

QUARTERLY REPORT

Contract #03-5-022-69

Research Unit #3

Reporting Period October 1, 1976-

December 30, 1976

Pages 17

Indentification, Documentation and Delineation of Coastal Migratory Bird
Habitat in Alaska.

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I. Task Objectives

1. Summarize and evaluate existing literature and unpublished data on the distribution, abundance, behavior, and food dependencies of birds associated with littoral and estuarine habitat in the Gulf of Alaska, Bristol Bay, and Aleutian Shelf.
2. Determine seasonal density distribution, critical habitats, migratory routes, and breeding locales for principal bird species in littoral and estuarine habitat in the Gulf of Alaska, Bristol Bay, and Aleutian Shelf. Identify critical species particularly in regard to possible effects of oil and gas development.

III. Field Activities

A. Field trip schedule

1. On September 30, 1976 eight aerial pelagic transects were conducted in Lower Cook Inlet utilizing a State of Alaska Grumman Goose.
2. Shoreline bird surveys were conducted in Lower Cook Inlet from September 30 to October 2, 1976 in a Kachemak Air Service DeHavilland Beaver. Concurrently, habitat mapping along the shoreline was completed.

3. A Peninsula Airways Cessna 180 was used for shoreline bird surveys along the north side of the Alaska Peninsula from October 13-16, 1976 and for habitat mapping from the mouth of the Naknek River around the Peninsula through False Pass to Cape Tolstoi at Pavlof Bay.
4. From October 25 to 27, 1976, most of the Aleutian Islands from Unimak to Samalga were mapped for coastal habitat in a Peninsula Airways Grumman Widgeon.

B. Scientific Party

1. For the Lower Cook Inlet pelagic and shoreline surveys, the bird observers were David Kurhajec, ADFG, Anchorage and David Erikson, ADFG, Homer. David Trudgen, ADFG, Anchorage concurrently mapped the shoreline.
2. Bird observers and mappers for the Alaska Peninsula and Aleutian Shelf surveys were Paul Arneson and Dave Kurhajec, ADFG, Anchorage. Mike Vivion, USFWS, Cold Bay, also made observations on a portion of the Aleutian Shelf survey.

C. Methods

As in past reports, the technique used for shoreline bird surveys was flying in single-engine, high-wing aircraft at an altitude of approximately 30-45 meters and speed of 160

kilometers per hour. Observers were used on both sides of the aircraft with the shoreside observer covering the area to the high tide line and the oceanside observer enumerated all birds within 200 meters of the aircraft. In estuarine habitat and where upland vegetation was inundated by storm tides, a total count of birds was attempted. This entailed flying back and forth over the estuaries or coastal floodplain at close enough intervals to get "total" coverage. These techniques were used for both the Lower Cook Inlet and Alaska Peninsula surveys.

The pelagic transects were conducted in twin-engine aircraft 30 meters off the water at 193 kilometers per hour. Observers enumerated birds within 100 meters on both sides of the aircraft.

All observations were recorded on cassette-type tape recorders. Information recorded was: bird identification to lowest taxon possible (order, family, genus, species); bird numbers, habitat type in which the bird was found and other information including activities, sex, color phase, etc., as outlined in the data processing format. Weather observations were recorded at the start of each flight and a coded survey conditions number was noted as often as conditions change. Time was recorded each time a new station was started and ended.

Habitat mapping was conducted from both single and twin

engine aircraft while flying at an altitude of 90-120 meters along the coastline. Information was color-coded onto USGS 1:63,360 maps.

D. Localities

See attached maps (Figures 1-3).

E. Data Collected

In Lower Cook Inlet approximately 1300 kilometers of shoreline were surveyed for birds covering 178 stations and recording 2779 parameters. Pelagic surveys covered 464 kilometers of open water in eight transects with 96 parameters recorded.

Over 620 kilometers of shoreline were surveyed on the Alaska Peninsula including 38 stations, and an estimated 1700 parameters were recorded. In addition 2500 kilometers of shoreline were mapped for habitat types on the Alaska Peninsula and 1500 kilometers on Fox and Krenitzin Islands. Inclement weather precluded completion of habitat mapping of the islands in the Aleutian Shelf lease area.

