 July	complete	Yukon-Alaska border to 153-km downstream	1	16	8	18	RKM; MAP; ROC	Mauer and Wilbor 1989
Upper Yukon	Porcupine	Porcupine River	1990	boat	15-19 July	complete	Yukon-Alaska border to 153-km downstream	3	16	14	32	RKM; MAP; ROC	Mauer 1990
Upper Yukon	Porcupine	Porcupine River	1991	boat	22-28 May, 13-16 July	complete	Yukon-Alaska border to 166-km downstream	2	26	19	46	RKM; MAP; ROC	Mauer et al. 1991
Upper Yukon	Porcupine	Porcupine River	1992	boat	15-18 July	complete	Yukon-Alaska border to 166-km downstream	8	17	5	14	RKM; ROC; MAP	Mauer 1992
Upper Yukon	Porcupine	Porcupine River	1993	boat	14-20 July	complete	Yukon-Alaska border to 166-km downstream	1	33	22	51	RKM; ROC; MAP	Mauer 1993
Upper Yukon	Porcupine	Porcupine River	1994	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	6	27	21	49	RKM; ROC; MAP	Mauer 1994
Upper Yukon	Porcupine	Porcupine River	1995	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	4	30	24	55	RKM; ROC; MAP	Mauer 1995

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Porcupine	Porcupine River	1996	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	0	31	20	45	RKM; ROC; MAP	Mauer 1996
Upper Yukon	Porcupine	Porcupine River	1997	boat	July	complete	Yukon-Alaska border to 166-km downstream	6	26	22	50	RKM	Mauer 2000
Upper Yukon	Porcupine	Porcupine River	1998	boat	July	complete	Yukon-Alaska border to 166-km downstream	2	28	24	55	RKM	Mauer 2000
Upper Yukon	Porcupine	Porcupine River	1999	boat	July	complete	Yukon-Alaska border to 166-km downstream	5	31	25	63	RKM	Mauer 2000
Upper Yukon	Porcupine	Porcupine River	2000	boat	July	complete	Yukon-Alaska border to 166-km downstream	6	28	19	34	RKM	Mauer 2000
Upper Yukon	Porcupine	Salmon Fork Black River	1984	boat	3-8 July	complete	Yukon-Alaska border to Chalkyitsik	0	3	3	8	DES, MAP	Ritchie 1984
Upper Yukon	Porcupine	Salmon Fork Black River	1994	unknown	Unknown	unknown	None provided	U	1	U	U	LAL	Fadely 1995
Upper Yukon	Rock Creek	Rock Creek	1984	heli	21 August	complete	Headwaters to Yukon River	0	0	0	0	None	Swem 1984
Upper Yukon	Schley Creek	Schley Creek	1991	heli	29 July	partial	See map in report	0	1	1	3	RKM; ROC; DES	McIntyre 1992
Upper Yukon	Seventymile	Diamond Fork Seventymile River	1991	heli	31 July	complete	See map in report	0	0	0	0	None	McIntyre 1992
Upper Yukon	Seventymile	Seventymile River	1984	heli	21 August	complete	Headwaters to Phoenix Creek	0	1	1	1	DES	Swem 1984
Upper Yukon	Seventymile	Seventymile River	1991	heli	31 July	partial	See map in report	0	0	0	0	None	McIntyre 1992
Upper Yukon	Seventymile	Seventymile River	1994	heli	20 July	complete	MOA surveys	1	6	3	4	LAL	Ritchie and Rose 1994

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Seventymile	Seventymile River	1995	heli	May-July	complete	Segment within Yukon MOA 3	1	10	6	17	LAL; ROC	Ritchie, Murphy, and Smith 1998
Upper Yukon	Seventymile	Seventymile River	1996	heli	26 May-2 June, 12-17 July	complete	Segment within Yukon MOA 3	2	10	10	22	MAP; ROC; LAL	Ritchie and Rose 1997
Upper Yukon	Seventymile	Seventymile River	1997	heli	26 May-1 June, 13-17 July	complete	Segment within Yukon MOA 3	3	10	7	15	MAP; ROC; LAL	Ritchie and Rose 1998
Upper Yukon	Seventymile	Seventymile River	2000	heli	27-30 May, 16-17 July	partial	Segment within Yukon MOA 3	0	3	0	0	LAL; ROC	Ritchie, Payer, and Shook 2000
Upper Yukon	Tatonduk	Funnel Creek	1991	heli	28 July	complete	See map in report	0	0	0	0	None	McIntyre 1992
Upper Yukon	Tatonduk	Tatonduk River	1984	boat	2-3 August	complete	Yukon-Alaska border to Yukon River	0	1	1	2	DES	Swem 1984
Upper Yukon	Tatonduk	Tatonduk River	1985	boat	30 July-3 August	complete	Yukon-Alaska border to Yukon River	0	1	1	3	RKM	Ulvi 1985
Upper Yukon	Woodchopper Creek	Woodchopper Creek	1998	heli	May-August	complete	Within Yukon MOA 2	0	1	1	1	LAL; ROC	Ritchie and Rose 1999
Upper Yukon	Woodchopper Creek	Woodchopper Creek	1999	heli	May, July	complete	Within Yukon MOA 2	0	1	1	3	LAL; ROC	Ritchie et al. 2000
Upper Yukon	Woodchopper Creek	Woodchopper Creek	2000	heli	27-30 May, 16-17 July	complete	Within Yukon MOA 2	0	1	1	2	LAL; ROC	Ritchie, Payer, and Shook 2000
Rough-legged Hawk													
Upper Yukon	Charley	Crescent Creek	1984	foot	26 June-1 July	partial	Foot survey of headwaters	1	0	0	0	None	Swem 1984

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Red-tailed Hawk													
Upper Yukon	Beaver Creek	Beaver Creek	1986	boat	Unknown (June-August)	partial	Unknown section of river surveyed	U	3	U	5	None	Kuopat 1986
Upper Yukon	Charley	Charley River	1975	unknown	9 July	complete	Mouth to 78-mi upriver	U	1	U	U	None	White and Cade 1975b
Upper Yukon	Charley	Charley River	1976	boat	17-29 July	complete	Crescent Creek to Yukon River	0	4	U	U	DES	Haugh and Halperin 1976
Upper Yukon	Charley	Charley River	1984	boat	11-17 July	complete	Gelvin's strip to Yukon River	8	2	2	2	RKM	Swem 1984
Upper Yukon	Charley	Charley River	1990	boat	24-30 July	complete	Gelvin's strip to Yukon River	0	2	1	2	RKM; MAP; ROC	Ulvi 1990
Upper Yukon	Charley	Charley River	1991	boat	7-13 July	complete	Gelvin's strip to Yukon River	4	3	1	2	RKM; MAP; ROC	Ulvi 1991
Upper Yukon	Fortymile	Fortymile River	1986	boat	Unknown (June-August)	partial	Unknown (Middle and North Forks)	0	3	U	U	None	Kuopat 1986
Upper Yukon	Kandik	Kandik River	1979	boat	29 June-5 July	complete	Yukon-Alaska border to Yukon River	7	6	U	U	None	Walker 1979
Upper Yukon	Kandik	Kandik River	1984	boat	25-29 July	complete	7 km above Indian Grave Creek to Yukon River	2	1	1	2	DES	Swem 1984
Upper Yukon	Kandik	Kandik River	1993	boat	9-16 July	complete	Big Sitdown Creek to Yukon River	4	1	U	U	RKM; MAP; ROC	Fadely and Fadely 1993
Upper Yukon	Nation	Nation River	1984	boat	4-5 August	partial	Preserve boundary to Yukon River	2	0	0	0	None	Swem 1984
Upper Yukon	Porcupine	Porcupine River	1981	boat	23-30 June, 16-19 July	complete	Yukon-Alaska border to John Herbert's Village	U	4	1	1	RKM, MAP	Ritchie and Curatolo 1981
Upper Yukon	Porcupine	Porcupine River	1982	boat	25 June-1 July, 14-18 July	complete	Yukon-Alaska border to John Herbert's Village	1	4	1	1	RKM, MAP	Ritchie 1982

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Upper Yukon	Porcupine	Porcupine River	1985	boat	14-19 July	complete	Yukon-Alaska border to John Herbert's Village	2	2	1	2	RKM; MAP	Ritchie 1985
Upper Yukon	Porcupine	Porcupine River	1988	boat	22-24 July	complete	Yukon-Alaska border to 153-km downstream	U	1	1	1	RKM; ROC	Mauer and Ritchie 1988
Upper Yukon	Porcupine	Porcupine River	1993	boat	14-20 July	complete	Yukon-Alaska border to 166-km downstream	2	1	U	U	RKM	Mauer 1993
Upper Yukon	Porcupine	Porcupine River	1994	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	2	1	1	1	RKM	Mauer 1994
Upper Yukon	Porcupine	Porcupine River	1995	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	6	0	0	0	None	Mauer 1995
Upper Yukon	Porcupine	Porcupine River	1996	boat	13-19 July	complete	Yukon-Alaska border to 166-km downstream	2	1	1	1	RKM	Mauer 1996

Appendix E. Details and results of raptor surveys in the Lower Yukon region.

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
American Kestrel													
Lower Yukon	Koyukuk	Alatna River	1991	boat	23-30 July	partial	Arrigetch Creek to Helpmejack Creek	0	1	U	U	ROC; MAP	Swanson 1991
Lower Yukon	Koyukuk	Kanutu River	1998	boat	7-8 July	partial	Kanutu River Canyon, Ahagatyeelt Lake to refuge boundary	2	0	0	0	None	Maxwell 1998
Middle Yukon	N/A	Middle Yukon River	1983	boat	3-5 June, 3-8 July	complete	Stevens Village to Tanana	0	1	U	U	RKM	Bente et al. 1983
Bald Eagle													
Lower Yukon	Anvik	Anvik River	1977	boat, plane	15 June, 27-30 June	complete	97 km surveyed	0	1	U	U	TWR	White and Boyce 1978
Lower Yukon	Koyukuk	Kanutu River	1994	boat	June	partial	Kanutu River Canyon, Ahagatyeelt Lake to refuge boundary	1	0	0	0	None	Maxwell 1998
Lower Yukon	N/A	Lower Yukon River	1981	boat	1-14 June, 1-20 July	complete	Ruby to St. Marys	1	1	U	U	DES	Mindell and Craighead 1981
Lower Yukon	N/A	Lower Yukon River	1983	boat	6-15 June, 9-27 July	complete	Ruby to St. Marys	5	0	0	0	RKM	Bente et al. 1983
Lower Yukon	Nowitna	Nowitna River	1979	heli	30 July	partial	Susulatna River to Grand Ck	1	0	0	0	None	Mindell and Dotson 1980
Middle Yukon	N/A	Middle Yukon River	1981	boat	1-14 June, 1-20 July	complete	Stevens Village to Tanana	1	0	0	0	None	Mindell and Craighead 1981
Middle Yukon	N/A	Middle Yukon River	1983	boat	3-5 June, 3-8 July	complete	Stevens Village to Tanana	1	0	0	0	RKM	Bente et al. 1983

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Golden Eagle													
Lower Yukon	Andreafsky	Andreafsky River	1977	plane	15 June	complete	109 km surveyed	0	2	2	3	TWR	White and Boyce 1978
Lower Yukon	Anvik	Anvik River	1977	boat, plane	15 June, 27-30 June	complete	97 km surveyed	0	1	U	U	TWR	White and Boyce 1978
Lower Yukon	Anvik	Otter Creek	1979	boat	18-19 July	partial	63°16'20"N, 160°56'40"W to 18km downstream (18 of 48 km)	1	0	0	0	TWR	Mindell and Dotson 1980
Lower Yukon	Hess Creek	Hess Creek	1970	aerial	Unknown	selective	Survey of proposed TAPS route	U	1	1	1	DES	White and Streater 1970
Lower Yukon	Koyukuk	Dietrich River	1970	aerial	Unknown	selective	Survey of proposed TAPS route	U	4	4	6	DES	White and Streater 1970
Lower Yukon	Koyukuk	Kateel River	1977	plane	20 July	complete	Arvesta Creek to Koyukuk River	0	1	1	2	TWR	White and Boyce 1978
Lower Yukon	N/A	Lower Yukon River	1981	boat	1-14 June, 1-20 July	complete	Ruby to St. Marys	1	0	0	0	None	Mindell and Craighead 1981
Lower Yukon	N/A	Lower Yukon River	1983	boat	6-15 June, 9-27 July	complete	Ruby to St. Marys	2	1	1	1	RKM	Bente et al. 1983
Lower Yukon River	N/A	TAPS corridor	1972	heli	11-21 July	selective	TAPS route, Yukon River to Coldfoot	U	2	U	U	None	White and Ray 1972
Lower Yukon River	N/A	TAPS corridor	1972	heli	11-21 July	selective	TAPS route, Coldfoot to Atigun Pass	U	11	U	U	None	White and Ray 1972
Lower Yukon River	N/A	TAPS corridor	1974	heli	13-18 July	selective	TAPS route, Yukon River to Coldfoot	U	1	U	U	None	White et al. 1975
Lower Yukon River	N/A	TAPS corridor	1974	heli	13-18 July	selective	TAPS route, Coldfoot to Atigun Pass	U	5	U	U	None	White et al. 1975

