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PROGRESS REPORT:

Bald Eagle Nesting and Reproductive Success
Along the Pacific Coast of the Alaska Peninsula
Cape Kubugakli to American Bay,
9 May-28 July, 1990

by

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Becharof, productivity, Oil Spill, Pacific Coast, bald
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ABSTRACT

Bald eagle (Haliaeetus leucocephalus) nesting success was examined along the Pacific Coast of the Alaska Peninsula, from Cape Kubugakli to American Bay, during the summer of 1990. A total of 245 nests were recorded, with productivity monitored on 117 nests. The mean clutch size was 1.78 eggs, with 35 nests containing 3 eggs. Hatching success was low at 44%, while brood rearing success was 82%, with pair productivity at 0.35 fledglings/egg laid. Nesting success (55%) and nest productivity (0.81-0.90 fledglings/occupied and/or active nest) closely paralleled that recorded in 1989.

Habitat use also paralleled 1989 results with nearshore islands/islets used more frequently for nests than other available habitat types. Fifty-four percent of the 1989 nest sites were reused in 1990.

INTRODUCTION

Bald eagles (Haliaeetus leucocephalus) are abundant along the waters of the Pacific Ocean throughout Alaska (Murie 1959, King et al. 1972); however, baseline information on relative abundance, distribution and production is lacking for the Alaska Peninsula (Sowl 1982). Within the last decade, surveys have been conducted to determine distribution and abundance on the Peninsula (Sowl 1982, Hodges 1983, Payne 1987, Payne 1988) indicating highest densities along the Pacific coast.

In March 1989, the 11-million gallon Exxon Valdez Oil Spill impacted 1170 km (725 mi) of Pacific shoreline (Cape Kubugakli to American Bay) contained within the Alaska Peninsula/Becharof National Wildlife Refuges and 100+ nearshore islands and islets managed as the Alaska Peninsula Unit of the Alaska Maritime National Wildlife Refuge. Bald eagle surveys conducted as part of the Refuges' Wildlife Inventory Plan formed basis for oil spill damage assessment studies. These pre-oil surveys included an aerial random plot survey of eagle density conducted in 1983 (Payne 1988) and a coastal nest survey conducted in 1987 (Payne 1987).

In May 1989, a bald eagle (oil spill) damage assessment study was initiated along the Pacific Coast, from Cape Kubugakli to Cape Kumnik. The objectives of the study included: a) determine the location and distribution of eagle nests along the Alaska Peninsula shoreline impacted by oil, b) monitor reproductive success from egg to fledgling, c) document any direct signs of oil impact on nesting eagles, and d) collect abandoned eggs for hydrocarbon analysis.

In May 1990, this study was expanded 209 km (130 mi) south to American Bay to include data from Becharof, Alaska Peninsula, and Alaska Maritime National Wildlife Refuges, and Aniakchak National Monument and Preserve.

METHODS AND STUDY AREA

For this year's surveys, the study area covered from Cape Kubugakli south to American Bay, along the Pacific Coast of the Alaska Peninsula, including nearshore islands (Fig. 1). The area consists of 1,330 km (825 mi) of rugged shoreline formed by the junction of the Aleutian Mountain Range and the Pacific Ocean. Kodiak Island is located 48 km (30 mi) east from the peninsula separated by the Shelikof Strait. Study area boundaries were the Katmai National Park and Preserve to the north and the Pavlof Unit of the Alaska Peninsula Refuge (managed by Izembek National Wildlife Refuge) to the south.

Aerial nest surveys were flown using a chartered Bell 206 Jet-Ranger helicopter. The same primary observer (author) was maintained on all surveys, with alternating second observers. On the initial survey, active nest locations were marked on 1:63,360 series topography maps. Active nests were those possessing two or more of the following items: fresh nesting materials, 1-2 adult eagles actively defending nest, adult eagle in incubating posture, egg(s) present, or young present.

Helicopter use was necessary during the later surveys, to gain foot access to nests. Nests determined as active on initial surveys, and not on later surveys, were examined for signs of oil, predation, disturbance or any egg/young remains. Apparent abandoned eggs (those not protected or tended by adults), were collected for hydrocarbon testing.

Survey data was recorded on a Word Perfect data file (Appendix I). Nest sites were classified by habitat type (Appendix I). Nests located from Kujilik Bay south to American Bay were surveyed only one time, and this was during the incubating/early hatchling period. Nests from Cape Kumliun north to Cape Kubugakli were surveyed three times; during incubation (May), downy hatchling stage (late June) and late fledgling stage (late July). During each nest visit, we recorded the number of adults/eggs/young present and the age class of the eaglets (Carpenter 1990).

Upon trying to compare our eagle reproduction results with similar studies in Alaska, it became clear that the term productivity had multiple usage in bald eagle literature, depending on survey methodology. Generally, observers were not

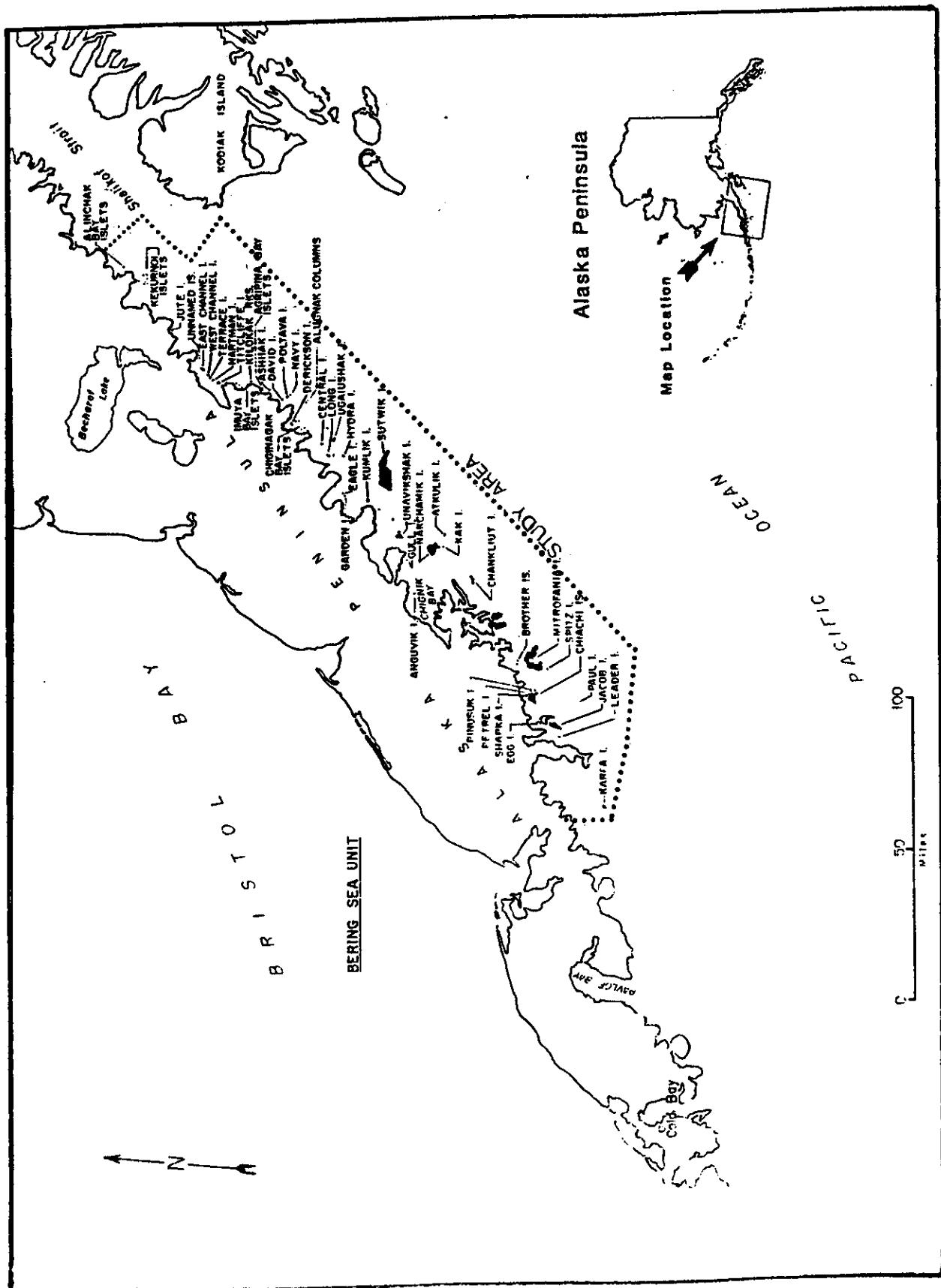


Figure 1. Study area location used for the 1990 bald eagle nesting survey, extending from Cape Kubugakli south to American Bay, along the Pacific Coast of the Alaska Peninsula, Alaska, including all nearshore islands.

able to record the number of eggs in nests, so the standard definition "productivity = fledglings/eggs laid" was rarely used. More commonly, eagle productivity was defined as the quantity of fledglings produced per nest. Yet, the term "nest" has been used to represent different things such as occupied nest, active nest and successful nest (see Appendix I for definitions). For purposes of clarity in this report, productivity was divided into two categories: pair productivity (# fledglings/egg laid) and nest productivity (# fledglings/nest). Additionally, separate calculations were made based on the different definitions of "nest."

Using the larger study area and sample size this year, I decided that the Sherrod et al. (1977) habitat classification system, used in 1989, was inadequate for the Alaska Peninsula. The original eagle habitat classification system was designed for the Aleutian Islands, where the island aspect was taken for granted. Along the Pacific Coast of the Alaska Peninsula, it was important to distinguish islands from the mainland, yet maintain the integrity of the original system. So, I decided to create a subclass under the island/islet heading allowing for all original habitat types to still be differentiated. The key at the end of Appendix I provides definitions and new organization of habitat categories used in this study.

RESULTS AND DISCUSSION

Nest Sites

In total, 245 bald eagle nest sites were recorded during this year's survey, from Cape Kubugakli to American Bay. Nest distribution was not equal among the different land management units (Table 1). So, data gathered by land management unit should not be used to format trends for the entire Alaska Peninsula.

Habitat use by nesting eagles in 1990 paralleled that of 1989 (Dewhurst 1989) (Table 2), for the comparable northern study area (Cape Kubugakli to Cape Kumnik). No direct relationships were found between habitat selection and nesting success (Table 2).

Expanding the study area in 1990 tripled the nest sample size, providing a more comprehensive study of habitat preferences along the Alaska Peninsula (Table 1). Islands and islets were by far the most used nesting habitat (Table 1, Fig. 2). By stratifying the data and examining only the island/islet nests, sea stacks and hillsides became the most used habitat types (Fig. 3). Thus the most preferred habitat, in the study area, was sea stacks adjacent to islands.