Figure 1. Trackline of eight aerial transects for birds in Lower Cook Inlet
September 30, 1976.

- A. East Foreland to West Foreland
- B. Kasilof River to Harriet Pt.
- C. Ninilchik to Chisik Island
- D. Anchor Pt. to Gull Island
(Chinitna Bay)
- E. Homer Spit to Augustine Island
- F. Augustine Island to Cape Douglas
- G. Pt. Adam to Cape Douglas
- H. Chugachik Island to Homer Spit

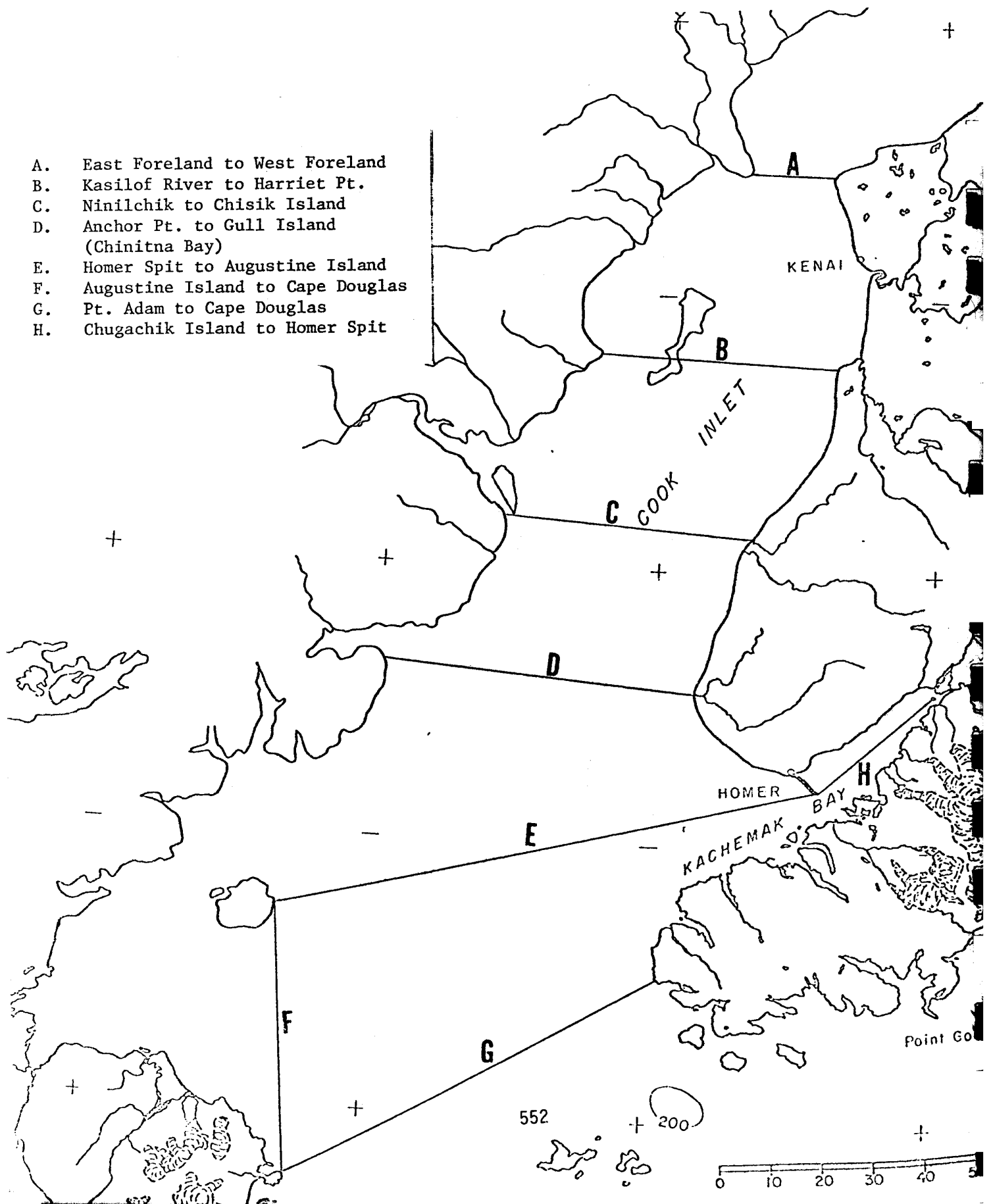


Figure 2. Trackline of aerial bird surveys and habitat mapping in Lower Cook Inlet September 30-October 2, 1976.