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Middle Yukon	N/A	Middle Yukon River	1983	boat	3-5 June, 3-8 July	complete	Stevens Village to Tanana	1	0	0	0	RKM	Bente et al. 1983
Gyr Falcon													
Lower Yukon	Andreafsky	Andreafsky River	1977	plane	15 June	complete	109 km surveyed	1	0	0	0	None	White and Boyce 1978
Lower Yukon	Andreafsky	East Fork	1977	plane	15 June	complete	161 km surveyed	0	2	2	6	TWR	White and Boyce 1978
Lower Yukon	Anvik	Anvik River	1977	boat, plane	15 June, 27-30 June	complete	97 km surveyed	0	1	1	4	TWR	White and Boyce 1978
Lower Yukon	N/A	Lower Yukon River	1972	heli	11-21 July	selective	TAPS route, Yukon River to Coldfoot	U	1	U	U	None	White and Ray 1972
Lower Yukon	N/A	Lower Yukon River	1972	heli	11-21 July	selective	TAPS route, Coldfoot to Atigun Pass	U	2	U	U	None	White and Ray 1972
Lower Yukon	N/A	Lower Yukon River	1974	heli	13-18 July	selective	TAPS route, Coldfoot to Atigun Pass	U	2	U	U	None	White et al. 1975
Lower Yukon	N/A	Lower Yukon River	1974	heli	13-18 July	selective	TAPS route, Yukon River to Coldfoot	U	2	U	U	None	White et al. 1975
Merlin													
Lower Yukon	Anvik	Anvik River	1977	boat, plane	15 June, 27-30 June	complete	97 km surveyed	0	1	1	4	TWR	White and Boyce 1978
Lower Yukon	Koyukuk	Kanuti River	1998	boat	7-8 July	partial	Kanuti River Canyon, Ahagatyeilt Lake to refuge boundary	1	0	0	0	None	Maxwell 1998
Lower Yukon	N/A	Lower Yukon River	1983	boat	6-15 June, 9-27 July	complete	Ruby to St. Marys	0	1	1	2	RKM	Bente et al. 1983

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Peregrine Falcon													
Lower Yukon	Andreafsky	Andreafsky River	1977	plane	15 June	complete	109 km surveyed	0	0	0	0	None	White and Boyce 1978
Lower Yukon	Andreafsky	East Fork	1977	plane	15 June	complete	161 km surveyed	0	0	0	0	None	White and Boyce 1978
Lower Yukon	Anvik	Anvik River	1977	boat, plane	15 June, 27-30 June	complete	97 km surveyed	0	0	0	0	None	White and Boyce 1978
Lower Yukon	Anvik	Canyon Creek	1979	boat	19 July	partial	Canyon Creek: 63°15'00"N, 160°36'40"W to 7.5 km downstream	0	0	0	0	None	Mindell and Dotson 1980
Lower Yukon	Anvik	Otter Creek	1979	boat	18-19 July	partial	63°16'20"N, 160°56'40"W to 18km downstream (18 of 48 km)	0	0	0	0	None	Mindell and Dotson 1980
Lower Yukon	Bonasila	Bonasila River	1977	plane	15 June	complete	51 km surveyed	0	0	0	0	TWR	White and Boyce 1978
Lower Yukon	Bonasila	Stuyahok River	1980	boat	8-12 June	complete	Stuyahok River: 62°06'01"N, 160°46'24"W to 87km downstream	0	0	0	0	None	Mindell and Dotson 1980
Lower Yukon	Hess Creek	Hess Creek	1970	aerial	Unknown	selective	Survey of proposed TAPS route	U	0	0	0	None	White and Streater 1970
Lower Yukon	Koyukuk	Alatna River	1991	boat	23-30 July	partial	Arrigetch Creek to Helpmejack Creek	0	1	1	1	ROC; MAP	Swanson 1991
Lower Yukon	Koyukuk	Dietrich River	1970	aerial	Unknown	selective	Survey of proposed TAPS route	0	0	0	0	None	White and Streater 1970
Lower Yukon	Koyukuk	Gisasa River	1977	plane	20 July	complete	Koyukuk River to 93 km upstream	0	0	0	0	None	White and Boyce 1978
Lower Yukon	Koyukuk	John River	1989	unknown	24 July	unknown	None provided	0	1	1	3	DES; MAP	Britten 1989

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Lower Yukon	Koyukuk	Kanuti River	1994	boat	June	partial	Kanuti River Canyon, Ahagateyelt Lake to refuge boundary	1	0	0	0	None	Maxwell 1998
Lower Yukon	Koyukuk	Kanuti River	1998	boat	7-8 July	partial	Kanuti River Canyon, Ahagateyelt Lake to refuge boundary	1	0	0	0	None	Maxwell 1998
Lower Yukon	Koyukuk	Kateel River	1977	plane	20 July	complete	Arvesta Creek to Koyukuk River	0	0	0	0	None	White and Boyce 1978
Lower Yukon	Koyukuk	Koyukuk River	1987	boat	5-7 July	partial	"Ella's Cabin" to Batza Slough	0	5	2	5	MAP; ROC	Osborne 1987a,b
Lower Yukon	Koyukuk	Koyukuk River	1988	boat	3 July	partial	Lower 35 miles of Koyukuk River	U	2	2	6	ROC; MAP	Osborne 1988
Lower Yukon	Koyukuk	Koyukuk River	1989	plane, boat	July, August	partial	"Ella's Cabin" to Batza Slough	U	3	2	5	ROC	Osborne 1989
Lower Yukon	Koyukuk	Middle Fork	1991	boat	25-27 June	partial	Primarily within Preserve boundaries	0	1	U	U	ROC; MAP	Swanson 1991
Lower Yukon	Melozitna	Melozitna River	1986	aerial	Unknown	unknown	None provided	0	1	U	U	None	USFWS 1997
Lower Yukon	N/A	Lower Yukon River	1977	unknown	Unknown	incidental	Tanana to St. Marys	2	5	U	U	None	Frazier pers. Commun.
Lower Yukon	N/A	Lower Yukon River	1978	boat	29 May-2 June, 3-8 August	complete	Tanana to St. Marys	9	20	16	27	CLF, MAP	Springer et al. 1979a, b
Lower Yukon	N/A	Lower Yukon River	1979	boat	13-24 June, 11-24 July	complete	Tanana to St. Marys	8	23	17	39	CLF, MAP	Springer et al. 1979b
Lower Yukon	N/A	Lower Yukon River	1980	boat	8-21 June, 4-21 July	complete	Ruby to St. Marys	7	32	27	69	CLF, MAP	Roseneau et al. 1980

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Lower Yukon	N/A	Lower Yukon River	1981	boat	1-14 June, 1-20 July	complete	Ruby to St. Marys	9	34	24	68	CLF	Mindell and Craighead 1981
Lower Yukon	N/A	Lower Yukon River	1982	boat	Unknown	complete	Ruby to St. Marys	11	30	19	48	None	USFWS 1997
Lower Yukon	N/A	Lower Yukon River	1983	boat	6-15 June, 9-27 July	complete	Ruby to St. Marys	10	41	33	76	RKM	Bente et al. 1983
Lower Yukon	N/A	Lower Yukon River	1984	boat	Unknown	complete	Ruby to St. Marys	5	40	35	85	None	USFWS 1997
Lower Yukon	N/A	Lower Yukon River	1985	boat	Unknown	complete	Ruby to St. Marys	10	39	33	77	None	USFWS 1997
Lower Yukon	N/A	Lower Yukon River	1986	boat	6-24 July	complete	Approx. km 950-1855	5	43	36	82	CLF; RKM	Bente 1986
Lower Yukon	N/A	Lower Yukon River	1987	boat	12-22 July	complete	Approx. km 950-1855	10	44	38	89	CLF; RKM	Bente 1987
Lower Yukon	N/A	Lower Yukon River	1988	boat	July, August	complete	Tanana to St. Marys	5	63	50	106	CLF; RKM	Bente 1988
Lower Yukon	N/A	Lower Yukon River	1989	boat	Unknown	complete	Tanana to St. Marys	14	69	54	105	ROC	Ambrose 1989; Bente 1989
Lower Yukon	N/A	Lower Yukon River	1990	boat	26 June-6 August	complete	Tanana to St. Marys	13	68	54	141	ROC	Ambrose 1990; Bente 1990
Lower Yukon	N/A	Lower Yukon River	1991	boat	July	complete	Ruby to Anvik	12	50	33	88	RKM	Bente 1991
Lower Yukon	Nowitna	Nowitna River	1979	heli	30 July	partial	Susulatna River to Grand Ck	0	0	0	0	None	Mindell and Dotson 1980

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Lower Yukon	Nowitna	Sulukna	1979	heli	30 July	complete	White Mtn Creek to Nowitna River	0	0	0	0	None	Mindell and Dotson 1980
Lower Yukon	Nowitna	Susulatna River	1979	heli	30 July	partial	Nowitna River to Sunrise Creek	0	0	0	0	None	Mindell and Dotson 1980
Lower Yukon	Nowitna	White Mountain Ck	1979	heli	30 July	complete	White Mtn Ck to Sulukna River	0	0	0	0	None	Mindell and Dotson 1980
Lower Yukon	Nulato	Nulato River	1977	plane	24 June	complete	34 km surveyed	0	0	0	0	None	White and Boyce 1978
Lower Yukon River	N/A	TAPS corridor	1972	heli	11-21 July	selective	TAPS route, Yukon River to Coldfoot	U	0	0	0	None	White and Ray 1972
Lower Yukon River	N/A	TAPS corridor	1972	heli	11-21 July	selective	TAPS route, Coldfoot to Atigun Pass	U	0	0	0	None	White and Ray 1972
Lower Yukon River	N/A	TAPS corridor	1974	heli	13-18 July	selective	TAPS route, Yukon River to Coldfoot	U	0	0	0	None	White et al. 1975
Middle Yukon	N/A	Middle Yukon River	1974	boat	18 June-1 July	complete	Stevens Village to Tanana	1	5	2	3	CLF, DES	White and Cade 1975b; White 1974b
Middle Yukon	N/A	Middle Yukon River	1975	boat	26 July-6 August	complete	Fort Hamlin to Tanana	1	3	3	7	DES	Ritchie and Ambrose 1975
Middle Yukon	N/A	Middle Yukon River	1976	plane, boat	6-12 July, 2 August	complete	Pipeline crossing to Tanana	0	6	4	9	DES	Haugh and Halperin 1976
Middle Yukon	N/A	Middle Yukon River	1979	boat	13-24 June, 11-24 July	complete	Fort Hamlin to Tanana	1	3	1	1	CLF, MAP	Springer et al. 1979b
Middle Yukon	N/A	Middle Yukon River	1980	boat	8-21 June, 4-21 July	complete	Stevens Village to Tanana	0	6	4	11	CLF, MAP	Roseneau et al. 1980

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Middle Yukon	N/A	Middle Yukon River	1981	boat	1-14 June, 1-20 July	complete	Stevens Village to Tanana	1	6	4	14	CLF	Mindell and Craighead 1981
Middle Yukon	N/A	Middle Yukon River	1982	boat	Unknown	complete	Stevens Village to Tanana	0	6	6	18	None	USFWS 1997
Middle Yukon	N/A	Middle Yukon River	1983	boat	3-5 June, 3-8 July	complete	Stevens Village to Tanana	0	8	8	22	RKM	Bente et al. 1983
Middle Yukon	N/A	Middle Yukon River	1984	boat	Unknown	complete	Stevens Village to Tanana	1	6	5	14	None	USFWS 1997
Middle Yukon	N/A	Middle Yukon River	1985	boat	Unknown	complete	Stevens Village to Tanana	1	6	6	14	None	USFWS 1997
Middle Yukon	N/A	Middle Yukon River	1986	boat	1-5 July	complete	Approx. km 650-850	2	7	5	12	CLF; RKM	Bente 1986
Middle Yukon	N/A	Middle Yukon River	1987	boat	9-11 July	complete	Approx. km 650-860	0	9	8	22	CLF; RKM	Bente 1987
Middle Yukon	N/A	Middle Yukon River	1988	boat	4-9 July	complete	Approx. km 650-860	1	10	8	20	CLF; RKM	Bente 1988
Middle Yukon	N/A	Middle Yukon River	1989	boat	Unknown	complete	Stevens Village to Tanana	0	17	11	24	ROC	Ambrose 1989; Bente 1989
Middle Yukon	N/A	Middle Yukon River	1990	boat	26 June-6 August	complete	Stevens Village to Tanana	1	15	13	31	ROC	Ambrose 1990; Bente 1990
Middle Yukon	N/A	Middle Yukon River	1991	boat	19-22 July	complete	Stevens Village to Tanana	2	16	13	28	RKM	Bente 1991