Table 1. Bald eagle nesting habitat preferences in the 1990 expanded study area of Cape Kubugakli to American Bay, subdivided into the respective management units.

Habitat Types ^a	# Active Nests				
	Becharof Refuge	Ugashik Unit	Chignik Unit	Maritime Refuge	Aniakchak Monument
I) Sea stacks	8	10	14	0	5
II) Coastal Ridges	1	0	26	0	2
III) Connected Stacks	0	1	14	0	3
IV) Islets/Islands					
-I Sea Stacks	0	0	0	32	0
-II Ridges	0	1	0	5	0
-III Conn. Stack	0	0	0	9	0
-IV Smaller Islet	0	0	0	1	0
-Va Hilltops	0	0	3	17	0
-Vb Hillsides	0	2	5	25	0
Va) Hilltops	3	7	27	0	5
Vb) Hillsides	2	0	10	0	3
Totals	14	26	99	89	17

^a Habitat types are defined in Appendix I

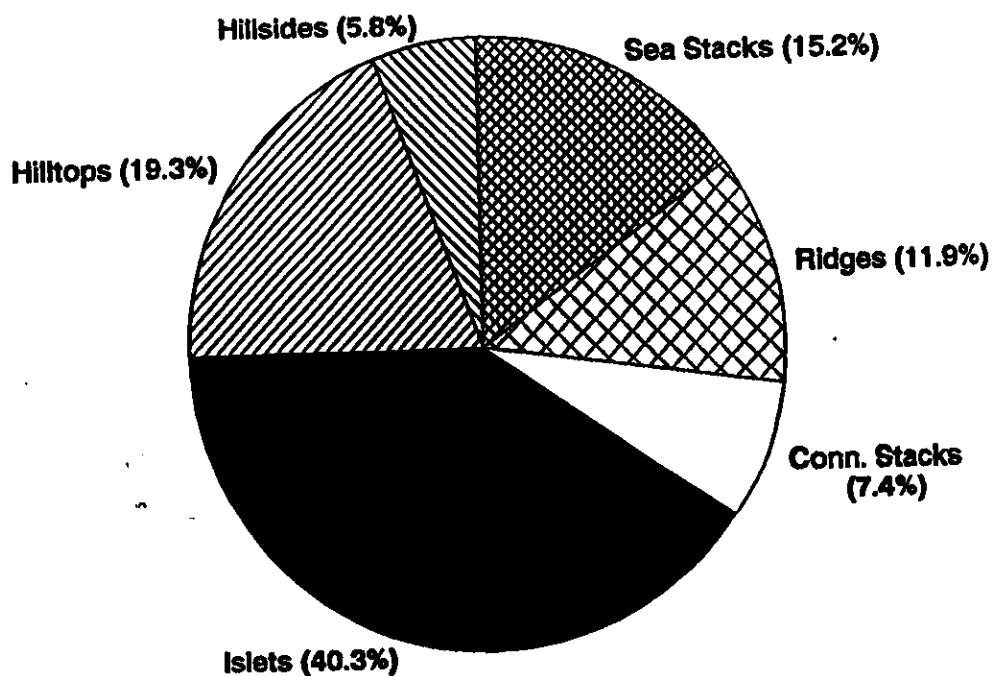


Figure 2. Distribution of 1990 bald eagle nests among available habitat types along the Pacific Coast of the Alaska Peninsula, Alaska, included nearshore islands (N=245 nests).

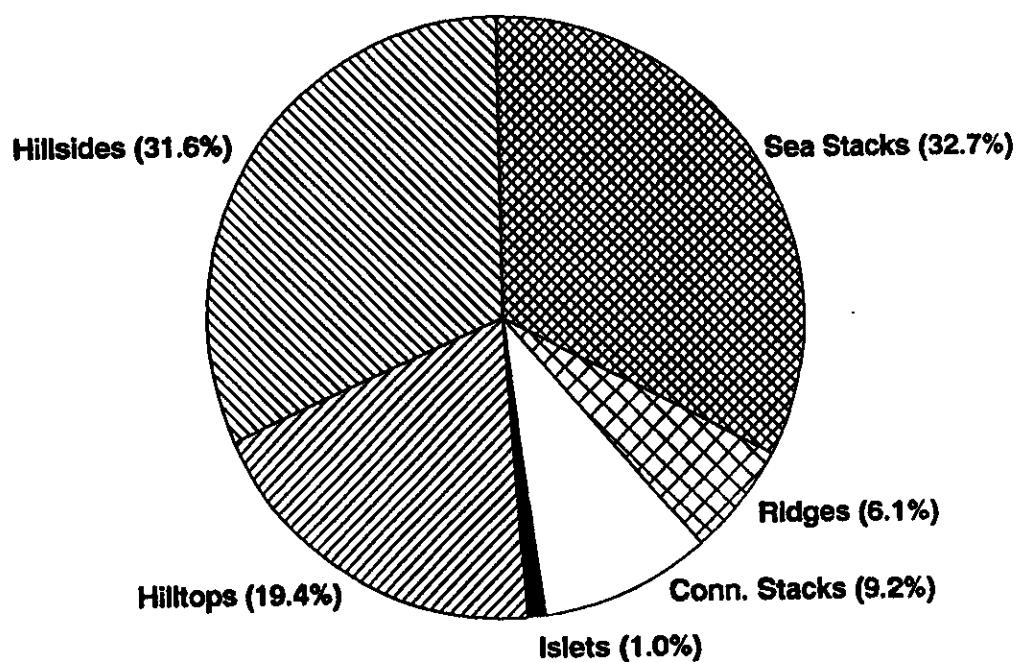


Figure 3. Bald eagle nest habitat selection on nearshore islands of the Alaska Peninsula, Alaska, May-July 1990 (N=100).

Table 2. A comparison of bald eagle nest site selection and success rate among differing habitat types, from Cape Kubugakli to Cape Kunmik, Alaska Peninsula, Alaska, May-July 1989 and 1990.

Habitat Types ^a	1989		1990	
	# Nests	% Success ^b	# Nests	% Success
(I) Sea Stack	15	73%	19	47%
(II) Coastal Ridge	6	50%	3	0
(III) Connected Stack	4	50%	1	0
(IV) Islets	38	56%	40	58%
(V) Hillsides	9	25%	15	60%
Total	72	55%	78	53%

^a Habitat types are defined in Appendix I

^b # Nests with fledglings/# Active Nests

Bald eagle habitat selection along the Alaska Peninsula coast may relate to nest access by land-based predators, namely brown bears (*Ursus horribilis*), red foxes (*Vulpes fulva*), and the introduced arctic foxes (*Alopex lagopus*). The higher preference for islands may have some basis on islands providing protection from predators. Arctic foxes were introduced to nearby islands for fox farming, except for Sutwik Island (Bailey, in prep), but by the 1950's, most had died or were removed by trapping. Red foxes have been documented only on Titcliff Island in Wide Bay (Bailey and Faust 1984). Brown bears are common only on Sutwik and the Wide Bay Islands, but visit all of the Peninsular islands. So mammalian predators are less common on islands than on the mainland, but whether or not this was a selective factor is only theory and subject to debate. For example, some of the highest densities of both bears and nesting eagles for the Alaska Peninsula, exist on Sutwik and the Wide Bay Islands.

Of the 72 nest sites surveyed in 1989, 54% were used again in 1990. Nest movement to nearby sites was recorded in 22 cases (Appendix III), with the mean distance between nesting sites being 1.2 km (0.7 mi). The yearly shifting of nest sites was examined to look for habitat preference patterns. In 63% of the moves, the nesting eagles built on the same habitat type as the original nest (Appendix III). Twenty-five nest sites used in 1989 or 1990 could not be reconciled as definite nest movement due to larger distances between sites. Eleven of the 1989 nest sites were abandoned in 1990, while 14 new nest sites were found in 1990 (Appendix III). Islands/islets were the most common habitat type in both the abandoned and the new sites.

Pair Productivity

All of the 245 active nests were initially checked for eggs, downy chicks or incubating adults. In 37 cases, incubating adults did not permit observation of nest contents. Of the 154 nests where nest contents were observed, clutch size frequencies were: 0 eggs-22, 1 egg-24, 2 eggs-73, and 3 eggs-35, producing a mean clutch size of 1.78 eggs.

Determining the overall pair productivity (# fledglings/eggs laid) was impossible due to the significant number of nests with initial contents unknown. Tallying only nests with known contents, 192 eggs yielded 85 downy (classes 1 and 2) eaglets and 70 fledglings (class 3). Pair productivity was 0.36 or one fledgling per every three eggs laid. Hatching success was surprisingly low (85 hatchlings/192 eggs = 44%), while brood rearing success was relatively high (70 fledglings/85 hatchlings = 82%). Brood rearing success was very comparable to 1989 results (57 fledglings/68 hatchlings = 84%).

Nest Productivity

Nest productivity in 1990 closely paralleled that of 1989 with 0.81-0.90 fledglings/occupied and/or active nest (Table 3). Nest productivity on the Alaska Peninsula was also very comparable with other bald eagle populations outside of Prince William Sound. Over the same study period (1989-1990), nest productivity on Kodiak Island was 1.63-1.66 (fledglings/successful nest), on the Upper Copper River was 1.61-1.72, and in Southeast Alaska was 1.39-1.52 (Schempf et al. 1990).

Nesting Success/Failure

Bald eagle nesting success closely paralleled than of 1989, with 53-55% of the nesting pairs successfully rearing eaglets to fledging (Table 3).

Determining the stage of nest failure was dependent on being able to observe nest contents on all surveys conducted. This was possible on 66% of the 50 failed active nests. Most nest failures occurred during incubation/hatching with 23 nests losing all eggs laid. Only ten nests failed during brood rearing.

The causes of nest failure were generally unknown, but brown bears (*Ursus horribilis*) were confirmed of destroying five nests, surprisingly all on islands: Wide Bay - # 90020, 90021; Aiugnak Columns - # 90076, 90077; Chiginagak Bay - # 90052). In these documented cases, a bear was observed on the respective islands and nests were physically destroyed. All surveyed nest sites were within range of brown bears, with access limited only by severe topography (narrow sea stacks, remote ledges).

Attempts to collect addled eggs for hydrocarbon analysis were futile this year. During the second survey (late June) only five eggs were observed, contrasting to the 12 eggs similarly sighted in 1989 (Dewhurst 1989). Of the five eggs observed, all were actively defended by at least one adult, so no collection was attempted. On the third survey (late July), only one egg remained, but the collection attempt was abandoned due to hazardous landing conditions. The other four eggs observed on the second survey were absent and presumed failed.

Observability of Nests/Young

Using a consistent primary observer (author) throughout the 1990 surveys eliminated the problem of nest location marking errors observed in 1989.

Incubating adult eagles flushed more often in this year's study, permitted observations of eggs and initial nest contents.

Table 3. A comparison of 1989 and 1990 bald eagle nest occupancy and productivity along the Pacific Coast of the Alaska Peninsula, Alaska.

<u>Cape Kubugakli to Cape Kunmik^a</u>	<u>1989</u>	<u>1990</u>
Total # Nests Surveyed ^b	72	106
# Occupied and/or Active Nests	72	78
# Successful Nests	40	41
% Nesting Success ^c	55%	53%
# Fledglings	62	70
# Fledglings/ Occupied-Active Nest	0.86	0.90
# Fledglings/ Successful Nest	1.55	1.71

<u>Total 1990 Productivity Survey Area (Cape Kubugakli to Cape Kumlik)</u>	<u>1990</u>
Total # Nests Surveyed	145
# Occupied and/or Active Nests	117
# Successful Nests	60
% Nesting Success	55%
# Fledglings	95
# Fledglings/ Occupied-Active Nest	0.81
# Fledglings/ Successful Nest	1.58

^a Data from Cape Providence and Aiugnak Columns was only collected in 1990 and was not included in calculations.

^b Includes "empty" nests. Note empty nests were not recorded during the 1989 survey. During the 1990 survey, empty nests were those occupied in 1989 but not in 1990. Other abandoned nests (w/out fresh nesting material) were not documented due to problems with distinguishing bald eagle nests from those built by gyrfalcons, rough-legged hawks and common ravens.

^c Nests discovered during the later surveys were not included in this calculation for either 1989 or 1990.

Use of helicopters throughout all the 1990 surveys improved observer accuracy, even in the fledgling stages (class 3). Unique observation problems were documented for each stage of productivity monitoring (Dewhurst 1989). Helicopter use improved accuracy in all survey stages by providing the ability to ground truth when nest contents were suspect.

Increasing the survey's scope in 1990 to include the Chignik Unit of the Alaska Peninsula Refuge, permitted further testing of helicopter use in treeless, mountainous, coastal terrain. In the Chignik Unit, more tall brush [Alders (Alnus spp.)] and willows (Salix spp.)] were encountered reducing nest visibility. Also, the combination of steeper terrain and low ceilings restricted survey periods and possibly caused higher altitude nests to be missed. The highest altitude nests were documented at 162 m (500 ft) in Kuiukta Bay and 327 m (1,000 ft) on Karpa Island. Comparing 1990 results with a similar study conducted by Payne (1987) using a Cessna 206 fixed-wing aircraft, 102 more nests were sighted this year than in 1987, using the same study area bounds (Cape Kubugakli to American Bay, excluding islands and Aniakchak National Monument). Based on these related facts, helicopter use was a more accurate and reliable method of censusing bald eagle nests along the Alaska Peninsula coast.

CONCLUSIONS

Expanding the study area in 1990, adding from Cape Kunnik to American Bay, yielded observations of 245 nests. Nesting habitat selection paralleled that of 1989. Nesting success and productivity also paralleled 1989 levels, and were consistent with other eagle populations surveyed outside of Prince William Sound. The ability to observe more eggs this year allowed for determination of mean clutch sizes and hatching success, not possible last year. Continuing observations were made of nest destruction by brown bears.

RECOMMENDATIONS

- 1) Revise the Alaska Peninsula/Becharof Refuges' Wildlife Inventory Procedure for bald eagles to include replication of nest surveys of the Pacific coast. To reduce expenses, surveys could be annually alternated between the Becharof Refuge/Ugashik Unit and the Chignik Unit. Preferably two series of flights would be conducted annually, during the incubation stage and the fledgling stage.
- 2) All future coastal bald eagle nesting surveys should be conducted by helicopter only, to maintain survey accuracy and safety.

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Appendix I. Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type ^a	Survey Dates
Quad-Nest				
Karluk D-4	8901/90001	Cape Kubugakli	I A/1ai	5/9/90 6/22/90
121-44-6			E/o	E/o
Karluk D-4	/90002	Alinchak Bay	Va 0/2a	7/26/90
121-44-7			A/1ai	Unit BNWR
Karluk D-4	8902/	Alinchak Bay	I E/o	E/o
121-D4-5			E/o	BNWR
Karluk D-4	/90003	Alinchak Bay	I A/2a2e	A1/1a1y-2
121-44-8			A/1a3e	A1/1a1y-3C BNWR
Karluk D-4	8903/90004	Alinchak Bay	I A/1a3e	A/1a1e BNWR
121-44-4			A/2a3e	E/o
Karluk D-4	/90005	Alinchak Bay	I A/1ai	NF/0a
121-44-9			A/1ai	BNWR
Karluk D-4	/90006	Alinchak Bay	I A/1ai	5/9/90
121-44-10			A/1ai	E/o
Karluk D-4	8905/	Alinchak Bay	I 0/2a	NF/0a
121-44-2			A/1ai	BNWR
Karluk D-4	8906/90007	Alinchak Bay	I A/1ai	5/9/90
121-44-1			A/1ai	E/o
Karluk D-4	8904/90008	Alinchak Bay	IVb A/1ai	BNWR
121-44-3			A/1ai	BNWR
Karluk C4&5	8907/	Cape Kekurnoi	II 0/2a	NF/0a
121-34-3			NF/0a	BNWR
Karluk C4&5	8908/90009	Kekurnoi Islets	IVb A/2ai	A2/2a2y-2
121-34-2			A/2ai	A2/2a2y-3C AMR
Karluk C4&5	8909/90010	Kekurnoi Islets	IVb A/2a1e	F/1a0e
121-34-1			F/1a0e	AMR
Karluk D-5			A/2a2e	BNWR
121-45-1	8910/90011	Puale Bay	Va A/2a2e	A2/2a2y-2
Karluk C-6	8911/90012	Cape Aklek	Va A/2ai	A2/2a2y-2
121-36-2	/90214	Ts'and Gey	Vb A/2ai	A2/2a2y-3C BNWR
121-36-3			A/2ai	A1/1a1y-3b BNWR

^a See end of Appendix for key to symbols and abbreviations.

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates	5/9/90	6/22/90	7/26/90	Unit
Quad-Nest					5/9/90	6/22/90	7/26/90	
Karluk C-3 120-31-1	8912/	Jute Island	Ivb	E/	NF/0a	NF/0a	NF/0a	AMR
Ugashik C-1 120-31-2	8913/	Portage Bay	v	E/	NF/0a	NF/0a	NF/0a	BNWR
Ugashik C-1 120-31-3	/90013	Portage Bay	Vb	A/2a3e	A3/2a3y-2	A1/1a1y-3d ^a	A1/1a1y-3d ^a	BNWR
Ugashik C-1 120-31-1	8914/	Kanatak Lagoon	Ivb	E/1a	NF/1a	NF/0a	NF/0a	BNWR
Ugashik B-1 120-21-14	8915/	Portage Bay	v	E/	E/0a	NF/0a	NF/0a	BNWR
Ugashik B-1 120-21-13	8916/90014	Cape Igvak	I	A/2a1	A1/2a1y-2	A1/1a1y-3b	A1/1a1y-3b	BNWR
Ugashik B-1 120-21-12	8917/90015	Cape Igvak	II	A/2a1	E/0a0e	E/1a0y	E/1a0y	BNWR
Ugashik B-1 120-21-15	/90016	Cape Igvak	I	A/2a1	A/2a0e	E/0a0y	E/0a0y	BNWR
Ugashik B-1 120-21-11	8918/	Wide Bay	I	E/	NF/0a	NF/0a	NF/0a	UGAS
Ugashik B-1 120-21-10	8920/90017	Wide Bay	I	A/2a2e	A2/2a2y-2	A2/1a2y-3b	A2/1a2y-3b	UGAS
Ugashik B-1 120-21-9	8921/90018	Wide Bay	I	A/2a1e	F/0a3eb	F/0a0e	F/0a0e	UGAS
Ugashik B-2 120-22-1	8929/	Wide Bay	III	E/	NF/0a	NF/0a	NF/0a	UGAS
Ugashik B-2 120-22-3	/90233	Wide Bay	Va	A/2a2e	A2/2a2y-2	E?/0a0y	E?/0a0y	UGAS
Ugashik B-2 120-22-2	/90019	Wide Bay	Va	A/1a3e	F/1a0e	F/2a0v	F/2a0v	UGAS

a one hatch-year eaglet was observed flying near the nest, with two other young eaglets sighted at the head of the bay.

b The eggs appeared to belong to a glaucous-winged gull due to size and color.

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-Nest	Ref #	Location	Habitat Type	Survey Dates		
				5/11/90	6/22/90	7/26/90
Ugashik B-1 120-21-21	90020 16243	Wide Bay Islet	IV-III	5/11/90	F/2a0e o/2e 0l E/0a	7/27/90 E/1a0y E/0a
Ugashik B-1 120-21-8	8919/	Wide Bay Islet	IV	E/		AMR
Ugashik B-1 120-21-16	/90021	East Channel Is	IVa	A/1a2e	F/2a0e	AMR
Ugashik B-1 120-21-17	/90022	West Channel Is	IVb	O/1a0e	E/0a	AMR
Ugashik B-1 120-21-7	8922/90023	West Channel Is	IV-II	A/1a3e	A2/2a2y-3a	AMR
Ugashik B-1 120-21-6	8923/90024	Wide Bay Islet	IVb	A/1a1e	A1/2a1y-2	AMR
Ugashik B-1 120-21-5	8924/	Hartman Island	IVa	E/	E/0a	AMR
Ugashik B-1 120-21-18	/90025	Hartman Island	IVa	A/2a2e	A2/2a2y-2	AMR
Ugashik B-1 120-21-19	/90026	Wide Bay Islet	IV-I	A/1ai	A2/2a2y-2	AMR
Ugashik B-1 120-21-20	/90027	Wide Bay Islet	IV-I	A/1ai	A2/2a2y-2	AMR
Ugashik B-1 120-21-4	8925/	Wide Bay Islet	IVb	E/	E/0a	AMR
Ugashik B-1 120-21-3	8926/	Wide Bay Islet	IV-I	E/	E/0a	AMR
Ugashik B-1 120-21-2	8927/90028	Titcliff Island	IV-I	A/2a2e	A2/2a2y-2	AMR
Ugashik B-1 120-21-21	/90029	Wide Bay Islet	IV-I	A/2ai	E/1a0e	AMR
Ugashik B-1 120-21-1	8928/90030	Cape Kayakliut	IVb	A/2a2e	A2/2a2y-2	AMR
Ugashik A-2 120-12-26	/90031	Imuya Bay	IV-I	A/2a2e	6/20/90 A2/2a2y-2	7/27/90 A2/1a2y-3b