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Rough-legged Hawk													
Lower Yukon	Andreafsky	Andreafsky River	1977	plane	15 June	complete	109 km surveyed	0	2	U	U	TWR	White and Boyce 1978
Lower Yukon	Anvik	Anvik River	1977	boat, plane	15 June, 27-30 June	complete	97 km surveyed	0	8	5	12	TWR	White and Boyce 1978
Lower Yukon	Anvik	Canyon Creek	1979	boat	19 July	partial	Canyon Creek: 63°15'00"N, 160°36'40"W to 7.5km downstream	0	2	2	6	TWR	Mindell and Dotson 1980
Lower Yukon	N/A	Lower Yukon River	1981	boat	1-14 June, 1-20 July	complete	Ruby to St. Marys	3	20	4	16	DES	Mindell and Craighead 1981
Lower Yukon	N/A	Lower Yukon River	1983	boat	6-15 June, 9-27 July	complete	Ruby to St. Marys	3	10	6	12	RKM	Bente et al. 1983
Red-tailed Hawk													
Lower Yukon	Koyukuk	Alatna River	1991	boat	23-30 July	partial	Arrigetch Creek to Helpmejack Creek	2	1	U	U	ROC; MAP	Swanson 1991
Lower Yukon	Koyukuk	Kanutu River	1994	boat	June	partial	Kanutu River Canyon, Ahagateyelt Lake to refuge boundary	3	0	0	0	None	Maxwell 1998
Lower Yukon	Koyukuk	Kanutu River	1998	boat	7-8 July	partial	Kanutu River Canyon, Ahagateyelt Lake to refuge boundary	5	0	0	0	None	Maxwell 1998
Lower Yukon	Koyukuk	Koyukuk River	1987	boat	5-7 July	partial	"Ella's Cabin" to Batza Slough	0	1	1	1	MAP; ROC	Osborne 1987
Lower Yukon	N/A	Lower Yukon River	1981	boat	1-14 June, 1-20 July	complete	Ruby to St. Marys	15	5	3	5	DES	Mindell and Craighead 1981
Lower Yukon	N/A	Lower Yukon River	1983	boat	6-15 June, 9-27 July	complete	Ruby to St. Marys	15	5	U	U	RKM	Bente et al. 1983
Middle Yukon	N/A	Middle Yukon River	1983	boat	3-5 June, 3-8 July	complete	Stevens Village to Tanana	2	1	U	U	RKM	Bente et al. 1983

Appendix F. Details and results of raptor surveys in the Tanana region.

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
American Kestrel													
Tanana	N/A	Upper Tanana River	1982	boat, plane	18 May, 30 June-3 July	partial	Fairbanks to Nenana	3	0	0	0	None	Amaral 1982
Tanana	Nenana	Bison Gulch	1991	heli, foot	30-31 May, 21-22 July	complete	Healy Clean Coal Project raptor survey	1	0	0	0	None	Roseneau and Springer 1991
Bald Eagle													
Tanana	Goodpaster	Goodpaster River	1997	heli	May, July	complete	Segment within Yukon MOA 1	U	0	0	0	None	Ritchie and Rose 1998
Tanana	Goodpaster	Goodpaster River	1998	heli	May-August	complete	Segment within Yukon MOA 1 and west to Tanana River	U	0	0	0	LAL	Ritchie and Rose 1999
Tanana	Goodpaster	Goodpaster River	1999	heli	May, July	complete	Segment within Yukon MOA 1 and west to Tanana River	U	1	1	1	LAL	Ritchie et al. 2000
Tanana	Goodpaster	Goodpaster River	2000	heli	27-30 May, 16-17 July	complete	Segment within Yukon MOA 1 and west to Tanana River	U	2	2	3	LAL	Ritchie, Payer, and Shook 2000
Tanana	N/A	Upper Tanana River	1978	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	U	15	12	21	None	Ritchie and Craighead 1982
Tanana	N/A	Upper Tanana River	1979	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	U	13	7	12	None	Ritchie and Craighead 1982
Tanana	N/A	Upper Tanana River	1980	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	U	14	8	12	None	Ritchie and Craighead 1982
Tanana	N/A	Upper Tanana River	1981	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	U	10	6	6	None	Ritchie and Craighead 1982
Tanana	N/A	Upper Tanana River	1982	boat, aerial	16-21 June, 9-13 July	partial	Tetlin Bridge to Fairbanks	U	18	15	27	MAP	Ritchie and Craighead 1982
Tanana	N/A	Upper Tanana River	1983	boat	5-8 June, 1-7 July	partial	Tetlin Bridge to Fairbanks	U	U	11	12	RKM; DES	Amaral 1983

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Tanana	N/A	Upper Tanana River	1991	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	26	12	14	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	1992	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	25	20	21	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	1993	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	35	20	24	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	1994	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	26	10	13	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	1995	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	33	17	21	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	1996	plane, boat	May, 5-10, 19 July	partial	Robertson River to Nenana	U	29	26	31	LAL	Ritchie and Rose 1997; not all sites were revisited in Timm 1996
Tanana	N/A	Upper Tanana River	1996	plane	9-10 May, 22-23 July	partial	Upper Tanana Valley, includes off-river areas	U	36	22	32	DES; LAL; ROC	Timm 1996
Tanana	N/A	Upper Tanana River	1997	plane, boat	May, July	complete	Tetlin Bridge to Nenana	U	28	9	12	LAL	Ritchie and Rose 1998
Tanana	N/A	Upper Tanana River	1997	plane	14, 16, 22 May, 25, 28, 29 July	partial	Upper Tanana Valley, includes off-river areas	U	34	15	22	DES; LAL; ROC	Timm 1997
Tanana	N/A	Upper Tanana River	1998	plane, boat	6 May, 4-9 July	complete	Tetlin Bridge to Nenana	U	28	6	6	LAL	Ritchie and Rose 1999
Tanana	N/A	Upper Tanana River	1998	plane	13-15 May, 26-27 July	partial	Upper Tanana Valley, includes off-river areas	U	38	20	27	DES; LAL; ROC	Timm 1998
Tanana	N/A	Upper Tanana River	1999	plane, boat	May, July	complete	Tetlin Bridge to Nenana	U	31	5	5	LAL	Ritchie et al. 2000
Tanana	N/A	Upper Tanana River	1999	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	37	19	26	DES; LAL; ROC	Timm 2000

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Tanana	N/A	Upper Tanana River	2000	plane, boat	8, 10, 22-23 May, 12-19 July	complete	Tetlin Bridge to Nenana	U	29	1	2	LAL	Ritchie, Payer, and Shook 2000
Tanana	N/A	Upper Tanana River	2000	plane	18, 22, 23 May, 24-25 July	partial	Upper Tanana Valley, includes off-river areas	U	39	16	18	DES; LAL; ROC	Timm 2000
Tanana	Salcha	Salcha River	1994	plane	11 May, 13-15 July	partial	Fixed-wing MOA surveys	U	7	3	3	LAL	Ritchie and Rose 1994
Tanana	Salcha	Salcha River	1995	heli	May-July	partial	Segment within Yukon MOA 1	U	2	U	U	LAL; ROC	Ritchie, Murphy, and Smith 1998
Tanana	Salcha	Salcha River	1996	heli	May, 12-17 July	partial	Segment within Yukon MOA 1	U	9	5	8	LAL	Ritchie and Rose 1997
Tanana	Salcha	Salcha River	1997	heli	May, July	complete	Segment within Yukon MOA 1 + adjacent nonMOA area	U	7	3	5	LAL	Ritchie and Rose 1998
Tanana	Salcha	Salcha River	1998	heli	May-August	complete	Segment within Yukon MOA 1 and west to Tanana River	U	4	2	3	LAL	Ritchie and Rose 1999
Tanana	Salcha	Salcha River	1999	heli	May, July	complete	Segment within Yukon MOA 1 and west to Tanana River	U	2	1	2	LAL	Ritchie et al. 2000
Tanana	Salcha	Salcha River	2000	heli	27-30 May, 16-17 July	complete	Segment within Yukon MOA 1 and west to Tanana River	U	9	9	9	LAL	Ritchie, Payer, and Shook 2000
Golden Eagle													
Tanana	Delta	Delta River	1972	heli	11-21 July	complete	Fielding Lake to Delta Junction	U	3	U	U	None	White and Ray 1972
Tanana	Delta	Delta River	1975	heli	14 June	partial	Denali Hwy to Bolio Lake	U	3	U	U	None	White and Cade 1975b
Tanana	Goodpaster	Goodpaster River	1995	heli	May-July	complete	Segment within Yukon MOA 1	1	0	0	0	LAL; ROC	Ritchie, Murphy, and Smith 1998

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Tanana	N/A	Upper Tanana River	1970	unknown	Unknown	selective	TAPS corridor survey	U	1	1	1	None	McGowan 1971
Tanana	N/A	Upper Tanana River	1975	aerial	16, 18 June	complete	Tetlin Bridge to Nenana	U	9	1	1	None	White and Cade 1975b
Tanana	N/A	Upper Tanana River	1981	boat	20-25 May, 12-14 July	partial	Tetlin Bridge to Fairbanks	U	3	2	2	DES	Ritchie and Curatolo 1981
Tanana	N/A	Upper Tanana River	1982	boat	16-21 June, 9-13 July	partial	Tetlin Bridge to Fairbanks	U	U	2	2	MAP	Ritchie and Craighead 1982
Tanana	Nenana	Antler Creek	1991	heli, foot	30-31 May, 21-22 July	complete	Healy Clean Coal Project raptor survey	3	0	0	0	None	Roseneau and Springer 1991
Tanana	Nenana	Carlo Creek	1975	heli	12 June	selective	Survey of proposed power transmission corridor	U	4	U	U	None	White and Cade 1975b
Tanana	Nenana	Copeland Creek	1991	heli, foot	30-31 May, 21-22 July	complete	Healy Clean Coal Project raptor survey	2	1	0	0	TWR; MAP	Roseneau and Springer 1991
Tanana	Nenana	Lignite Creek	1991	heli, foot	30-31 May, 21-22 July	partial	Louise Creek to Nenana River	1	1	0	0	TWR; MAP	Roseneau and Springer 1991
Tanana	Nenana	Moody Creek	1991	heli, foot	30-31 May, 21-22 July	partial	Lower approximately 4 mi.	1	1	1	2	TWR; MAP	Roseneau and Springer 1991
Tanana	Nenana	Nenana River	1975	plane	18 June	partial	Nenana to Carlo	U	2	U	U	None	White and Cade 1975b
Tanana	Nenana	Nenana River	1991	heli, foot	30-31 May, 21-22 July	partial	Fox Creek to Mile 369, Alaska Railroad	0	4	3	3	TWR; MAP	Roseneau and Springer 1991

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Gyr Falcon													
Tanana	Goodpaster	Goodpaster River	1995	heli	May-July	complete	Segment within Yukon MOA 1	0	1	U	U	LAL; ROC	Ritchie, Murphy, and Smith 1998
Tanana	Healy	Healy River	1995	heli	May-July	complete	Segment within Yukon MOA 1	1	0	0	0	LAL; ROC	Ritchie, Murphy, and Smith 1998
Tanana	Salcha	Salcha River	1977	plane	2 August	partial	The Splits to Tanana River	1	0	0	0	None	White and Boyce 1978
Merlin													
Tanana	N/A	Upper Tanana River	1982	boat	16-21 June, 9-13 July	partial	Tetlin Bridge to Fairbanks	U	1	U	U	MAP	Ritchie and Craighead 1982
Tanana	Nenana	Copeland Creek	1991	heli, foot	30-31 May, 21-22 July	complete	Healy Clean Coal Project raptor survey	1	0	0	0	None	Roseneau and Springer 1991
Tanana	Salcha	Salcha River	1993	heli	23 June	partial	MOA survey; Maiden Creek to headwaters	0	1	U	U	ROC	McIntyre 1993
Peregrine Falcon													
Tanana	N/A	Lower Tanana River	1978	boat	29 May-2 June	complete	Manley Hot Springs to Yukon River	U	0	0	0	None	Springer et al. 1979a
Tanana	Chena	Chena River	1994	heli	18 July	partial	None provided	0	0	0	0	None	Ritchie and Rose 1994
Tanana	Chena	Chena River	1996	heli	26 May-2 June, 12-17 July	partial	Segment within Yukon MOA 1	U	1	U	U	MAP; ROC	Ritchie and Rose 1997
Tanana	Chena	Chena River	1999	heli	May, July	partial	Segment within Yukon MOA 1 and west of MOA boundary	0	2	1	2	LAL; ROC	Ritchie et al. 2000
Tanana	Chena	Chena River	2000	heli	27-30 May, 16-17 July	partial	Segment within Yukon MOA 1 and west of MOA boundary	1	3	1	2	LAL; ROC	Ritchie, Payer, and Shook 2000
Tanana	Delta	Delta River	1970	aerial	Unknown	partial	Survey of proposed TAPS route	U	0	0	0	None	White and Streater 1970