Appendix I (continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series- Quad-Nest	Ref #	Location	Habitat Type	Survey Dates		
				5/11/90	6/20/90	7/27/90
Ugashik A-2	8930/	Imuya Bay	Iva	E/0a	E/0a	gnile
120-12-25						AMR
Ugashik A-2	8931/90032	Imuya Bay	Iva	A/2a2e	A1/2a1y-2	AMR
120-12-24						
Ugashik A-2	/90033	Imuya Bay	Va	A/1a2e	A2/1a2y-2	UGAS
120-12-27						
Ugashik A-2	8932/	Imuya Bay	I	E/0a	E/0a	UGAS
120-12-23						
Ugashik A-2	8933/	Imuya Bay	II	E/0a	E/0a	UGAS
120-12-22						
Ugashik A-2	8934/90034	Cape Kilocak	IV-I	A/2a3e	A3/1a3y-2	AMR
120-12-21						
Ugashik A-2	8935/	Cape Kilocak	IV	E/0a	E/0a	AMR
120-12-20						
Ugashik A-2	8936/	Wreck Islet	IV	O/2a	NF/0a	AMR
120-12-19						
Ugashik A-2	8937/90035	Cape Kilocak	I	A/2a2e	A2/1a2y-2	UGAS
120-12-18						
Ugashik A-2	8938/	Cape Kilocak	IV	E/0a	NF/0a	AMR
120-12-17						
Ugashik A-2	/90036	Acripina Bay	I	A/1a1e	F/0a0e	UGAS
120-12-28						
Ugashik A-2	8939/	Acripina Bay	Iva	E/	NF/0a	AMR
120-12-16						
Ugashik A-2	/90037	Acripina Bay	Iva	A/1a3e	A3/1a3y-3a	AMR
120-12-29						
Ugashik A-2	8940/	Acripina Bay	Vb	E/0a	NF/0a	UGAS
120-12-15						
Ugashik A-2	8941/90038	Acripina Bay	Va	A/1ai	A2/1a2y-2	UGAS
120-12-14						
Ugashik A-2	8942/	Acripina Bay	Vb	O/2a	NF/0a	UGAS
120-12-13						

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat	Survey Dates		
			Type	5/10/90	6/20/90	7/27/90
<u>Quad-Nest</u>						Unit
Ugashik A-2	/90039	Agripina Bay	IV-I	A/1a2e	A2/1a2y-2	AMR
120-12-30						AMR
Ugashik A-2	8943/90040	Agripina Bay	IV-II	A/1a2e	A1/2a1y-2	O/0a0y (fledged?)
120-12-12						
Ugashik A-2	8944/90042	Agripina Bay	IVa	A/1a2e	F/1a0e	AMR
120-12-10						
Ugashik A-2	8945/	Ushiaik Island	IVb	E/0a	E/0a	AMR
120-12-11						
Ugashik A-2	/90041	Ushiaik Island	IV-III	A/2a2e	A1/1a1y-2	AMR
120-12-31						
Ugashik A-2	8946/	Lone Rock	IV	E/0a	NF/0a	NE/0a
120-12-9						
Ugashik A-2	8947/90043	David Island	IV	A/1a3e	F/0a0e	AMR
120-12-8						
Ugashik A-2	8949/90044	David Island	Iva	O/1a0e	NF/0a	AMR
120-12-6						
Ugashik A-2	8948/90045	David Island	IV-III	A/1a2e	F/1a0e	AMR
120-12-7						
Ugshaik A-2	8950/	Port Wrangell	Vb	E/0a	NF/0a	UGAS
120-12-5						
Ugsahik A-2	/90046	Port Wrangell	Va	O/2a0e	O/1a0e	UGAS
120-12-32						
Ugashik A-2	8951/	Port Wrangell	I	E/0a	NF/0a	UGAS
120-12-4						
Ugashik A-2	8952/90047	Port Wrangell	Va	A/1a2e	A1/1a1y-2	A1/2a1y-3d
120-12-3						UGAS
Ugashik A-2	8953/90048	Port Wrangell	I	A/2a3e	A2/2a2y-2	A2/1a2y-3c
120-12-2						UGAS
Ugashik A-2	/90049	Chiginaqak Bay	Va	5/10/90 A/2a3e	A3/2a3y-3a	O/0a0y (fledged?)
120-12-33						
Ugashik A-2	8954/90050	Poltava Island	IV-I	5/11/90 A/1a2e	A1/1a1y-3a	A1/1a1y-3d
120-12-1						AMR

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates		Unit
				5/10/90	6/19/90	
Sutwik D-3 127-43-13	/90051	Chiginagak Bay	IVb	5/10/90 A/2a2e	A/1a2e 6/19/90	F/0aaey AMR
Sutwik D-3 127-43-12	8955/	Foul Islet	IV	5/11/90 E/0a	E/0a	AMR
Sutwik D-3 127-43-11	8957/90052	Chiginagak Bay	Iva	A/2a2e	F/2a0e	F/1a0y AMR
Sutwik D-3 127-43-10	8958/90053	Chiginagak Bay	IVb	A/2a3e	A2/2a2y-2	F/1a0y AMR
Sutwik D-3 127-43-9	8959/90054	Chiginagak Bay	I	A/1a2e	A1/2a1y-3a	A1/1a1y-3d UGAS
Sutwik D-3 127-12-8	8960/90055	Cape Kuyuyukak	I	A/1a2e	A1/2a1y-3a	A1/0a1y-3d UGAS
Sutwik D-3 127-12-7	8961/90056	Cape Kuyuyukak	I	A/2a3e	F/1a0e	F/0aa0y UGAS
Sutwik D-3 127-12-14	/90057	Cape Kuyuyukak	IVb	A/2a3e	A2/2a2y-3a	A2/1a1y-3d UGAS
Sutwik D-3 127-12-6	8965/90058	Nakalilok Bay	III	A/1a2e	6/20/90 F/1a0e	7/28/90 F/0aa0y UGAS
Sutwik D-3 127-12-14 ³¹	/90059	Nakalilok Bay	Va	A/1a3e	A1/1a1y-2	O/0aa0y(fledged?) UGAS
Sutwik D-3 127-12-15	/90060	Nakalilok Bay	IVb	A/1a2e	A2/1a2y-2	A2/1a2y-3d UGAS
Sutwik D-3 127-12-5	8966/	Nakol Pt	IVb	E/0a	E/2a	E/0a UGAS
Sutwik D-3 127-12-16	/90061	Nakalilok Bay	Va	A/1a3e	A2/1a2y-2	A2/1a2y-3d UGAS
Sutwik D-3 127-12-4	8967/90062	Yantarni Sound	II	O/2a0e	E/0a	NF/0a UGAS
Sutwik D-3 127-12-3	8962/	Central Island	IV	E/0a	6/19/90 E/0a	E/0a AMR
Sutwik D-3 127-12-17	/90063	Central Island	IV-III	A/2ai	A3/2a3y-2	A3/1a3y-3b AMR

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat	Survey Dates			Unit
				Type	5/10/90	6/19/90	
Quad-Nest							
Sutwik D-3	8963/	Ugaiushak Island	IV-II	E/0a		E/0a	AMR
Sutwik D-3	127-12-2	/90064	Ugaiushak Island	Iva	A/2a1e	A1/2a1y-2	AMR
Sutwik D-3	127-12-18	/90064	Ugaiushak Island	Iva		O/2a0y(fledged?)	
Sutwik D-3	127-12-19	/90065	Ugaiushak Island	Iva	A/2a3e	A3/2a3d-2	AMR
Sutwik D-3	127-12-20	/90066	Long Island	IVb	A/2a3e	A3/2a3y-3c	AMR
Sutwik D-3	127-12-1	8964/90067	Long Island	IV-I	A/2a2e	A1/2a1y-2	AMR
Sutwik C-4	127-34-1	/90068	Hydra Island	IVb	A/2a2e	A1/2a1y-1b	AMR
Sutwik D-4	127-44-5	8968/	Yantarni Bay	Vb	E/0a	6/20/90	AMR
Sutwik D-4	127-44-4	8969/90069	Yantarni Bay	I	A/2a1	E/0a	UGAS
Sutwik D-4	127-44-3	8970/90070	Yantarni Bay	Va	A/1a2e	A2/2a2y-2	UGAS
Sutwik D-4	127-44-6	/90071	Yantarni Bay	Va	A/1a1	A2/1a2y-3c	UGAS
Sutwik D-4	127-44-2	8971/90072	Extra Island	IVb	A/1a2e	A2/2a2y-2	AMR
Sutwik D-4	127-44-1	8972/	Cape Kumik	II	E/0a	E/0a	UGAS
Sutwik D-4	127-44-7	/90073	Cape Kumik	IVb	A/1a1e	F/0a0ey	UGAS
Sutwik D-2	127-42-1	/90074	Cape Providence	I	A/1a2e	7/27/90	UGAS
Sutwik D-2	127-42-2	/90075	Cape Providence	Va	A/1a1e	F/0a0ey	UGAS
Sutwik D-2	127-42-3	/90076	Unkwn Island	IVb	A/2a3e	6/19/90	AMR
						F/2a0y	

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates			Unit
				5/10/90	6/20/90	7/28/90	
Oquad-Nest							
Sutwik D-2	/90077	Unkwn Island	IVb	A/2a3e	A1/2a1y-2	F/2a0y	AMR
127-42-4	/90078	Aiugnak Columns	IVb	A/1a2e	A1/2a1y-2	A1/1a1y-3c	AMR
Sutwik D-2	/90079	Cape Kumlik	I	A/1a2e	A1/1a1y-2	A1/1a1y-3c	ANMP
127-42-5	/90080	Cape Kumlik	III	A/1a1e	A1/1a1y-2	F/2a0y	ANMP
Sutwik D-4	/90081	Amber Bay	Vb	A/1ai	A1/1a1y-2	A2/1a2y-3c	ANMP
127-44-8	/90234	Amber Bay	III		O/2a0y		ANMP
Sutwik D-4	/90235	Amber Bay	Va		O/2a0y		ANMP
127-44-11	/90236	Amber Bay	III			A2/2a2y-3c	ANMP
Sutwik D-4	/90082	Amber Bay	Va	A/1a2e		A21a1y-3b1y-3c	
127-44-12				5/23/90			
Sutwik D-4	/90083	Aniakchak Bay	Va	A/2a3e	A2/2a2y-2	A2/1a2y-3c	ANMP
127-44-13							
Sutwik D-5							
127-45-1	/90237	Eagle Island	IV			O/2a0y	AMR
Sutwik D-5	/90084	Aniakchak Bay	Va	A/2a2e	F/1a0y		ANMP
127-45-2							
Sutwik D-5							
127-45-3							
Sutwik C-5							
127-35-1	/90085	Aniakchak Bay	Va	A/2a3e	A1/1a1y-2	A1/1a1y-3c	ANMP
Sutwik C-5	/90086	Kumlik Island	IV-III	A/2a10e	NE/1a	NE/0a	AMR
127-35-2							
Sutwik C-5							
127-35-3							
Sutwik C-5							
127-35-4	/90087	Cape Kumlik	I	A/2ai	O/1a0v		ANMP
Sutwik C-5	/90088	Unld Islet	IVb	A/2ai			AMR
127-35-5							

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kukugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-Quad-Nest	Ref #	Location	Habitat Type	5/10/90	6/20/90	7/28/90	Unit
Sutwik C-5 127-35-6	/90089	Unid Islet	IVb	A/2a1e			AMR
Sutwik C-5 127-35-7	/90090	Cape Kumlik	II	A/1ai			ANMP
Sutwik C-5 127-35-8	/90091	Cape Kumlik	I	A/2a1			ANMP
Sutwik C-5 127-35-9	/90238	Garden Island	IV-I		6/19/90	A1/1a1y-3d	AMR
Sutwik C-4 127-34-2	/90092	Sutwik Island	IV-I	A/2a0e	E/0a	NF/0a	AMR
Sutwik C-4 127-34-3	/90093	Sutwik Island	IV-I	A/1a2e	NF	A1/0a1y-3c	AMR
Sutwik C-4 127-34-4	/90094	Sutwik Island	IV-I	A/1a2e		A2/1a2y-2	AMR
Sutwik C-4 127-34-5	/90095	Sutwik Island	IV-Va	E/1a		A1/2a1y-3a	A1/1a1y-3c
Sutwik C-4 127-34-6	/90096	Sutwik Island	IV-I	A/1a2e		A2/2a2y-2	F/1a0y
Sutwik C-4 127-34-7	/90097	Sutwik Island	IV-III	A/1a2e	F/0a	NF/0a	AMR
Sutwik C-4 127-34-8	/90098	Sutwik Island	IV-I	A/2a2e		A2/1a1y21y3a	A1/1a1y3c
Sutwik C-4 127-34-9	/90099	Sutwik Island	IV-I	A/1a2e		F/2a0e	F/2a0y
Sutwik C-4 127-34-10	/90100	Sutwik Island	IV-I	A/1a2e	F/0a0e	NF	AMR
Sutwik C-4 127-34-11	/90101	Sutwik Island	IV-I	A/1ai		A1/1a1y-2	A1/1a1y-3c
Sutwik C-4 127-34-12	/90102	Sutwik Island	IV-I	A/2a		A1/1a1y2.1y3a	A2/1a2y-3c
Sutwik C-4 127-34-13	/90103	Sutwik Island	IV-I	A/2a2e		A2/1a2y-2	A2/1a2y-3c

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series- Quad-Nest	Ref #	Location	Habitat Type	Survey Dates
				5/23/90 6/19/90 7/28/90
Sutwik C-4	/90104	Sutwik Island	IV-I	F/1a0e
127-34-14			A/1a3e	F/0a0ey
Sutwik C-4	/90105	Sutwik Island	IV-III	F/1a0e
127-34-15			A/2a2e	F/1a0e
Sutwik C-4	/90106	Sutwik Island	IV-III	A/2a0e
127-34-16			A/1a1y-2	A1/1a1y-3d
Sutwik C-4	/90239	Sutwik Island	IV-I	O/1a0e
127-34-17			A1/1a1y-2	A1/1a1y-3c
Sutwik C-4	/90240	Sutwik Island	IV-I	O/1a0y
127-34-18			A1/2a1y-2	A1/1a1y-3c
Sutwik C-4	/90241	Sutwik Island	IV-I	A1/0a1y-2
127-34-19			A1/1a1y-2	A1/1a1y-3b
Sutwik C-4	/90242	Sutwik Island	IV-I	A1/0a1y-2
127-34-20			A2/1a2y-2	F/0a0y
Sutwik C-4	/90243	Sutwik Island	IV-I	5/23/90
127-34-21			A/1a1e	
Sutwik C-6	/90107	Kuijulik Bay	I	A/1a1e
127-36-1			A/1a1e	
Sutwik C-6	/90108	Kuijulik Bay	I	A/1a1e
127-36-2			A/1a1e	
Sutwik C-6	/90109	Kuijulik Bay	IVb	A/1a2e
127-36-3			A/2a0e	
Sutwik C-6	/90110	Kuijulik Bay	II	A/2a0e
127-36-4			A/1a1e+	
Sutwik C-6	/90111	Kuijulik Bay	II	A/1a1e+
127-36-5			A/2a0e	
Sutwik C-6	/90112	Kuijulik Bay	II	A/2a0e
127-36-6			A/1a1e+	
Chignik C1	/90113	Kuijulik Bay	II	A/2a0e
126-31-1			A/1a0e	
Chignik C1	/90114	Kuijulik Bay	II	A/1a0e
126-31-2				

Appendix I (continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates	Unit
Quad-Nest			5/23/90		
Sutwik C-6 127-36-7	/90115	Kujulik Bay	Va	A/2a2e	CHIG
Sutwik C-6 127-36-8	/90116	Kujulik Bay	II	A/1a0e	CHIG
Sutwik C-6 127-36-9	/90117	Cape Kumliun	I	A/1a2e	CHIG
Sutwik C-6 127-36-10	/90118	Cape Kumliun	I	A/1a2e	CHIG
Sutwik C-6 127-36-11	/90119	Cape Kumliun	I	A/1a1e	CHIG
Sutwik C-6 127-36-12	/90120	Unavikshak Is	IVa	A/1ai	AMR
Sutwik C-6 127-36-13	/90121	Unavikshak Is	IVa	A/2a0e	AMR
Sutwik B-6 127-26-1	/90122	Cape Kumliun	IVb	A/1a2e	CHIG
Sutwik B-6 127-26-2	/90123	Cape Kumliun	I	A/1a2e	CHIG
Sutwik B-6 127-26-3	/90124	Cape Kumliun	I	A/1a-bp	CHIG
Sutwik B-6 127-26-4	/90125	Cape Kumliun	II	A1/2a1d	CHIG
Sutwik B-6 127-26-5	/90126	Hook Bay	III	A/1ai	CHIG
Chignik C-1 126-31-3	/90127	Hook Bay	II	A/1a2e	CHIG
Chignik C-1 126-31-4	/90128	Hook Bay	II	A/1a3e	CHIG
Chignik B-1 126-21-1	/90129	Weasel Mountain	I	A/1a1e	CHIG
Chignik B-1 126-21-2	/90130	Weasel Mountain	III	A/1a1e	CHIG

Appendix I (continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates	Unit
Quad-Nest				5/28/90	
Chignik B-1	/90131	Chignik Bay	Va	A/1ai	CHIG
126-21-3					
Chignik B-1	/90132	Anquvik Island	IVb	A/1a3e	AMR
126-21-4					
Chignik B-2	/90133	Chignik Bay	Va	A/1a3e	CHIG
126-22-1					
Chignik B-2	/90134	Chignik Bay	Va	A/1a1e	CHIG
126-22-2					
Chignik B-2	/90135	Chignik Bay	II	A/1a1e	CHIG
126-22-3					
Chignik B-2	/90136	Chignik Bay	II	A/2a3e	CHIG
126-22-4					
Chignik B-2	/90137	Chignik Bay	III	A/2a2e	CHIG
126-22-5					
Chignik B-2	/90138	Chignik Bay	III	A/1a2e	CHIG
126-22-6					
Chignik B-2	/90139	Chignik Bay	II	A/1ai	CHIG
126-22-7					
Chignik B-2	/90140	Chignik Bay	II	A/1ai	CHIG
126-22-8					
Chignik B-2	/90141	Anchorage Bay	II	A/1ai	CHIG
126-22-9					
Chignik B-2	/90142	Anchorage Bay	Vb	A/1ai	CHIG
126-22-10					
Chignik B-1	/90143	Lumber Bay	Va	A/1ai	CHIG
126-21-1					
Chignik B-1	/90144	Lake Bay	II	A2/2a2d	CHIG
126-21-2					
Chignik A-1	/90145	Castle Bay	I	A/1a2e	CHIG
126-11-1					
Chignik A-1	/90146	Castle Cape	I	A2/1a2d	CHIG
126-11-2					

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates	Unit
<u>Quad-Nest</u>				5/28/90	
Chignik A-1	/90147	Castle Cape	II	E/1a	CHIG
126-11-3	/90148	Necessity Cove	II	E/1a	CHIG
Chignik A-1	/90149	Chankliut Island	IV-I	A/1a2e	AMR
126-11-4	/90150	Chankliut Island	IV-I	A/1a2e	AMR
Chignik A-1	/90151	Chankliut Island	IV-I	A/1ai	AMR
126-11-5	/90152	Nakchamik Island	IVb	A1/1a1eld	AMR
Chignik A-1	/90153	Nakchamik Island	IV-III	A1/2a1d	AMR
126-11-6	/90154	Warner Bay	II	A/1a2e	CHIG
Chignik A-2	/90155	Sweater Bay	II	5/22/90 A/1a2e	CHIG
126-12-1	/90156	Kuiukta Bay	IVb	A/2a2e	CHIG
Chignik A-2	/90157	Kuiukta Bay	II	A/2a2e	CHIG
126-12-2	/90158	Kuiukta Bay	Iva	A/1a2e	CHIG
Chignik A-2	/90159	Kuiukta Bay	Iva	A/2a2e	CHIG
126-12-3					
Chignik A-2					
126-12-4					
Chignik A-2					
126-12-5					
Chignik A-2					
126-12-6					
Chignik A-2					
126-12-7	/90160	Kuiukta Bay	Iva	A/1a3e	CHIG
Chignik A-2	/90161	Kuiukta Bay	Va	A/2a2e	CHIG
126-12-8	/90162	Kuiukta Bay	IVb	A/2a2e	CHIG
Chignik A-2					
126-12-9					