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Tanana	Delta	Delta River	1972	heli	11-21 July	complete	Fielding Lake to Delta Junction	0	0	0	0	None	White and Ray 1972
Tanana	Delta	Delta River	1975	heli	14 June	partial	Denali Hwy to Bolio Lake	0	0	0	0	None	White and Cade 1975b
Tanana	Delta	Delta River	1977	plane	2 August	partial	Lower Tangle lake to north end canyon	0	0	0	0	None	White and Boyce 1978
Tanana	Goodpaster	Goodpaster River	1977	plane	2 August	complete	Eisenmenger Fork to Sand Creek	0	0	0	0	None	White and Boyce 1978
Tanana	Goodpaster	Goodpaster River	1994	plane	11 May, 17 July	complete	Fixed-wing MOA surveys	0	2	2	6	LAL	Ritchie and Rose 1994
Tanana	Goodpaster	Goodpaster River	1995	heli	May-July	complete	Segment within Yukon MOA 1	0	1	1	4	LAL; ROC	Ritchie, Murphy, and Smith 1998
Tanana	Goodpaster	Goodpaster River	1996	heli	26 May-2 June, 12-17 July	complete	Segment within Yukon MOA 1	0	3	2	4	MAP; ROC; LAL	Ritchie and Rose 1997
Tanana	Goodpaster	Goodpaster River	1997	heli	26 May-1 June, 13-17 July	complete	Segment within Yukon MOA 1 + adjacent nonMOA area	0	5	3	9	MAP; ROC; LAL	Ritchie and Rose 1998
Tanana	Goodpaster	Goodpaster River	1998	heli	May-August	complete	Segment within Yukon MOA 1 and west to Tanana River	0	6	4	9	LAL; ROC	Ritchie and Rose 1999
Tanana	Goodpaster	Goodpaster River	1999	heli	May, July	complete	Segment within Yukon MOA 1 and west to Tanana River	0	5	4	9	LAL; ROC	Ritchie et al. 2000
Tanana	Goodpaster	Goodpaster River	2000	heli	27-30 May, 16-17 July	complete	Segment within Yukon MOA 1 and west to Tanana River	1	7	2	3	LAL; ROC	Ritchie, Payer, and Shook 2000
Tanana	Healy	Healy River	1995	heli	May-July	complete	Segment within Yukon MOA 1	0	0	0	0	None	Ritchie, Murphy, and Smith 1998
Tanana	Healy	Healy River	1996	heli	26 May-2 June, 12-17 July	complete	Segment within Yukon MOA 1	1	1	1	2	MAP; ROC; LAL	Ritchie and Rose 1997

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Tanana	N/A	Upper Tanana River	1970	boat	2-13 July	complete	Tetlin to Nenana	U	7	7	20	DES	Haugh and Cade 1970
Tanana	N/A	Upper Tanana River	1971	boat	Unknown	complete	Tetlin Bridge to Nenana	U	7	6	16	DES	Haugh 1972
Tanana	N/A	Upper Tanana River	1972	boat	6 June (lower), 22-31 July (upper)	complete	Tetlin Bridge to Nenana	U	4	3	7	DES	Haugh 1972
Tanana	N/A	Upper Tanana River	1972	heli	11-21 July	partial	Delta Junction to Fairbanks	U	0	0	0	None	White and Ray 1972
Tanana	N/A	Upper Tanana River	1973	boat	6-11 July	partial	Tetlin to Delta	U	4	4	8	DES	Haugh 1973
Tanana	N/A	Upper Tanana River	1974	unknown	Unknown	complete	Tetlin Bridge to Nenana	U	1	1	1	CLF	White and Cade 1975b
Tanana	N/A	Upper Tanana River	1974	heli	13-18 July	selective	Delta Junction to Fairbanks	U	0	0	0	None	White et al. 1975
Tanana	N/A	Upper Tanana River	1975	aerial	16, 18 June	complete	Tetlin Bridge to Nenana	U	2	0	0	CLF	White and Cade 1975b
Tanana	N/A	Upper Tanana River	1976	plane	3 Aug	partial	Tetlin Bridge to Fairbanks	2	0	0	0	None	Haugh and Halperin 1976
Tanana	N/A	Upper Tanana River	1977	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	0	3	1	1	CLF	Roseneau et al. 1981
Tanana	N/A	Upper Tanana River	1978	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	0	4	3	6	CLF	Roseneau et al. 1981
Tanana	N/A	Upper Tanana River	1979	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	3	3	2	4	CLF	Roseneau et al. 1981
Tanana	N/A	Upper Tanana River	1980	boat	8-12 June, 25-29 July	partial	Tetlin Bridge to Fairbanks	0	4	2	5	CLF, MAP	Roseneau and Bente 1980

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Tanana	N/A	Upper Tanana River	1981	boat	20-25 May, 12-14 July	partial	Tetlin Bridge to Fairbanks	U	5	5	12	DES	Ritchie and Curatolo 1981
Tanana	N/A	Upper Tanana River	1982	boat, plane	18 May, 30 June-3 July	partial	Fairbanks to Nenana	1	0	0	0	None	Amaral 1982
Tanana	N/A	Upper Tanana River	1982	boat	16-21 June, 9-13 July	partial	Tetlin Bridge to Fairbanks	U	4	3	8	DES, MAP	Ritchie and Craighead 1982
Tanana	N/A	Upper Tanana River	1983	boat	5-8 June, 1-7 July	partial	Tetlin Bridge to Fairbanks	0	5	4	11	RKM; DES	Amaral 1983
Tanana	N/A	Upper Tanana River	1984	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	1	4	2	4	None	Ritchie et al. 2000
Tanana	N/A	Upper Tanana River	1985	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	0	4	3	5	None	Ritchie et al. 2000
Tanana	N/A	Upper Tanana River	1986	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	2	5	4	12	None	Ritchie et al. 2000
Tanana	N/A	Upper Tanana River	1987	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	0	8	5	10	None	Ritchie et al. 2000
Tanana	N/A	Upper Tanana River	1988	unknown	Unknown	partial	Tetlin Bridge to Fairbanks	1	12	9	16	None	Ritchie et al. 2000
Tanana	N/A	Upper Tanana River	1989	boat	Unknown	partial	Tanacross to Fairbanks	0	15	11	29	ROC	Ambrose 1989
Tanana	N/A	Upper Tanana River	1990	boat	Unknown	partial	Tanacross to Fairbanks	3	15	9	29	ROC	Ambrose 1990
Tanana	N/A	Upper Tanana River	1991	boat	May-June, July	complete	Tetlin Bridge to Nenana	1	19	15	38	RKM; MAP; ROC	Bente and Wright 1992
Tanana	N/A	Upper Tanana River	1991	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	4	4	7	DES; LAL; ROC	Timm 2000

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Tanana	N/A	Upper Tanana River	1992	boat	18-23 June, 29 July-2 August	complete	Tetlin Bridge to Nenana	3	25	16	39	RKM; MAP; ROC	Bente and Wright 1993
Tanana	N/A	Upper Tanana River	1992	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	4	4	9	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	1993	boat	24 May-3 June, 29 June-12 July	complete	Tetlin Bridge to Nenana	1	26	19	62	RKM; MAP; ROC	Bente and Wright 1994
Tanana	N/A	Upper Tanana River	1993	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	3	3	12	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	1994	boat	24 May-3 June, 29 June-12 July	complete	Tetlin Bridge to Nenana	1	27	24	74	RKM; MAP; ROC	Bente and Wright 1995
Tanana	N/A	Upper Tanana River	1994	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	5	5	16	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	1995	boat	Unknown	complete	Tetlin Bridge to Nenana	2	34	25	65	RKM; ROC	Bente 1995
Tanana	N/A	Upper Tanana River	1995	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	8	5	7	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	1996	boat	May, 5-10, 19 July	complete	Tetlin Bridge to Fairbanks	5	26	17	44	RKM; MAP; ROC	Ritchie and Rose 1997
Tanana	N/A	Upper Tanana River	1996	plane	9-10 May, 22-23 July	partial	Upper Tanana Valley, includes off-river areas	U	4	2	4	DES; LAL; ROC	Timm 1996
Tanana	N/A	Upper Tanana River	1997	boat	May-July	complete	Tetlin Bridge to Nenana	3	33	28	70	MAP; ROC; LAL	Ritchie and Rose 1998
Tanana	N/A	Upper Tanana River	1997	plane	14, 16, 22 May, 25, 28, 29 July	partial	Upper Tanana Valley, includes off-river areas	U	4	4	8	DES; LAL; ROC	Timm 1997
Tanana	N/A	Upper Tanana River	1998	boat	May-July	complete	Tetlin Bridge to Nenana	2	38	32	91	LAL; ROC; MAP	Ritchie and Rose 1999

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Tanana	N/A	Upper Tanana River	1998	plane	13-15 May, 26-27 July	partial	Upper Tanana Valley, includes off-river areas	U	5	4	13	DES; LAL; ROC	Timm 1998
Tanana	N/A	Upper Tanana River	1999	boat	May, July	complete	Tetlin Bridge to Nenana	1	39	28	84	LAL; ROC; MAP	Ritchie et al. 2000
Tanana	N/A	Upper Tanana River	1999	plane	May, July	partial	Upper Tanana Valley, includes off-river areas	U	6	6	15	DES; LAL; ROC	Timm 2000
Tanana	N/A	Upper Tanana River	2000	boat	5-9 June, 12-19 July	complete	Tetlin Bridge to Nenana	2	38	26	67	LAL; ROC; MAP	Ritchie, Payer, and Shook 2000
Tanana	N/A	Upper Tanana River	2000	plane	18, 22, 23 May, 24-25 July	partial	Upper Tanana Valley, includes off-river areas	U	9	7	14	DES; LAL; ROC	Timm 2000
Tanana	Nenana	Antler Creek	1991	heli, foot	30-31 May, 21-22 July	complete	Healy Clean Coal Project raptor survey	0	0	0	0	None	Roseneau and Springer 1991
Tanana	Nenana	Bison Gulch	1991	heli, foot	30-31 May, 21-22 July	complete	Healy Clean Coal Project raptor survey	0	0	0	0	None	Roseneau and Springer 1991
Tanana	Nenana	Carlo Creek	1975	heli	12 June	selective	Survey of proposed power transmission corridor	0	0	0	0	None	White and Cade 1975b
Tanana	Nenana	Copeland Creek	1991	heli, foot	30-31 May, 21-22 July	complete	Healy Clean Coal Project raptor survey	0	0	0	0	None	Roseneau and Springer 1991
Tanana	Nenana	Healy Creek	1991	heli, foot	30-31 May, 21-22 July	partial	Usibelli to Nenana River	0	0	0	0	None	Roseneau and Springer 1991
Tanana	Nenana	Lignite Creek	1991	heli, foot	30-31 May, 21-22 July	partial	Louise Creek to Nenana River	0	0	0	0	None	Roseneau and Springer 1991
Tanana	Nenana	Moody Creek	1991	heli, foot	30-31 May, 21-22 July	partial	Lower approximately 4 mi.	0	0	0	0	None	Roseneau and Springer 1991
Tanana	Nenana	Nenana River	1975	plane	18 June	partial	Nenana to Carlo	U	0	0	0	None	White and Cade 1975b