Appendix I (continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series- Quad-Nest	Ref #	Location	Habitat Type	Survey Dates	Unit
Chignik A-2	/90163	Windy Bay	Vb	A/1a2e	CHIG
126-12-10	/90164	Windy Bay	Vb	A/1a1e	CHIG
Chignik A-3	/90165	Foot Bay	Vb	5/29/90 A/1a2e	CHIG
126-13-1	/90166	Foot Bay	I	A/1a2e	CHIG
Chignik A-2	/90167	Kuiukta Bay	III	A/1a2e	CHIG
126-12-11	/90168	Mitrofania Bay	Vb	A/1a2e	CHIG
Stepovak D3	/90169	Mitrofania Bay	Vb	A/1a2e	CHIG
135-43-2	/90170	Fishrack Bay	Va	E/1a0e	CHIG
Chignik A-3	/90171	Fish Ranch Bay	Va	E/1a0e	CHIG
126-13-2	/90172	Ivan Bay	II	A/2a2e	CHIG
Stepovak D3	/90173	Ivan Bay	II	A/2a2e	CHIG
135-43-3	/90174	Ivan Bay	I	O/2a0e	CHIG
Chignik A-3	/90175	Stirni Point	III	A2/2a2d	CHIG
126-13-3	/90176	Brother Islands	IVb	5/28/90 A/1a1e	AMR
Stepovak D3	/90177	Mitrofania Is.	IVb	O/2a	AMR
135-43-4	/90178	Mitrofania Is.	IV-I	A/1a1e	AMR
Stepovak D3	/90179				
135-43-5					
Stepovak D3					
135-43-6					
Stepovak D3					
135-43-7					
Stepovak D3					
135-43-8					
Stepovak D3					
135-43-9					

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates	Unit
<u>Quad-Nest</u>					
Stepovak D3	/90179	Mitrofania Is.	IV-II	A/1a2e	AMR
135-43-10					
Stepovak D3	/90180	Mitrofania Is.	IVb	A/2a2e	AMR
135-43-11					
Stepovak D3	/90181	Mitrofania Is.	IV-I	A1/1a1d	AMR
135-43-12					
Stepovak D3	/90182	Mitrofania Is.	IVb	A/1a3e	AMR
135-43-13				5/29/90	
Stepovak D4	/90183	Coal Cape	Va	A/2a1e	CHIG
135-44-1					
Stepovak D4	/90184	Coal Cape	II	A/1a2e	CHIG
135-44-2					
Stepovak D4	/90185	Perryville	Va	E/1a0e	CHIG
135-44-3					
Stepovak D4	/90186	Coal Point	II	A2/2a2d	CHIG
135-44-4					
Stepovak D4	/90187	Coal Point	Va	A/2a2e	CHIG
135-44-5					
Stepovak D4	/90188	Coal Point	III	A/2a1j	CHIG
135-44-6				5/28/90	
Stepovak D4	/90189	Chiachi Island	IVa	A/1a3e	AMR
135-44-7					
Stepovak D4	/90190	Paul Island	IV-I	A/1a1e	AMR
135-44-8					
Stepovak D5	/90191	Egg Island	IVa	A2/1a2d/e	AMR
135-45-1					
Stepovak D5	/90192	Jacob Island	IV-II	A/1a2e	AMR
135-45-2					
Stepovak D5	/90193	Jacob Island	Va	A/1a2e	AMR
135-45-3				5/29/90	
Stepovak D5	/90194	Humpback Bay	Vb	O/2a0e	CHIG
135-45-4					

Appendix I (Continued) . Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates	Unit
Quad-Nest				5/31/90	
Stepovak D5 135-44-5	/90195	Humpback Bay	Va	A/1ai	CHIG
Stepovak D5 135-44-6	/90196	Humpback Bay	I	A/2a2e	CHIG
Stepovak D5 135-44-7	/90197	Alexander Point	II	E/0a	CHIG
Stepovak D5 135-44-8	/90198	Ivanof Bay	Va	O/2a0e	CHIG
Stepovak D5 135-44-9	/90199	Road Island	IV-III	A/1a2e	CHIG
Stepovak D5 135-44-10	/90200	James Island	Iva	5/31/90 A/1ai	CHIG
Stepovak D5 135-44-11	/90201	Ivanof Bay	III	A/2ai	CHIG
Stepovak C5-6 135-35-1	/90202	Ivanof Bay	I	O/2a0e	CHIG
Stepovak C5-6 135-35-2	/90203	Kupreanof Penin.	Va	A/2a1e	CHIG
Stepovak C5-6 135-35-3	/90204	Kupreanof Penin.	Va	A/1ai	CHIG
Stepovak C5-6 135-35-4	/90205	Fox Cape	II	A1/2a1d	CHIG
Stepovak C5-6 135-35-5	/90206	Kupreanof Point	III	A/1a2e	CHIG
Stepovak C5-6 135-35-6	/90207	Boulder Bay	I	A/2a3e	CHIG
Stepovak C5-6 135-35-7	/90208	Boulder Bay	III	A/2a2e	CHIG
Stepovak C5-6 135-35-8	/90209	Cub Point	III	A1/2a1d	CHIG
Stepovak C5-6 135-35-9	/90210	Fox Bay	Ivb	A/1a1e	CHIG

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates	Unit
Quad-Nest				5/31/90	
Stepovak C5-6	/90211	Island Bay	IVb	A/1a2e	CHIG
135-35-10	/90212	Stepovak Bay	I	A1/1a1d	CHIG
Stepovak C5-6	/90214	Stepovak Bay	III	A/1a3e	CHIG
135-35-11	/90215	Stepovak Bay	Va	A/1a3e	CHIG
Stepovak D5	/90216	Stepovak Bay	Vb	A/1a2e	CHIG
135-45-12	/90217	Stepovak Bay	II	5/29/90 E/1a0e	CHIG
Stepovak D5	/90218	Ramsey Bay	II	A/1a1e	CHIG
135-46-13	/90219	Ramsey Bay	Va	E/1a	CHIG
Stepovak D6	/90220	Dent Point	Va	A2/1a2d	CHIG
135-46-14	/90221	Grub Gulch	Va	A/1a2e	CHIG
Stepovak D6	/90222	Grub Gulch	Va	A/2a2e	CHIG
135-46-15	/90223	Clark Bay	Va	A/1a1	CHIG
Stepovak D6	/90224	Clark Bay	Va	O/2a0e	CHIG
135-46-16	/90225	Clark Bay	Vb	A/1a2e	CHIG
Stepovak D6	/90226	Waterfall Point	Va	A/2a2e	CHIG
134-31-1	/90227	American Bay	Vb	E/0a	CHIG
Port Moller D1					
134-41-1					
Port Moller C1					
134-31-1					
Port Moller C1					
134-31-2					
Port Moller C1					
134-31-3					

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series-	Ref #	Location	Habitat Type	Survey Dates	Unit
Oquad-Nest				5/31/90	
Stepovak D5	/90195	Humpback Bay	Va	A/1ai	CHIG
135-44-5					
Stepovak D5	/90196	Humpback Bay	I	A/2a2e	CHIG
135-44-6					
Stepovak D5	/90197	Alexander Point	II	E/0a	CHIG
135-44-7					
Stepovak D5	/90198	Ivanof Bay	Va	O/2a0e	CHIG
135-44-8					
Stepovak D5	/90199	Road Island	IV-III	A/1a2e	CHIG
135-44-9					
Stepovak D5	/90200	James Island	Iva	5/31/90 A/1ai	CHIG
135-44-10					
Stepovak D5	/90201	Ivanof Bay	III	A/2ai	CHIG
135-44-11					
Stepovak C5-6	/90202	Ivanof Bay	I	O/2a0e	CHIG
135-35-1					
Stepovak C5-6	/90203	Kupreanof Penin	Va	A/2a1e	CHIG
135-35-2					
Stepovak C5-6	/90204	Kupreanof Penin	Va	A/1ai	CHIG
135-35-3					
Stepovak C5-6	/90205	Fox Cape	II	A1/2a1d	CHIG
135-35-4					
Stepovak C5-6	/90206	Kupreanof Point	III	A/1a2e	CHIG
135-35-5					
Stepovak C5-6	/90207	Boulder Bay	I	A/2a3e	CHIG
135-35-6					
Stepovak C5-6	/90208	Boulder Bay	III	A/2a2e	CHIG
135-35-7					
Stepovak C5-6	/90209	Cub Point	III	A1/2a1d	CHIG
135-35-8					
Stepovak C5-6	/90210	Fox Bay	Ivb	A/1ai	CHIG
135-35-9					

Appendix I (Continued). Bald eagle nesting data gathered during May-July 1990 from Cape Kubugakli to American Bay, along the Pacific coast of the Alaska Peninsula.

Series- Quad-Nest	Ref #	Location	Habitat Type	Survey Dates	Unit
Port Moller C1	/90228	American Bay	Va	5/31/90	CHIG
134-31-4				A/1a2e	
Port Moller C1	/90229	American Bay	Va	A/1a2e	CHIG
134-31-5					
Port Moller C1	/90230	American Bay	Va	A2/1a2d	CHIG
134-31-6					
Port Moller C1	/90231	Karpa Island	IVb	A/2a3e	AMR
134-31-7					
Port Moller C1	/90230	Karpa Island	IV-II	O/2a0e	AMR
134-31-8					

Key to Appendix I Abbreviations and Symbols

series-Quad-Nest Number: Example 134-31-7 means map series #134 (Port Moller), map quad #31 (C1), nest number on the quad map.

- 1) series-Quad-Nest Number: Example 134-31-7 means map series #134 (Port Moller), map quad #31 (C1), nest number on the quad map.
- 2) Reference Numbers: Example 8918/90025 - means the 18th nest documented in the study area during 1989, and the 25th nest documented in 1990

3) Habitat Types:

- I = Sea Stacks (pinnacles sticking out of the sea)
- II = Ridges (small peninsulas still connected to the mainland)
- III = Connected Sea Stacks (ridges that have been partially worn away, leaving a stack joined to the mainland by a lower, saddle-shaped arm)
- IV = Islet/Islands (similar to sea stacks except the width at the topbeing greater than the height at the bottom)

Island Subdivisions

- IV-I = Sea Stack adjacent to a larger island
- IV-II = Ridge on an island
- IV-III = Sea Stack still connected to an island

Key to Appendix I Abbreviations and Symbols (Continued)

Island Subdivisions

IV-IV = Smaller island or islet adjacent to a larger island

Iva or IV-Va = Top of a smaller island

IVb or IV-Vb = Side of a smaller island

Va = Hilltops (top of any portion of the mainland - cliffs, ridges)

Vb = Hillsides (sides of hills on the mainland)

Note: Most of these habitat types originate in Sherrrod et al. (1977), while the rest were invented for this study

4) Survey Results Abbreviations:

Pre- / symbols (ex. A2/1a2y-3c) Source: Bowman (1990)

E = Empty
NF = Not Found (previously observed nest not found on later surveys)
O = Occupied (nest with fresh nesting materials or 2 adults actively defending or at the nest)

A = Active (eggs, chicks or incubation posture observed. The presence of a pair or lone bird near the nest does not count as Active.)