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Tanana	Nenana	Nenana River	1991	heli, foot	30-31 May, 21-22 July	partial	Fox Creek to Mile 369, Alaska Railroad	0	0	0	0	None	Roseneau and Springer 1991
Tanana	Salcha	North Fork Salcha River	1993	heli	23 June	complete	MOA survey	0	1	U	U	ROC	McIntyre 1993
Tanana	Salcha	Salcha River	1977	plane	2 August	partial	The Splits to Tanana River	1	0	0	0	None	White and Boyce 1978
Tanana	Salcha	Salcha River	1980	boat	8-12 June, 25-29 July	partial	TAPS crossing to Tanana River	U	0	0	0	None	Roseneau and Bente 1980
Tanana	Salcha	Salcha River	1993	heli	23 June	partial	MOA survey; Maiden Creek to headwaters	0	1	U	U	ROC	McIntyre 1993
Tanana	Salcha	Salcha River	1994	plane	11 May, 13-15 July	partial	Fixed-wing MOA surveys	1	2	1	1	LAL	Ritchie and Rose 1994
Tanana	Salcha	Salcha River	1995	heli	May-July	partial	Segment within Yukon MOA 1	2	4	1	2	LAL; ROC	Ritchie, Murphy, and Smith 1998
Tanana	Salcha	Salcha River	1996	heli	26 May-2 June, 12-17 July	partial	Segment within Yukon MOA 1	1	4	3	9	MAP; ROC; LAL	Ritchie and Rose 1997
Tanana	Salcha	Salcha River	1997	heli	26 May-1 June, 13-17 July	complete	Segment within Yukon MOA 1 + adjacent nonMOA area	2	9	8	17	MAP; ROC; LAL	Ritchie and Rose 1998
Tanana	Salcha	Salcha River	1998	heli	May-August	complete	Segment within Yukon MOA 1 and west to Tanana River	3	11	7	15	LAL; ROC	Ritchie and Rose 1999
Tanana	Salcha	Salcha River	1999	heli	May, July	complete	Segment within Yukon MOA 1 and west to Tanana River	1	14	7	13	LAL; ROC	Ritchie et al. 2000
Tanana	Salcha	Salcha River	2000	heli	27-30 May, 16-17 July	complete	Segment within Yukon MOA 1 and west to Tanana River	0	15	8	15	LAL; ROC	Ritchie, Payer, and Shook 2000
Various	N/A	Denali Highway	1975	heli	14 June	selective	North side Denali Hwy, Paxson to Little Clearwater Ck	0	0	0	0	None	White and Cade 1975b

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Rough-legged Hawk													
Tanana	N/A	Upper Tanana River	1970	unknown	Unknown	selective	TAPS corridor survey	U	1	1	3	None	McGowan 1971
Red-tailed Hawk													
Tanana	Goodpaster	Goodpaster River	1977	plane	2 August	complete	Eisenmenger Fork to Sand Creek	0	2	U	U	TWR	White and Boyce 1978
Tanana	N/A	Upper Tanana River	1975	aerial	16, 18 June	complete	Tetlin Bridge to Nenana	U	1	U	U	None	White and Cade 1975b
Tanana	N/A	Upper Tanana River	1982	boat, plane	18 May, 30 June-3 July	partial	Fairbanks to Nenana	2	1	1	1	DES	Amaral 1982
Tanana	N/A	Upper Tanana River	1982	boat	16-21 June, 9-13 July	partial	Tetlin Bridge to Fairbanks	U	1	1	1	MAP	Ritchie and Craighead 1982
Tanana	N/A	Upper Tanana River	1983	boat	5-8 June, 1-7 July	partial	Tetlin Bridge to Fairbanks	U	U	1	U	RKM; DES	Amaral 1983
Tanana	Nenana	Nenana River	1991	heli, foot	30-31 May, 21-22 July	partial	Fox Creek to Mile 369, Alaska Railroad	3	1	1	3	TWR; MAP	Roseneau and Springer 1991

Appendix G. Details and results of raptor surveys in the Kuskokwim region.

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Bald Eagle													
Kuskokwim	Swift	Cheeneetnuk River	1979	boat	25 June-1 July	complete	Cheeneetnuk only: 62°05'06"N, 154°58'45"W to 95km downstream	2	0	0	0	None	Mindell and Dotson 1980
Kuskokwim	George	East Fork George River	1979	boat	31 July-2 August	complete	East Fork George: 62°11'16"N, 156°57'43"W to 97km downstream	1	0	0	0	TWR	Mindell and Dotson 1980
Kuskokwim	Eek	Eek River	1977	plane	14 June	complete	69 km surveyed	1	0	0	0	TWR	White and Boyce 1978
Kuskokwim	Kisaralik	Kisaralik River	1984	boat	22-26 July	complete	Kisaralik Lake to Bethel	2	0	0	0	None	Boyce and Fristensky 1984
Kuskokwim	N/A	Kuskokwim River	1976	boat	23 July-3 August	partial	McGrath to Aniak	1	0	0	0	None	Jurs 1978; Ritchie and Ambrose 1976
Kuskokwim	N/A	Kuskokwim River	1979	boat	2-7 July	partial	McGrath to Aniak	1	0	0	0	None	Mindell and Dotson 1980
Kuskokwim	N/A	Kuskokwim River	1980	boat	2-7 July	partial	McGrath to Aniak	3	1	U	U	TWR	Mindell and Dotson 1980
Kuskokwim	N/A	Kuskokwim River	1981	boat	June, July	partial	McGrath to Aniak	U	3	U	U	TWR	Mindell 1981
Kuskokwim	Tatlawiksuk	Tatlawiksuk River	1979	boat	15-18 June	partial	62°07'31"N, 155°31'00"W to 71km downstream (71 of 128 km)	2	0	0	0	None	Mindell and Dotson 1980
Golden Eagle													
Kuskokwim	Eek	Eek River	1977	plane	14 June	complete	69 km surveyed	0	2	1	1	TWR	White and Boyce 1978
Kuskokwim	Fog	Fog River	1977	plane	14 June	complete	21 km surveyed	0	1	1	2	TWR	White and Boyce 1978

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Kuskokwim	Kisaralik	Kisaralik River	1977	heli	21 June	complete	76 km surveyed	0	6	5	9	TWR	White and Boyce 1978
Kuskokwim	Kisaralik	Kisaralik River	1982	heli	16-21 June	complete	T4N R60W Sec 33 (Bethel B-2) to Little Crow Hills	0	2	2	2	TWR	Mindell 1982
Kuskokwim	Kisaralik	Kisaralik River	1984	boat	22-26 July	complete	Kisaralik Lake to Bethel	2	1	1	2	TWR	Boyce and Fristensky 1984
Kuskokwim	Kisaralik	Kisaralik River	1987	boat	17-21 June	partial	Eastern border Yukon Delta NWR to approx. Quartz Creek	U	4	3	5	TWR	McCaffery and Ernst 1989
Kuskokwim	Kisaralik	Kisaralik River	1988	boat	29 June-1 July	partial	Eastern border Yukon Delta NWR to approx. Quartz Creek	U	2	1	3	TWR	McCaffery and Ernst 1989
Kuskokwim	Kwethluk	Kwethluk River	1977	plane	14 June	partial	29 km surveyed	0	1	1	U	TWR	White and Boyce 1978
Kuskokwim	Kisaralik	Quicksilver Creek	1982	heli	16 June	complete	Survey of creek en route to boat survey on Kisaralik River	0	1	1	2	TWR	Mindell 1982
Kuskokwim	Tuluksak	Tuluksak River	1980	boat	15 July	partial	Nyac area: 61°02'16"N, 159°56'06"W to 16km downstream	0	2	2	3	TWR	Mindell and Dotson 1980
Gyr Falcon													
Kuskokwim	Eek	Eek River	1977	plane	14 June	complete	69 km surveyed	0	1	U	U	TWR	White and Boyce 1978
Kuskokwim	Fog	Fog River	1977	plane	14 June	complete	21 km surveyed	0	1	U	U	TWR	White and Boyce 1978
Kuskokwim	Kisaralik	Kisaralik River	1982	heli	16 June	complete	T4N R60W Sec 33 (Bethel B-2) to Little Crow Hills	1	2	2	1	TWR	Mindell 1982
Kuskokwim	Kisaralik	Kisaralik River	1984	boat	22-26 July	complete	Kisaralik Lake to Bethel	0	1	1	1	TWR	Boyce and Fristensky 1984

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Kuskokwim	Kisaralik	Kisaralik River	1987	boat	17-21 June	partial	Eastern border Yukon Delta NWR to approx. Quartz Creek	U	1	1	4	TWR	McCaffery and Ernst 1989
Kuskokwim	Kisaralik	Kisaralik River	1988	boat	29 June-1 July	partial	Eastern border Yukon Delta NWR to approx. Quartz Creek	U	1	1	2	TWR	McCaffery and Ernst 1989
Kuskokwim	Kisaralik	Quicksilver Creek	1982	heli	16 June	complete	Survey of creek en route to boat survey on Kisaralik River	0	2	2	2	TWR	Mindell 1982
Kuskokwim	Tuluksak	Tuluksak River	1980	boat	15 July	partial	Nyac area: 61°02'16"N, 159°56'06"W to 16km downstream	2	1	1	1	TWR	Mindell and Dotson 1980
Merlin													
Kuskokwim	Kisaralik	Kisaralik River	1984	boat	22-26 July	complete	Kisaralik Lake to Bethel	1	1	1	2	TWR	Boyce and Fristensky 1984
Kuskokwim	N/A	Kuskokwim River	1976	boat	23 July-3 August	partial	McGrath to Aniak	1	0	0	0	None	Jurs 1978; Ritchie and Ambrose 1976
Peregrine Falcon													
Kuskokwim	Swift	Cheeneetnuk River	1979	boat	25 June-1 July	complete	Cheeneetnuk only: 62°05'06"N, 154°58'45"W to 95km downstream	0	0	0	0	None	Mindell and Dotson 1980
Kuskokwim	George	East Fork George River	1979	boat	31 July-2 August	complete	East Fork George: 62°11'16"N, 156°57'43"W to 97km downstream	0	0	0	0	None	Mindell and Dotson 1980
Kuskokwim	Eek	Eek River	1977	plane	14 June	complete	69 km surveyed	0	0	0	0	None	White and Boyce 1978
Kuskokwim	Fog	Fog River	1977	plane	14 June	complete	21 km surveyed	0	0	0	0	None	White and Boyce 1978
Kuskokwim	Swift	Gagaryah River	1980	boat	17-20 June	complete	Gagaryah River: 61°51'05"N, 154°47'42"W to 78km downstream	0	0	0	0	None	Mindell and Dotson 1980

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Kuskokwim	Holokuk	Holokuk River	1980	heli	7 June	selective	selective survey of rock outcrops en route to Nyac	0	1	1	3	TWR	Mindell and Dotson 1980
Kuskokwim	Kisaralik	Kisaralik River	1977	heli	21 June	complete	76 km surveyed	0	0	0	0	None	White and Boyce 1978
Kuskokwim	Kisaralik	Kisaralik River	1982	heli	16 June	complete	T4N R60W Sec 33 (Bethel B-2) to Little Crow Hills	0	0	0	0	None	Mindell 1982
Kuskokwim	Kisaralik	Kisaralik River	1984	boat	22-26 July	complete	Kisaralik Lake to Bethel	0	0	0	0	None	Boyce and Fristensky 1984
Kuskokwim	Kisaralik	Kisaralik River	1987	boat	17-21 June	partial	Eastern border Yukon Delta NWR to approx. Quartz Creek	U	0	0	0	None	McCaffery and Ernst 1989
Kuskokwim	Kisaralik	Kisaralik River	1988	boat	29 June-1 July	partial	Eastern border Yukon Delta NWR to approx. Quartz Creek	U	0	0	0	None	McCaffery and Ernst 1989
Kuskokwim	N/A	Kuskokwim River	1976	boat	23 July-3 August	partial	McGrath to Aniak	2	1	1	1	TWR; CLF	Jurs 1978; Ritchie and Ambrose 1976
Kuskokwim	N/A	Kuskokwim River	1979	boat	2-7 July	partial	McGrath to Aniak	0	2	2	5	TWR	Mindell and Dotson 1980
Kuskokwim	N/A	Kuskokwim River	1980	boat	2-7 July	partial	McGrath to Aniak	0	2	2	5	TWR	Mindell and Dotson 1980
Kuskokwim	N/A	Kuskokwim River	1981	boat	June, July	partial	McGrath to Aniak	4	4	4	11	TWR	Mindell 1981
Kuskokwim	N/A	Kuskokwim River	1982	boat	Unknown	partial	McGrath to Aniak	1	5	3	8	MAP	Waggoner 1987
Kuskokwim	N/A	Kuskokwim River	1983	boat	Unknown	partial	McGrath to Aniak	0	5	4	11	MAP	Waggoner 1987

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Kuskokwim	N/A	Kuskokwim River	1985	boat	Unknown	partial	McGrath to Aniak	2	5	2	5	MAP	Waggoner 1987
Kuskokwim	N/A	Kuskokwim River	1986	boat	Unknown	partial	McGrath to Aniak	0	8	6	14	MAP	Waggoner 1987
Kuskokwim	N/A	Kuskokwim River	1987	boat	21-29 May, 13-20 July	partial	McGrath to Aniak	0	9	7	15	ROC; MAP	Waggoner 1987
Kuskokwim	N/A	Kuskokwim River	1988	boat	8-13 June, 11-16 July	partial	McGrath to Aniak	1	8	4	12	ROC	Waggoner 1988
Kuskokwim	N/A	Kuskokwim River	1989	boat	Unknown	partial	McGrath to Aniak	0	9	9	27	ROC	Waggoner 1989
Kuskokwim	N/A	Kuskokwim River	1991	boat	8-11 July	partial	McGrath to Aniak	2	6	6	16	ROC; MAP	Waggoner 1991
Kuskokwim	Kwethluk	Kwethluk River	1977	plane	14 June	partial	29 km surveyed	0	0	0	0	None	White and Boyce 1978
Kuskokwim	Nixon Fork Kuskokwim	Nixon Fork Kuskokwim River	1979	heli	30 July	complete	McGrath to Von Frank Mountain	0	0	0	0	None	Mindell and Dotson 1980
Kuskokwim	Oskawalik	Oskawalik River	1980	boat	21-23 June	partial	Oskawalik River: 61°35'53"N, 157°41'36"W to 48km downstream	0	0	0	0	None	Mindell and Dotson 1980
Kuskokwim	Kisaralik	Quicksilver Creek	1982	heli	16 June	complete	Survey of creek en route to boat survey on Kisaralik River	0	0	0	0	None	Mindell 1982
Kuskokwim	Selatna	Selatna River	1979	boat	8-14 June	partial	62°26'40"N, 155°26'30"W to 44km downstream (44 of 80 km)	0	0	0	0	0	Mindell and Dotson 1980
Kuskokwim	Stony	Stony River	1987	heli	13 July	selective	Lime Hills area	0	5	4	6	ROC; MAP	Waggoner 1987

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Kuskokwim	Tatlawiksuk	Tatlawiksuk River	1979	boat	15-18 June	partial	62°07'31"N, 155°31'00"W to 71km downstream (71 of 128 km)	0	1	1	1	TWR	Mindell and Dotson 1980
Kuskokwim	Tatlawiksuk	Tatlawiksuk River	1980	heli	21 June	selective	check of 1979 PEFA nest site	0	1	U	U	TWR	Mindell and Dotson 1980
Kuskokwim	Tatlawiksuk	Tatlawiksuk River	1980	boat	5 July	partial	River mouth to 27km upstream	0	0	0	0	None	Mindell and Dotson 1980
Kuskokwim	Tatlawiksuk	Tatlawiksuk River	1987	heli	13 July	selective	Unknown section of river surveyed	0	1	1	3	ROC; MAP	Waggoner 1987
Kuskokwim	Tuluksak	Tuluksak River	1977	plane	14 June	partial	40 km surveyed	0	0	0	0	None	White and Boyce 1978
Kuskokwim	Tuluksak	Tuluksak River	1980	boat	15 July	partial	Nyac area: 61°02'16"N, 159°56'06"W to 16km downstream	0	0	0	0	None	Mindell and Dotson 1980
Kuskokwim	Tuluksak	Tuluksak River	1986	unk.	Unknown	incidental	Nyac area	0	1	U	U	None	Amaral 1986
Rough-legged Hawk													
Kuskokwim	Swift	Cheeneetnuk River	1979	boat	25 June-1 July	complete	Cheeneetnuk only: 62°05'06"N, 154°58'45"W to 95km downstream	U	1	1	4	TWR	Mindell and Dotson 1980
Kuskokwim	Swift	Gagaryah River	1980	boat	17-20 June	complete	Gagaryah River: 61°51'05"N, 154°47'42"W to 78km downstream	0	2	2	5	TWR	Mindell and Dotson 1980
Kuskokwim	Kisaralik	Kisaralik River	1984	boat	22-26 July	complete	Kisaralik Lake to Bethel	3	4	4	11	TWR	Boyce and Fristensky 1984
Kuskokwim	Kisaralik	Kisaralik River	1987	boat	17-21 June	partial	Eastern border Yukon Delta NWR to approx. Quartz Creek	U	3	2	6	TWR	McCaffery and Ernst 1989
Kuskokwim	Kisaralik	Kisaralik River	1988	boat	29 June-1 July	partial	Eastern border Yukon Delta NWR to approx. Quartz Creek	U	1	1	2	TWR	McCaffery and Ernst 1989

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Kuskokwim	N/A	Kuskokwim River	1976	boat	23 July-3 August	partial	McGrath to Aniak	U	5	4	7	TWR; CLF	Jurs 1978; Ritchie and Ambrose 1976
Kuskokwim	N/A	Kuskokwim River	1979	boat	2-7 July	partial	McGrath to Aniak	U	U	U	U	TWR	Mindell and Dotson 1980
Kuskokwim	N/A	Kuskokwim River	1980	boat	2-7 July	partial	McGrath to Aniak	0	12	6	13	TWR	Mindell and Dotson 1980
Kuskokwim	N/A	Kuskokwim River	1981	boat	June, July	partial	McGrath to Aniak	U	15	11	39	TWR	Mindell 1981
Kuskokwim	N/A	Kuskokwim River	1982	boat	Unknown	partial	McGrath to Aniak	U	14	11	24	MAP	Waggoner 1987
Kuskokwim	N/A	Kuskokwim River	1983	boat	Unknown	partial	McGrath to Aniak	U	13	12	29	MAP	Waggoner 1987
Kuskokwim	N/A	Kuskokwim River	1985	boat	Unknown	partial	McGrath to Aniak	U	8	2	3	MAP	Waggoner 1987
Kuskokwim	N/A	Kuskokwim River	1986	boat	Unknown	partial	McGrath to Aniak	U	8	7	14	MAP	Waggoner 1987
Kuskokwim	N/A	Kuskokwim River	1987	boat	21-29 May, 13-20 July	partial	McGrath to Aniak	U	7	3	4	ROC; MAP	Waggoner 1987
Kuskokwim	N/A	Kuskokwim River	1988	boat	8-13 June, 11-16 July	partial	McGrath to Aniak	U	10	7	11	ROC	Waggoner 1988
Kuskokwim	N/A	Kuskokwim River	1989	boat	Unknown	partial	McGrath to Aniak	U	9	5	12	ROC	Waggoner 1989
Kuskokwim	Oskawalik	Oskawalik River	1980	boat	21-23 June	partial	Oskawalik River: 61°35'53"N, 157°41'36"W to 48km downstream	0	5	4	18	TWR	Mindell and Dotson 1980
Kuskokwim	Selatna	Selatna River	1979	boat	8-14 June	partial	62°26'40"N, 155°26'30"W to 44km downstream (44 of 80 km)	U	1	U	U	None	Mindell and Dotson 1980

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Red-tailed Hawk													
Kuskokwim	Swift	Cheeneetnuk River	1979	boat	25 June-1 July	complete	Cheeneetnuk only: 62°05'06"N, 154°58'45"W to 95km downstream	U	4	U	U	TWR	Mindell and Dotson 1980
Kuskokwim	George	East Fork George River	1979	boat	31 July-2 August	complete	East Fork George: 62°11'16"N, 156°57'43"W to 97km downstream	0	2	2	4	TWR	Mindell and Dotson 1980
Kuskokwim	Swift	Gagaryah River	1980	boat	17-20 June	complete	Gagaryah River: 61°51'05"N, 154°47'42"W to 78km downstream	0	5	U	U	TWR	Mindell and Dotson 1980
Kuskokwim	N/A	Kuskokwim River	1979	boat	2-7 July	partial	McGrath to Aniak	U	U	U	U	TWR	Mindell and Dotson 1980
Kuskokwim	N/A	Kuskokwim River	1980	boat	2-7 July	partial	McGrath to Aniak	0	17	7	10	TWR	Mindell and Dotson 1980
Kuskokwim	N/A	Kuskokwim River	1981	boat	June, July	partial	McGrath to Aniak	U	35	U	U	TWR	Mindell 1981
Kuskokwim	Oskawalik	Oskawalik River	1980	boat	21-23 June	partial	Oskawalik River: 61°35'53"N, 157°41'36"W to 48km downstream	0	7	2	3	TWR	Mindell and Dotson 1980
Kuskokwim	Selatna	Selatna River	1979	boat	8-14 June	partial	62°26'40"N, 155°26'30"W to 44km downstream (44 of 80 km)	U	3	U	U	TWR	Mindell and Dotson 1980
Kuskokwim	Tatlawiksuk	Tatlawiksuk River	1979	boat	15-18 June	partial	62°07'31"N, 155°31'00"W to 71km downstream (71 of 128 km)	U	5	U	U	TWR	Mindell and Dotson 1980

Appendix H. Details and results of raptor surveys in the Susitna region.

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Bald Eagle													
Beluga	Beluga Flats	Beluga Flats	1988	plane	20 May	selective	Small area surveyed en route to Beluga River	U	1	U	U	RKM; MAP	Parker 1988
Beluga	N/A	Beluga River	1988	plane	20 May	complete	Mouth to Triumvirate Glacier	U	9	U	U	RKM; MAP	Parker 1988
Chuitna	N/A	Chuitna River	1988	plane	20 May	complete	Mouth to Wolverine Fork	U	0	0	0	RKM; MAP	Parker 1988
Little Susitna	Lake Creek	Lake Creek	1988	plane	13 May	complete	Mouth to Chelatna Lake	U	2	U	U	RKM; MAP	Parker 1988
Little Susitna	N/A	Little Susitna River	1988	plane	11 May	complete	Mouth to Parks Highway	U	1	U	U	RKM; MAP	Parker 1988
Susitna	Kashwitna	Kashwitna River	1988	plane	11 May	complete	Mouth to headwaters	U	0	0	0	None	Parker 1988
Susitna	N/A	Susitna River	1988	plane	10 May	partial	Mouth to Talkeetna	U	20	U	U	RKM; MAP	Parker 1988
Susitna	Susitna Flats	Susitna Flats	1988	plane	10 May	selective	Small area surveyed en route to Susitna River	U	4	U	U	RKM; MAP	Parker 1988
Susitna	Willow Creek	Willow Creek	1988	plane	11 May	complete	Mouth to headwaters	U	0	0	0	None	Parker 1988
Susitna	Yentna	Kahiltna River	1988	plane	13 May	complete	Mouth to Kahiltna Glacier	U	1	U	U	RKM; MAP	Parker 1988
Susitna	Yentna	Peters Creek	1988	plane	13 May	partial	Mouth to Petersville	U	2	U	U	RKM; MAP	Parker 1988
Susitna	Yentna	Skwentna River	1988	plane	13 May	partial	Mouth to Talachulitna River	U	1	U	U	RKM; MAP	Parker 1988

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Susitna	Yentna	Sunflower Creek	1988	plane	13 May	partial	Mouth to tractor trail crossing	U	1	U	U	RKM; MAP	Parker 1988
Susitna	Yentna	Yentna River	1988	plane	13 May	partial	Mouth to Skwenta River	U	6	U	U	RKM; MAP	Parker 1988
Theodore	N/A	Theodore River	1988	plane	20 May	selective	Small area surveyed en route to Beluga River	U	1	U	U	RKM; MAP	Parker 1988
Gyr Falcon													
Susitna	Maclaren	Maclaren River	1975	heli	14 June	selective	Survey of proposed power transmission corridor	U	1	1	U	DES	White and Cade 1975b
Susitna	N/A	Susitna River	1974	heli	10-15 June	partial	Devil's Canyon to Susitna Glacier	0	2	U	U	None	White 1974c
Peregrine Falcon													
Matanuska	N/A	Matanuska River	1975	heli	13 June	complete	Palmer to Eureka	U	0	0	0	None	White and Cade 1975b
Susitna	Maclaren	Maclaren River	1975	heli	14 June	selective	Survey of proposed power transmission corridor	U	0	0	0	None	White and Cade 1975b
Susitna	N/A	Susitna River	1974	heli	10-15 June	partial	Devil's Canyon to Susitna Glacier	1	0	0	0	None	White 1974c

Appendix I. Details and results of raptor surveys in the Upper Copper region.