A1 = Active nest with 1 chick

A2 = Active nest with 2 chicks

A3 = Active nest with 3 chicks

F = Failed (eggs did not hatch or eaglets died)

Post- / symbols (ex. A2/1a2y-3c) Source: Dewhurst (1989), Carpenter (1990)

1 = Numbers indicate quantity

a = Adult eagles

e = Egg
ai = Adult incubating, not permitted observation of eggs or lack of Y = Eaglet

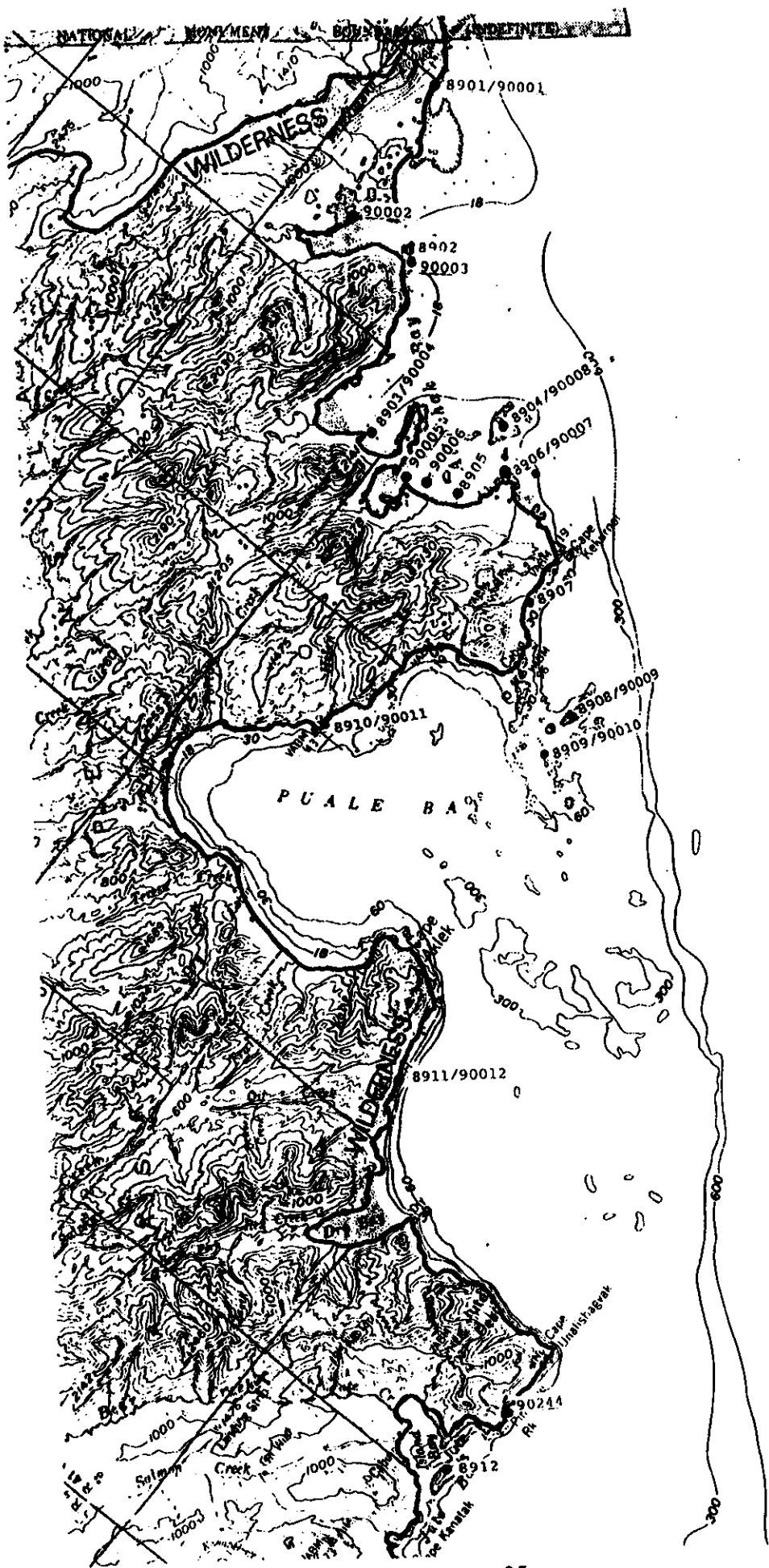
y-1 = Eaglet in first down (small hatching)

y-2 = Eaglet in 2nd down (middle-sized hatching)
y-3a = Eaglet w/ early contour growth (large hatching)
y-3b = Eaglet w/ late contour growth (first feather patches)

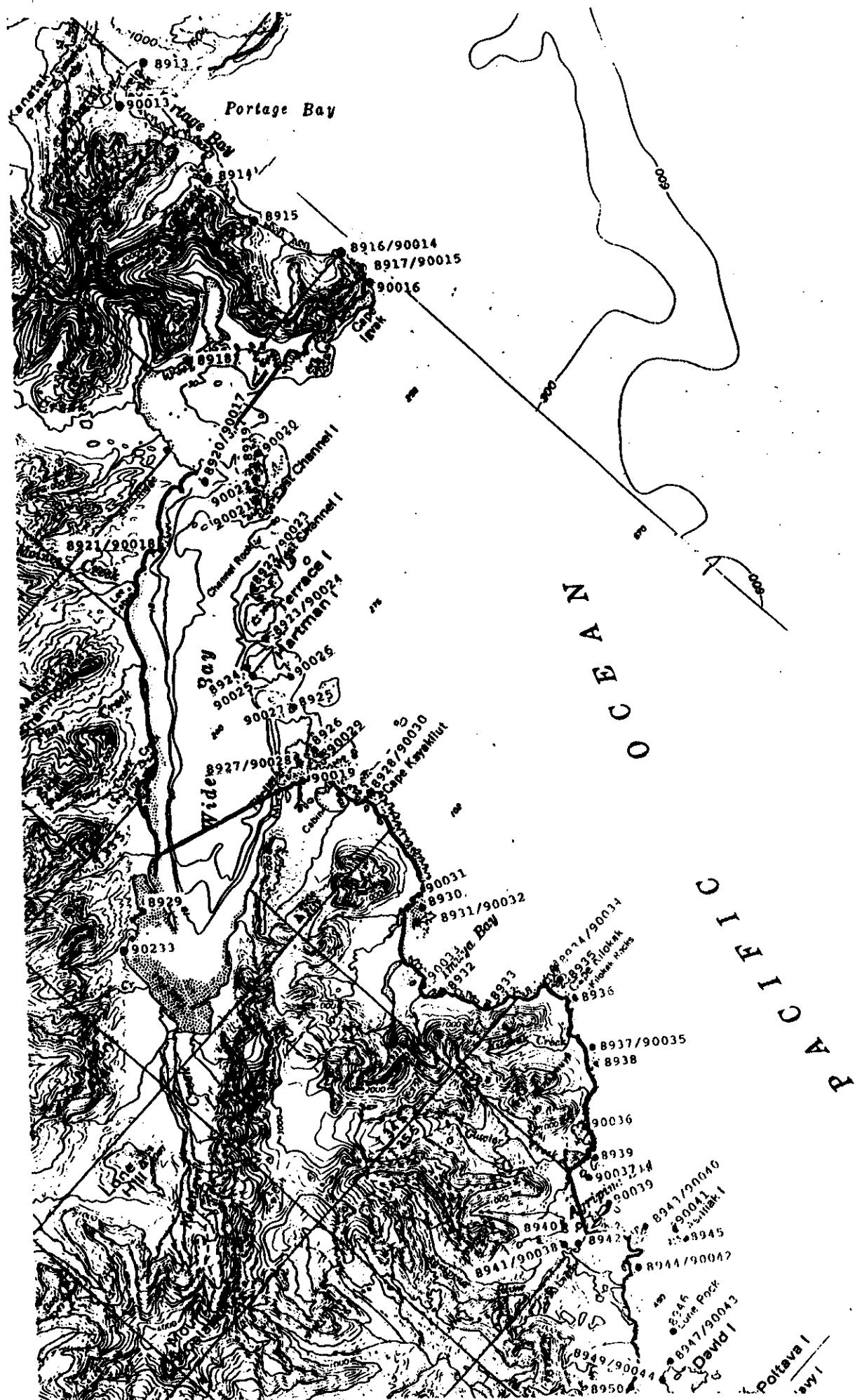
y-3c = Eaglet - standing & mostly feathered
y-3d = Fledgling eaglet w/ complete contour, possibly flight capable

Key to Appendix I Abbreviations and Symbols (Continued)