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Bald Eagle													
Copper	Gakona	Gakona River	1976	plane	10-11 June	complete	Gakona River	U	1	U	U	DES	Haugh and Halperin 1976
Copper	Gulkana	Gulkana River	1976	plane	10-11 June	complete	Gulkana River	U	4	U	U	DES	Haugh and Halperin 1976
Copper	Gulkana	Gulkana River	1989	boat, aerial	May-July	complete	Paxson Lake to Copper River	U	14	10	17	None	Anthony et al. 1991
Copper	Gulkana	Gulkana River	1990	boat, aerial	May-July	complete	Paxson Lake to Copper River	U	17	6	9	None	Anthony et al. 1991
Copper	Gulkana	Middle Fork	1989	vehicle	May-July	partial	Swede Lake and Upper Middle Fork	U	5	4	7	None	Anthony et al. 1991
Copper	Gulkana	Middle Fork	1990	vehicle	May-July	partial	Swede Lake and Upper Middle Fork	U	4	3	4	None	Anthony et al. 1991
Copper	Gulkana	West Fork	1989	boat	May-July	partial	Fish Lake to Sourdough	U	4	3	5	None	Anthony et al. 1991
Copper	Gulkana	West Fork	1990	boat	May-July	partial	Fish Lake to Sourdough	U	11	4	5	None	Anthony et al. 1991
Copper	N/A	Copper River	1973	heli	13-15 July	complete	Slana to Copper Center, and Chitina River to McCarthy	52	9	9	15	DES	Adler and Ludlow 1973
Copper	N/A	Copper River	1988	boat	July	partial	Batzulnetas to Chitina	U	15	U	U	MAP	Amaral 1988
Golden Eagle													
Copper	Gulkana	Gulkana River	1972	heli	11-21 July	complete	Copper Center to Fielding Lake	U	2	U	U	None	White and Ray 1972

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Copper	Gulkana	Summit Lake	1970	aerial	Unknown	selective	Survey of proposed TAPS route	U	1	U	U	DES	White and Streater 1970
Copper	N/A	Copper River	1970	unknown	Unknown	unknown	None provided	U	1	1	1	None	McGowan 1971
Copper	N/A	Copper River	1973	heli	13-15 July	complete	Slana to Copper Center, and Chitina River to McCarthy	3	4	4	7	DES	Adler and Ludlow 1973
Gyr Falcon													
Copper	Gulkana	Gulkana River	1972	heli	11-21 July	complete	Copper Center to Fielding Lake	U	1	U	U	None	White and Ray 1972
Copper	Chitina	West Fork Tana River	1973	heli	13-15 July	complete	Slana to Copper Center, and Chitina River to McCarthy	2	0	0	0	None	Adler and Ludlow 1973
Peregrine Falcon													
Copper	Chitina	Chitina River	1987	unknown	August	incidental	None provided	U	1	U	U	None	Amaral 1988
Copper	Gakona	Gakona River	1975	heli	14 June	complete	Gakona to Summit Lake	U	0	0	0	None	White and Cade 1975b
Copper	Gakona	Gakona River	1976	plane	10-11 June	complete	Gakona River	0	0	0	0	None	Haugh and Halperin 1976
Copper	Gulkana	Gulkana River	1972	heli	11-21 July	complete	Copper Center to Fielding Lake	U	0	0	0	None	White and Ray 1972
Copper	Gulkana	Gulkana River	1977	plane	2 August	partial	Sourdough to Copper River	0	0	0	0	None	White and Boyce 1978
Copper	Gulkana	West Fork	1976	plane	10-11 June	complete	West Fork Gulkana River	1	U	U	U	DES	Haugh and Halperin 1976

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Copper	Gulkana	West Fork	1977	plane	2 August	partial	Sourdough to Fish Lake	0	0	0	0	None	White and Boyce 1978
Copper	N/A	Copper River	1973	heli	13-15 July	complete	Slana to Copper Center, and Chitina River to McCarthy	0	0	0	0	None	Adler and Ludlow 1973
Copper	N/A	Copper River	1975	heli	14 June	partial	Glenallen to Sanford River	U	0	0	0	None	White and Cade 1975b
Copper	N/A	Copper River	1987	boat	July	partial	Chistochina to Chitina	U	0	0	0	None	Amaral 1988
Copper	N/A	Copper River	1988	boat	28-29 July	partial	Batzulnetas to Chistochina	U	0	0	0	None	Amaral 1988
Copper	N/A	Copper River	1973	heli	13-15 July	complete	Red-tailed Hawk Slana to Copper Center, and Chitina River to McCarthy	2	0	0	0	None	Adler and Ludlow 1973

Appendix J. Details and results of raptor surveys in the West Coast region.

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Bald Eagle													
Inglutalik	N/A	Inglutalik River	1992	boat	23-28 June	complete	Kilusiktok Creek to Norton Bay	1	1	0	0	MAP	Morkill 1992
Kobuk	N/A	Kobuk River	1991	boat	9-16 July	partial	Walker Lake to Pah River	3	0	0	0	ROC; MAP	Swanson 1991
Unalakleet	Chiroskey	Chiroskey River	1979	boat	16-18 July	partial	Chiroskey River: 63°39'50"N, 160°26'20"W to 35km downstream	1	0	0	0	None	Mindell and Dotson 1980
Golden Eagle													
Golsovia	N/A	Golsovia River	1979	boat	9-11 July	partial	63°15'12"N, 161°16'10"W to 50km downstream (50 of 80 km)	0	1	U	U	None	Mindell and Dotson 1980
Ingakslugwat Hills	N/A	Ingakslugwat Hills	1988	foot, plane	June, July	partial	Foot and aerial survey of the Ingakslugwat Hills	U	3	3	4	TWR	McCaffery 1989
Inglutalik	N/A	Inglutalik River	1992	boat	23-28 June	complete	Kilusiktok Creek to Norton Bay	1	1	0	0	MAP	Morkill 1992
Kivalina	N/A	Kivalina River	1977	plane	10 July	partial	58 km surveyed	U	1	U	U	None	White and Boyce 1978
Noatak	N/A	Noatak River	1971	unknown	Unknown	unknown	None provided	U	5	5	7	None	McGowan 1973
Noatak	N/A	Noatak River	1975	boat, plane	19-30 June	partial	Aniuk River to Kelly River and some tributaries	0	5	5	7	DES	Haugh and Potter 1975
Noatak	N/A	Noatak River	1986	boat, heli	Unknown	complete	Lake Matcharak to Kotzebue Sound	U	2	1	1	RKM, MAP	Amaral 1986
Noatak	N/A	Noatak River	1987	boat	31 May-22 June, 7-27 July	complete	Lake Matcharak to Kelly Bar	9	5	3	3+	RKM	Ball 1987

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Noatak	N/A	Noatak River	1988	boat	13 June-4 July, 25 July-10 August	complete	Km 50-520	U	6	3	3	RKM; MAP	Ellis et al. 1988
Noatak	N/A	Noatak River	1990	boat	28 June-13 July	complete	Lake Matcharak to Sisiak Creek	6	1	0	0	None	Wildman 1990
Noatak	N/A	Noatak River	1991	boat	10-22 June	partial	Twelve Mile Slough to Park boundary	1	2	2	4	ROC; MAP	Swanson 1991
Noatak	N/A	Noatak River	1991	boat	18-26 June, July	complete	Twelve Mile Slough to western boundary Noatak National Preserve	0	2	2	3	ROC; DES; RKM; MAP	Wildman 1991
Seward Peninsula	N/A	Seward Peninsula	1968	aerial	Unknown	partial	None provided	U	7	U	U	None	McGowan 1975
Seward Peninsula	N/A	Seward Peninsula	1969	aerial	Unknown	partial	None provided	U	4	U	U	None	McGowan 1975
Seward Peninsula	N/A	Seward Peninsula	1970	unknown	Unknown	partial	None provided	U	1	1	2	None	McGowan 1971
Seward Peninsula	N/A	Seward Peninsula	1973	aerial	10-13 July	partial	Comparable area to Roseneau 1969, 1970	U	5	5	6	None	McGowan 1975
Shaktoolik	N/A	Shaktoolik River	1977	heli	11 July	complete	Brass Pan Creek to 85 km downstream	0	1	1	1	TWR	White and Boyce 1978
Unalakleet	North Fork Unalakleet	North Fork Unalakleet River	1977	plane	23 June	partial	48 km surveyed	0	1	1	2	TWR	White and Boyce 1978
Unalakleet	South	South River	1979	boat	25-27 July	complete	South River: 63°33'10"N, 160°46'20"W to 54km downstream	0	1	1	2	TWR	Mindell and Dotson 1980
Ungalik	N/A	Ungalik River	1977	plane, heli	25 June, 11 July	complete	90 km surveyed	0	2	2	4	TWR	White and Boyce 1978

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Wulik	N/A	Wulik River	1977	plane	8,10 July	complete	Headwaters to Chukchi Sea	U	3	U	U	None	White and Boyce 1978
Gyrfalcon													
Coco Creek	N/A	Coco Creek	1992	heli	3 July	unknown	None provided	0	1	1	4	ROC	McIntyre and Adams 1992
Golsovia	N/A	Golsovia River	1979	boat	9-11 July	partial	63°15'12"N, 161°16'10"W to 50km downstream (50 of 80 km)	0	2	1	3	TWR	Mindell and Dotson 1980
Ingakslugwat Hills	N/A	Ingakslugwat Hills	1988	foot, plane	June, July	partial	Foot and aerial survey of the Ingakslugwat Hills	U	3	2	6	TWR	McCaffery 1989
Kivalina	N/A	Kivalina River	1977	plane	10 July	partial	58 km surveyed	U	2	U	U	None	White and Boyce 1978
Kougarok	N/A	Kougarok River	1992	foot	3 July	unknown	None provided	0	1	1	3	ROC	McIntyre and Adams 1992
Noatak	N/A	Noatak River	1971	unknown	Unknown	unknown	None provided	U	2	1	2	None	McGowan 1973
Noatak	N/A	Noatak River	1975	boat, plane	19-30 June	partial	Aniuk River to Kelly River and some tributaries	2	5	4	10	DES	Haugh and Potter 1975
Noatak	N/A	Noatak River	1986	boat, heli	Unknown	complete	Lake Matcharak to Kotzebue Sound	3	1	1	3	RKM, MAP	Amaral 1986
Noatak	N/A	Noatak River	1987	boat	31 May-22 June, 7-27 July	complete	Lake Matcharak to Kelly Bar	1	3	2	7	RKM	Ball 1987
Noatak	N/A	Noatak River	1988	boat	13 June-4 July, 25 July-10 August	complete	Km 50-520	U	5	3	6	RKM; MAP	Ellis et al. 1988
Noatak	N/A	Noatak River	1990	boat	28 June-13 July	complete	Lake Matcharak to Sisiak Creek	0	3	3	5	ROC; DES; RKM	Wildman 1990

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Noatak	N/A	Noatak River	1991	boat	10-22 June	partial	Twelve Mile Slough to Park boundary	0	2	2	U	ROC; MAP	Swanson 1991
Noatak	N/A	Noatak River	1991	boat	18-26 June, July	complete	Twelve Mile Slough to western boundary Noatak National Preserve	0	2	2	3	ROC; DES; RKM; MAP	Wildman 1991
Noatak	Nushralutak Creek	Nushralutak Creek	1990	foot	28 June-13 July	partial	Foot survey prior to boat survey of Noatak River	0	1	1	2	ROC; DES	Wildman 1990
Noatak	Nushralutak Creek	Nushralutak Creek	1991	foot	17 June	partial	Foot survey prior to boat survey of Noatak River	0	1	1	U	ROC; DES	Wildman 1991
Nuluk	N/A	Nuluk River	1992	heli	4 July	unknown	None provided	0	1	1	3	ROC	McIntyre and Adams 1992
Seward Peninsula	N/A	Seward Peninsula	1968	aerial	Unknown	partial	None provided	U	U	19	55	None	McGowan 1975
Seward Peninsula	N/A	Seward Peninsula	1969	aerial	Unknown	partial	None provided	U	U	14	35	None	McGowan 1975
Seward Peninsula	N/A	Seward Peninsula	1970	unknown	Unknown	partial	None provided	U	1	1	4	None	McGowan 1971
Seward Peninsula	N/A	Seward Peninsula	1973	aerial	10-13 July	partial	Comparable area to Roseneau 1969, 1970	U	23	21	49	None	McGowan 1975
Seward Peninsula	N/A	Seward Peninsula	1987	boat, foot	July	selective	Cape Krusenstern to Shaktoolik	0	1	U	U	MAP	Wright 1987
Shaktoolik	N/A	Shaktoolik River	1977	heli	11 July	complete	Brass Pan Creek to 85 km downstream	0	1	1	4	TWR	White and Boyce 1978
Unalakleet	North Fork Unalakleet	North Fork Unalakleet River	1977	plane	23 June	partial	48 km surveyed	0	1	1	2	TWR	White and Boyce 1978

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Unalakleet	North	North River	1977	plane	25 June	complete	74 km surveyed	0	1	1	1	TWR	White and Boyce 1978
Unalakleet	North	North River	1980	boat	28-31 July	complete	North: 64°24'31"N, 159°56'28"W to 88km downstream	0	1	1	3	TWR	Mindell and Dotson 1980
Ungalik	N/A	Ungalik River	1977	plane, heli	25 June, 11 July	complete	90 km surveyed	0	5	5	13	TWR	White and Boyce 1978
Wulik	N/A	Wulik River	1977	plane	8,10 July	complete	Headwaters to Chukchi Sea	U	1	U	U	None	White and Boyce 1978
Merlin													
Golsovia	N/A	Golsovia River	1979	boat	9-11 July	partial	63°15'12"N, 161°16'10"W to 50km downstream (50 of 80 km)	0	1	U	U	DES	Mindell and Dotson 1980
Inglutalik	N/A	Inglutalik River	1992	boat	23-28 June	complete	Kilusiktok Creek to Norton Bay	1	0	0	0	MAP	Morkill 1992
Noatak	N/A	Noatak River	1988	boat	13 June-4 July, 25 July-10 August	complete	Km 50-520	U	3	2	5	RKM; MAP	Ellis et al. 1988
Noatak	N/A	Noatak River	1991	boat	10-22 June	partial	Twelve Mile Slough to Park boundary	2	0	0	0	ROC; MAP	Swanson 1991
Unalakleet	Chiroskey	Chiroskey River	1979	boat	16-18 July	partial	Chiroskey River: 63°39'50"N, 160°26'20"W to 35km downstream	1	0	0	0	None	Mindell and Dotson 1980
Peregrine Falcon													
Coco Creek	N/A	Coco Creek	1992	heli	3 July	unknown	None provided	0	0	0	0	None	McIntyre and Adams 1992
Golsovia	N/A	Golsovia River	1979	boat	9-11 July	partial	63°15'12"N, 161°16'10"W to 50km downstream (50 of 80 km)	0	0	0	0	None	Mindell and Dotson 1980

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Ingakslugwat Hills	N/A	Ingakslugwat Hills	1988	foot, plane	June, July	partial	Foot and aerial survey of the Ingakslugwat Hills	U	0	0	0	None	McCaffery 1989
Inglutalik	N/A	Inglutalik River	1992	boat	23-28 June	complete	Kilusiktok Creek to Norton Bay	0	1	1	1	ROC; MAP	Morkill 1992
Kivalina	N/A	Kivalina River	1977	plane	10 July	partial	58 km surveyed	U	0	0	0	None	White and Boyce 1978
Kobuk	N/A	Kobuk River	1991	boat	9-16 July	partial	Walker Lake to Pah River	1	0	0	0	ROC; MAP	Swanson 1991
Kotzebue Sound	N/A	Kotzebue Sound	1990	unknown	Unknown	unknown	None provided	1	3	U	U	ROC	Ambrose 1990
Kougarok	N/A	Kougarok River	1992	foot	3 July	unknown	None provided	0	0	0	0	None	McIntyre and Adams 1992
Noatak	N/A	Noatak River	1971	unknown	Unknown	unknown	None provided	U	0	0	0	None	McGowan 1973
Noatak	N/A	Noatak River	1975	boat, plane	19-30 June	partial	Aniuk River to Kelly River and some tributaries	0	0	0	0	None	Haugh and Potter 1975
Noatak	N/A	Noatak River	1986	boat, heli	Unknown	complete	Lake Matcharak to Kotzebue Sound	1	4	2	6	RKM, MAP	Amaral 1986
Noatak	N/A	Noatak River	1987	boat	31 May-22 June, 7-27 July	complete	Lake Matcharak to Kelly Bar	1	4	2	4	RKM	Ball 1987
Noatak	N/A	Noatak River	1988	boat	13 June-4 July, 25 July-10 August	complete	Km 50-520	U	4	2	3	RKM; MAP	Ellis et al. 1988
Noatak	N/A	Noatak River	1989	unknown	Unknown	complete	Lake Matcharak to Kotzebue Sound	0	3	2	3	ROC	Ambrose 1989

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Noatak	N/A	Noatak River	1990	boat	28 June-13 July	complete	Lake Matcharak to Sisiak Creek	1	2	1	2	ROC; DES; RKM	Wildman 1990
Noatak	N/A	Noatak River	1991	boat	10-22 June	partial	Twelve Mile Slough to Park boundary	0	1	1	3	ROC; MAP	Swanson 1991
Noatak	N/A	Noatak River	1991	boat	18-26 June, July	complete	Twelve Mile Slough to western boundary Noatak National Preserve	0	4	4	8	ROC; DES; RKM; MAP	Wildman 1991
Noatak	Nushralutak Creek	Nushralutak Creek	1990	foot	29 June	partial	Foot survey prior to boat survey of Noatak River	0	0	0	0	None	Wildman 1990
Noatak	Nushralutak Creek	Nushralutak Creek	1991	foot	17 June	partial	Foot survey prior to boat survey of Noatak River	0	0	0	0	None	Wildman 1991
Norton Sound	Cape Nome	Cape Nome	1988	vehicle	29 July	incidental	Eyrie observed in active rock quarry	0	1	1	1	ROC	Booth 1988
Norton Sound	N/A	Norton Sound	1988	heli	June, July	complete	Black Point to Cape York	1	19	13	34	DES	Wright and Hughes 1988, Wright 1991
Norton Sound	N/A	Norton Sound	1989	heli	5-14 June, 7-12 July, 24-29 July	complete	Black Point to Wales	4	23	14	35	MAP; ROC	Wright 1990
Norton Sound	N/A	Norton Sound	1990	unknown	Unknown	unknown	None provided	15	24	20	50	ROC	Ambrose 1990
Norton Sound	N/A	Norton Sound	1991	heli	July	complete	Stuart Is. To Cape Prince of Wales	10	27	22	54	RKM; MAP; ROC	Bente and Wright 1992
Nuluk	N/A	Nuluk River	1992	heli	4 July	unknown	None provided	0	0	0	0	None	McIntyre and Adams 1992
Seward Peninsula	N/A	Seward Peninsula	1987	boat, foot	July	selective	Cape Krusenstern to Shaktoolik	1	6	5	16	MAP	Wright 1987

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Shaktoolik	N/A	Shaktoolik River	1977	heli	11 July	complete	Brass Pan Creek to 85 km downstream	0	0	0	0	None	White and Boyce 1978
Shaktoolik	N/A	Shaktoolik River	1987	boat	8-16 July	unknown	Unknown section of river surveyed	0	2	2	2	ROC	Bolstadt 1987
Unalakleet	Chiroskey	Chiroskey River	1979	boat	16-18 July	partial	Chiroskey River: 63°39'50"N, 160°26'20"W to 35km downstream	0	0	0	0	None	Mindell and Dotson 1980
Unalakleet	North Fork Unalakleet	North Fork Unalakleet River	1977	plane	23 June	partial	48 km surveyed	0	0	0	0	None	White and Boyce 1978
Unalakleet	North	North River	1977	plane	25 June	complete	74 km surveyed	0	0	0	0	None	White and Boyce 1978
Unalakleet	North	North River	1980	boat	28-31 July	complete	North: 64°24'31"N, 159°56'28"W to 88km downstream	0	0	0	0	None	Mindell and Dotson 1980
Unalakleet	Old Woman	Old Woman River	1980	boat	26-27 July	partial	Old Woman: 63°41'36"N, 159°48'36"W to 46km downstream	0	0	0	0	None	Mindell and Dotson 1980
Unalakleet	South	South River	1979	boat	25-27 July	complete	South River: 63°33'10"N, 160°46'20"W to 54km downstream	0	0	0	0	None	Mindell and Dotson 1980
Ungalik	N/A	Ungalik River	1977	plane, heli	25 June, 11 July	complete	90 km surveyed	0	0	0	0	None	White and Boyce 1978
Wulik	N/A	Wulik River	1977	plane	8,10 July	complete	Headwaters to Chukchi Sea	U	0	0	0	None	White and Boyce 1978
Rough-legged Hawk													
Golsovia	N/A	Golsovia River	1979	boat	9-11 July	partial	63°15'12"N, 161°16'10"W to 50km downstream (50 of 80 km)	1	1	1	4	TWR	Mindell and Dotson 1980
Ingakslugwat Hills	N/A	Ingakslugwat Hills	1988	foot, plane	June, July	partial	Foot and aerial survey of the Ingakslugwat Hills	U	6	U	U	TWR	McCaffery 1989

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Inglutalik	N/A	Inglutalik River	1992	boat	23-28 June	complete	Kilusiktok Creek to Norton Bay	0	1	U	U	ROC; MAP	Morkill 1992
Kivalina	N/A	Kivalina River	1977	plane	10 July	partial	58 km surveyed	U	3	U	U	None	White and Boyce 1978
Kobuk	N/A	Kobuk River	1991	boat	9-16 July	partial	Walker Lake to Pah River	2	0	0	0	ROC; MAP	Swanson 1991
Noatak	N/A	Noatak River	1971	unknown	Unknown	unknown	None provided	U	3	0	0	None	McGowan 1973
Noatak	N/A	Noatak River	1975	boat, plane	19-30 June	partial	Aniuk River to Kelly River and some tributaries	0	3	1	5	DES	Haugh and Potter 1975
Noatak	N/A	Noatak River	1986	boat, heli	Unknown	complete	Lake Matcharak to Kotzebue Sound	U	5	4	9	RKM, MAP	Amaral 1986
Noatak	N/A	Noatak River	1987	boat	31 May-22 June, 7-27 July	complete	Lake Matcharak to Kelly Bar	7	4	1	2	RKM	Ball 1987
Noatak	N/A	Noatak River	1988	boat	13 June-4 July, 25 July-10 August	complete	Km 50-520	U	14	7	11	RKM; MAP	Ellis et al. 1988
Noatak	N/A	Noatak River	1990	boat	28 June-13 July	complete	Lake Matcharak to Sisiak Creek	0	6	5	14	ROC; DES; RKM	Wildman 1990
Noatak	N/A	Noatak River	1991	boat	10-22 June	partial	Twelve Mile Slough to Park boundary	0	1	U	U	ROC; MAP	Swanson 1991
Noatak	N/A	Noatak River	1991	boat	18-26 June, July	complete	Twelve Mile Slough to western boundary Noatak National Preserve	0	6	6	8	ROC; DES; RKM; MAP	Wildman 1991
Noatak	Nushralutak Creek	Nushralutak Creek	1990	foot	29 June	partial	Foot survey prior to boat survey of Noatak River	0	1	0	0	ROC; DES	Wildman 1990

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Noatak	Nushralutak Creek	Nushralutak Creek	1991	foot	17 June	partial	Foot survey prior to boat survey of Noatak River	0	1	U	U	ROC; DES	Wildman 1991
Seward Peninsula	N/A	Seward Peninsula	1968	aerial	Unknown	partial	None provided	U	28	U	U	None	McGowan 1975
Seward Peninsula	N/A	Seward Peninsula	1969	aerial	Unknown	partial	None provided	U	7	U	U	None	McGowan 1975
Seward Peninsula	N/A	Seward Peninsula	1973	aerial	10-13 July	partial	Comparable area to Roseneau 1969, 1970	U	9	9	24	None	McGowan 1975
Seward Peninsula	N/A	Seward Peninsula	1987	boat, foot	July	selective	Cape Krusenstern to Shaktoolik	0	3	3	U	MAP	Wright 1987
Unalakleet	Chiroskey	Chiroskey River	1979	boat	16-18 July	partial	Chiroskey River: 63°39'50"N, 160°26'20"W to 35km downstream	0	2	2	4	TWR	Mindell and Dotson 1980
Unalakleet	North	North River	1977	plane	25 June	complete	74 km surveyed	0	1	1	1	TWR	White and Boyce 1978
Unalakleet	North	North River	1980	boat	28-31 July	complete	North: 64°24'31"N, 159°56'28"W to 88km downstream	0	1	1	U	TWR	Mindell and Dotson 1980
Unalakleet	Old Woman	Old Woman River	1980	boat	26-27 July	partial	Old Woman: 63°41'36"N, 159°48'36"W to 46km downstream	1	2	2	2	TWR	Mindell and Dotson 1980
Unalakleet	South	South River	1979	boat	25-27 July	complete	South River: 63°33'10"N, 160°46'20"W to 54km downstream	0	2	U	U	TWR	Mindell and Dotson 1980
Ungalik	N/A	Ungalik River	1977	plane, heli	25 June, 11 July	complete	90 km surveyed	0	3	U	U	TWR	White and Boyce 1978
Wulik	N/A	Wulik River	1977	plane	8,10 July	complete	Headwaters to Chukchi Sea	U	2	U	U	None	White and Boyce 1978

Red-tailed Hawk

Major Drainage	Minor Drainage	Area surveyed	Year	Survey Method	Dates	Survey coverage	Survey Details	Single Adults	No. Pairs	Min. No. Successful Nests	Min. No. Young	Nest Site Format	Reference
Kobuk	N/A	Kobuk River	1991	boat	9-16 July	partial	Walker Lake to Pah River	1	1	1	1	ROC; MAP	Swanson 1991
Shaktoolik	N/A	Shaktoolik River	1987	boat	8-16 July	unknown	Unknown section of river surveyed	1	0	0	0	ROC	Bolstadt 1987
Unalakleet	North	North River	1980	boat	28-31 July	complete	North: 64°24'31"N, 159°56'28"W to 88km downstream	0	1	1	1	TWR	Mindell and Dotson 1980