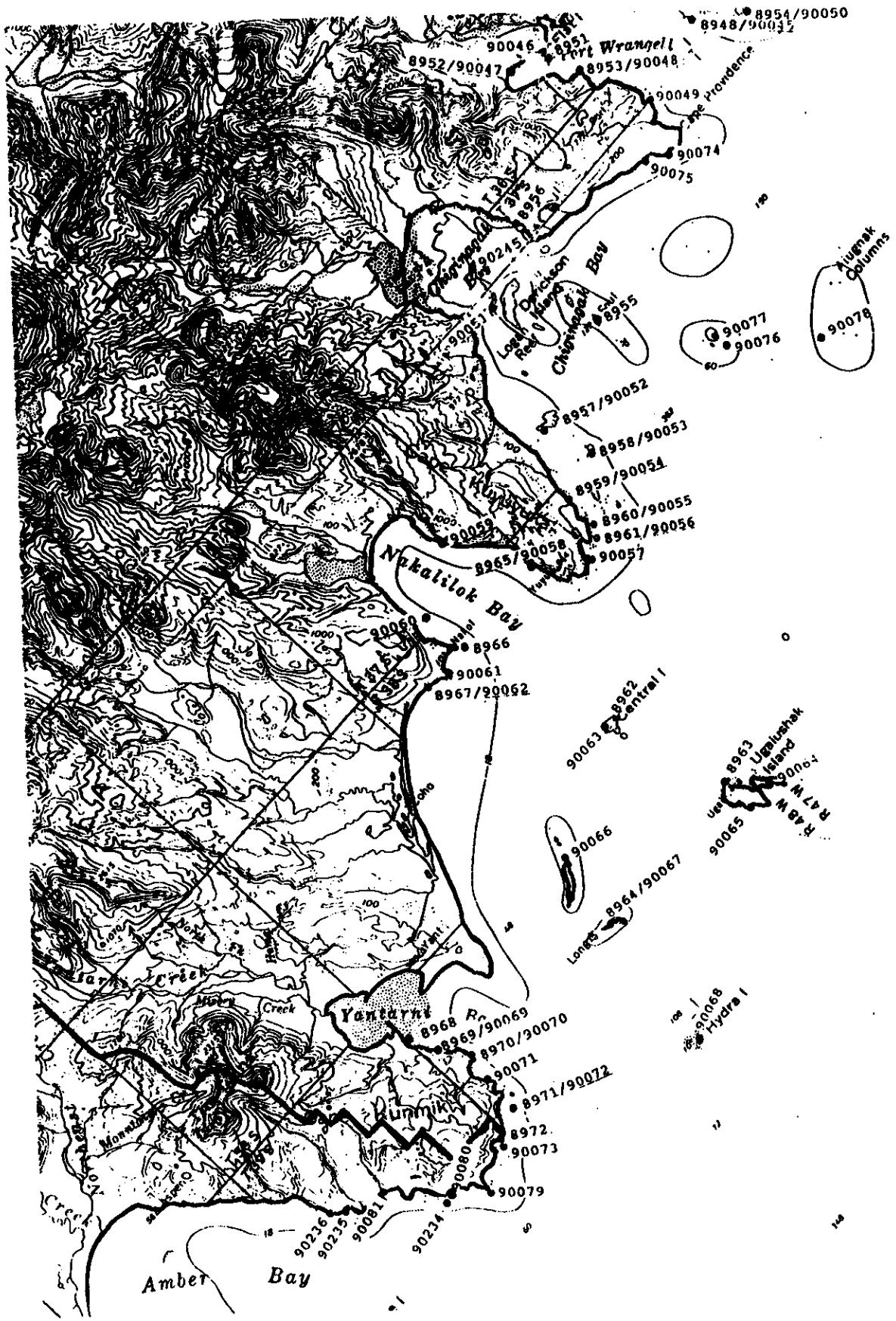
- 5) Units:
- BNWR = Becharof National Wildlife Refuge
 - UGAS = Ugashik Unit of Alaska Peninsula National Wildlife Refuge
 - CHIG = Chignik Unit of Alaska Peninsula National Wildlife Refuge
 - ANMP = Aniakchak National Monument and Preserve
 - AMR = Alaska Peninsula Unit of Alaska Maritime National Wildlife Refuge



Appendix II. Bald eagle nest locations observed May-July 1989 and 1990, Alaska Peninsula, Alaska. Label numbers correspond to nest reference numbers used in Appendix I.



Appendix II (Continued). Bald eagle nest locations observed May-July 1989 and 1990, Alaska Peninsula, Alaska. Label numbers correspond to nest reference numbers used in Appendix I.



Appendix II (Continued). Bald eagle nest locations observed May-July 1989 and 1990, Alaska Peninsula, Alaska. Label numbers correspond to nest reference numbers used in Appendix I.



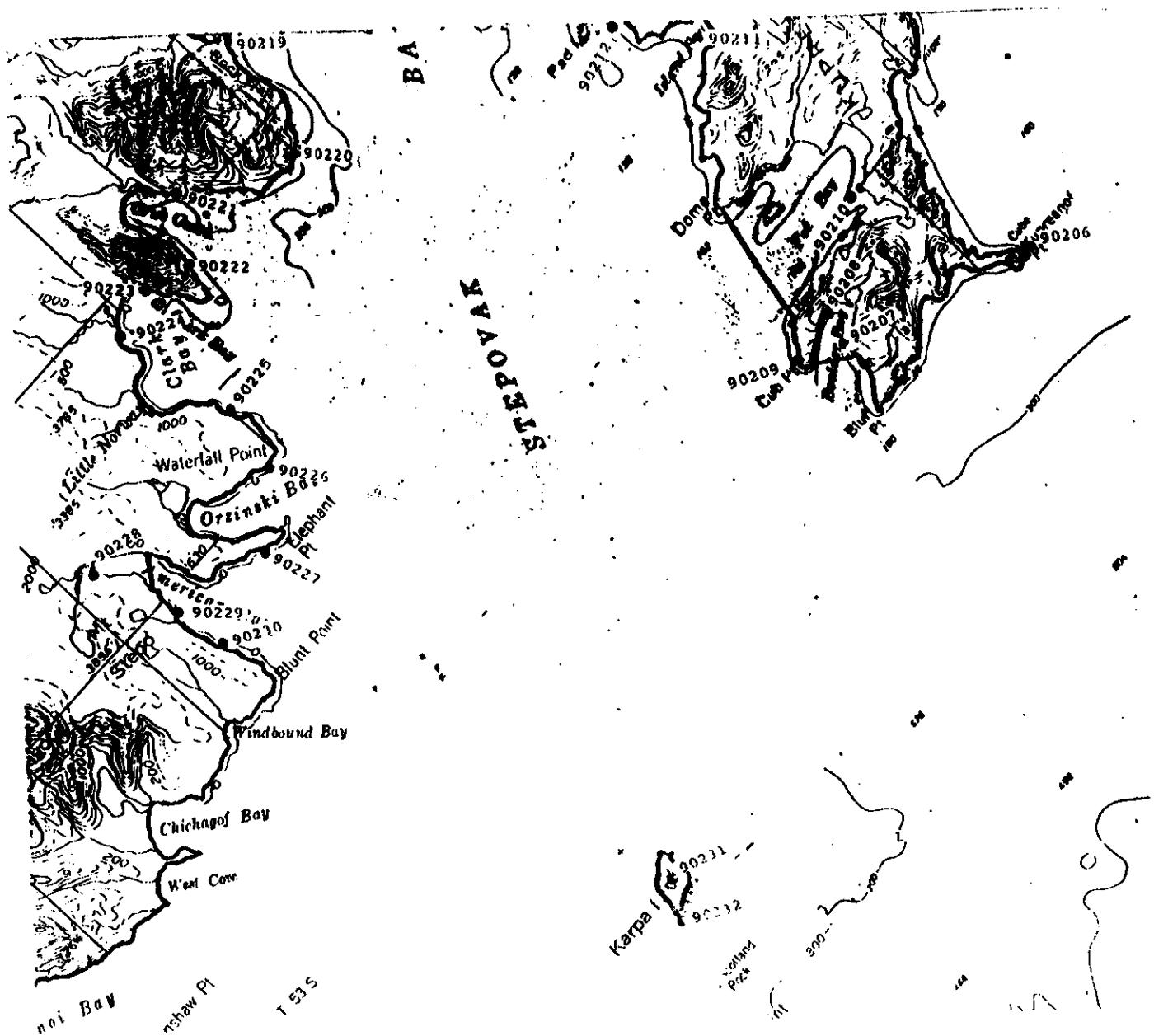
Appendix II (continued). Bald eagle nest locations observed May-July 1989 and 1990, Alaska Peninsula, Alaska. Label numbers correspond to nest reference numbers used in Appendix I.



Appendix II (Continued). Bald eagle nest locations observed May-July 1989 and 1990, Alaska Peninsula, Alaska. Label numbers correspond to nest reference numbers used in Appendix I.



Appendix II (Continued). Bald eagle nest locations observed May-July 1989 and 1990, Alaska Peninsula, Alaska. Label numbers correspond to nest reference numbers used in Appendix I.



Appendix II (Continued). Bald eagle nest locations observed May-July 1989 and 1990, Alaska Peninsula, Alaska. Label numbers correspond to nest reference numbers used in Appendix I.

Appendix III. Record of new, abandoned and moved bald eagle nests between 1989 and 1990 nesting season, Cape Kubugakli to Cape Kumnik, Alaska Peninsula, Alaska.

1989 Nest #	1990 Nest #	Distance between nests km (mi)	1989 Habitat Type	1990 Habitat Type
8902	90003	0.8 (0.5)	I	I
8905	90006	2.2 (1.4)	I	I
8912	90244	0.8 (0.5)	IV-Va	IV-Vb
8913	90013	2.2 (1.4)	Va	Va
8919	90021	0.6 (0.4)	IV-Va	IV-Va
8924	90025	0.4 (0.2)	IV-Va	IV-Va
8925	90027	0.2 (0.1)	IV-Vb	IV-I
8926	90029	0.2 (0.1)	IV-I	IV-I
8929	90233	2.0 (1.2)	III	Va
8930	90031	0.2 (0.1)	IV-Va	IV-I
8932	90033	1.3 (0.8)	I	Va
8939	90036	1.6 (1.0)	IV-Va	IV-Va
8940	90037	2.4 (1.5)	Vb	IV-Va
8942	90039	2.4 (1.5)	Vb	IV-I
8945	90041	0.6 (0.4)	IV-Vb	IV-III
8951	90046	0.2 (0.1)	I	Va
8956	90245	0.5 (0.3)	Va	IV-Va
8962	90063	0.3 (0.2)	IV-Vb	IV-III
8963	90064	1.6 (1.0)	IV-II	IV-Va
8966	90061	1.2 (0.8)	IV-Vb	Va
8968	90071	2.7 (1.7)	Vb	Va
8972	90073	0.2 (0.1)	II	IV-Vb
Mean Distance		1.2 (0.7)		
8907	?		II	
8914	?		IV-Vb	
8915	?		Va	
8918	?		I	
8933	?		II	
8935	?		IV-Va	
8936	?		IV-Va	
8938	?		IV-Va	
8946	?		IV-Va	
8950	?		Vb	
8955	?		IV-Va	
?	90005			I
?	90016			I
?	90019			Va
?	90020			IV-III
?	90022			IV-Vb

Appendix III (Continued). Record of new, abandoned and moved bald eagle nests between 1989 and 1990 nesting season, Cape Kubugakli to Cape Kumnik, Alaska Peninsula, Alaska.

1989 Nest #	1990 Nest #	Distance between nests km (mi)	1989 Habitat Type	1990 Habitat Type
?	90026			IV-I
?	90049			Va
?	90051			IV-Vb
?	90057			IV-Vb
?	90059			IV-Va
?	90061			Va
?	90065			IV-Vb
?	90066			IV-Vb
?	90068			IV-Vb