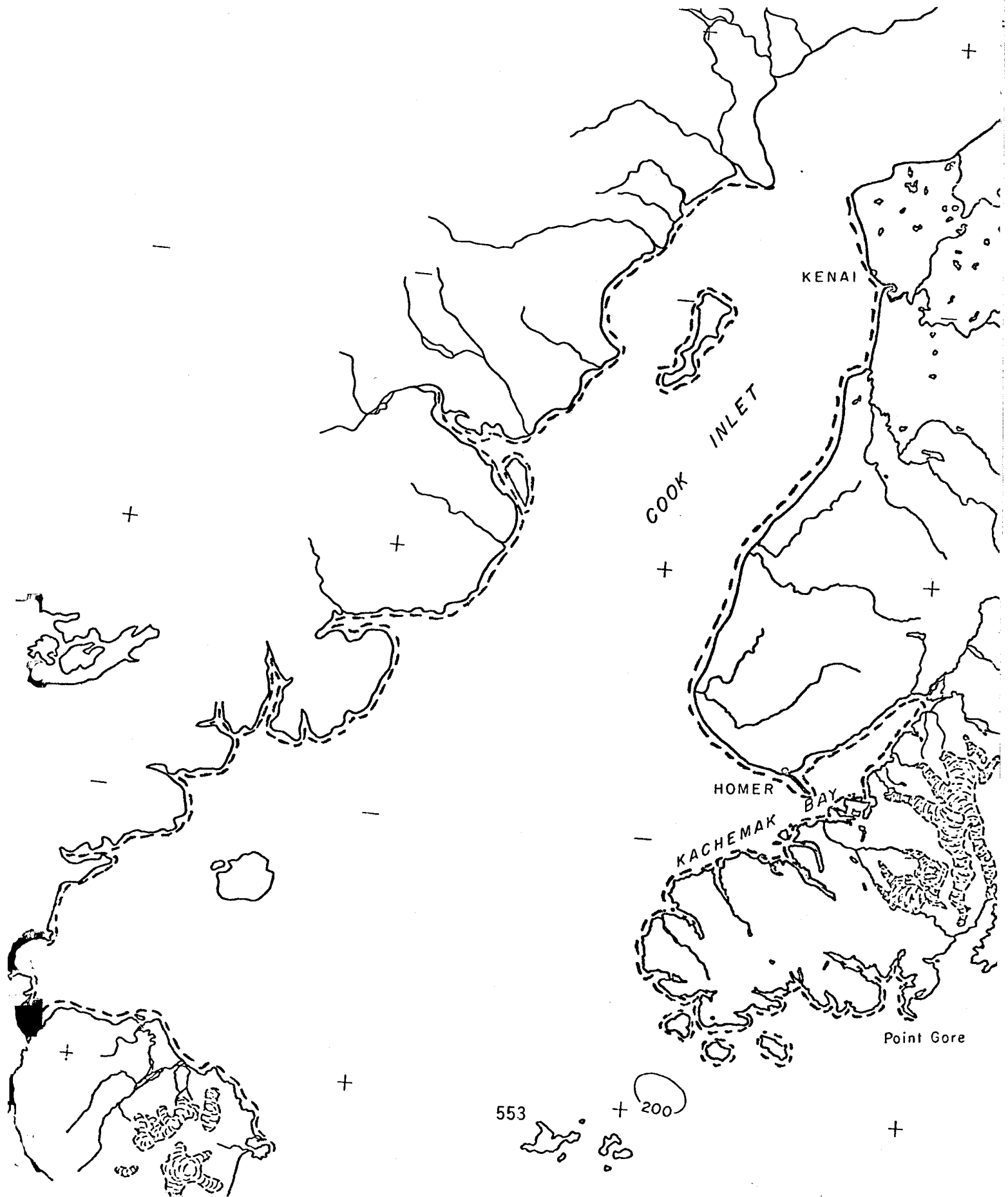


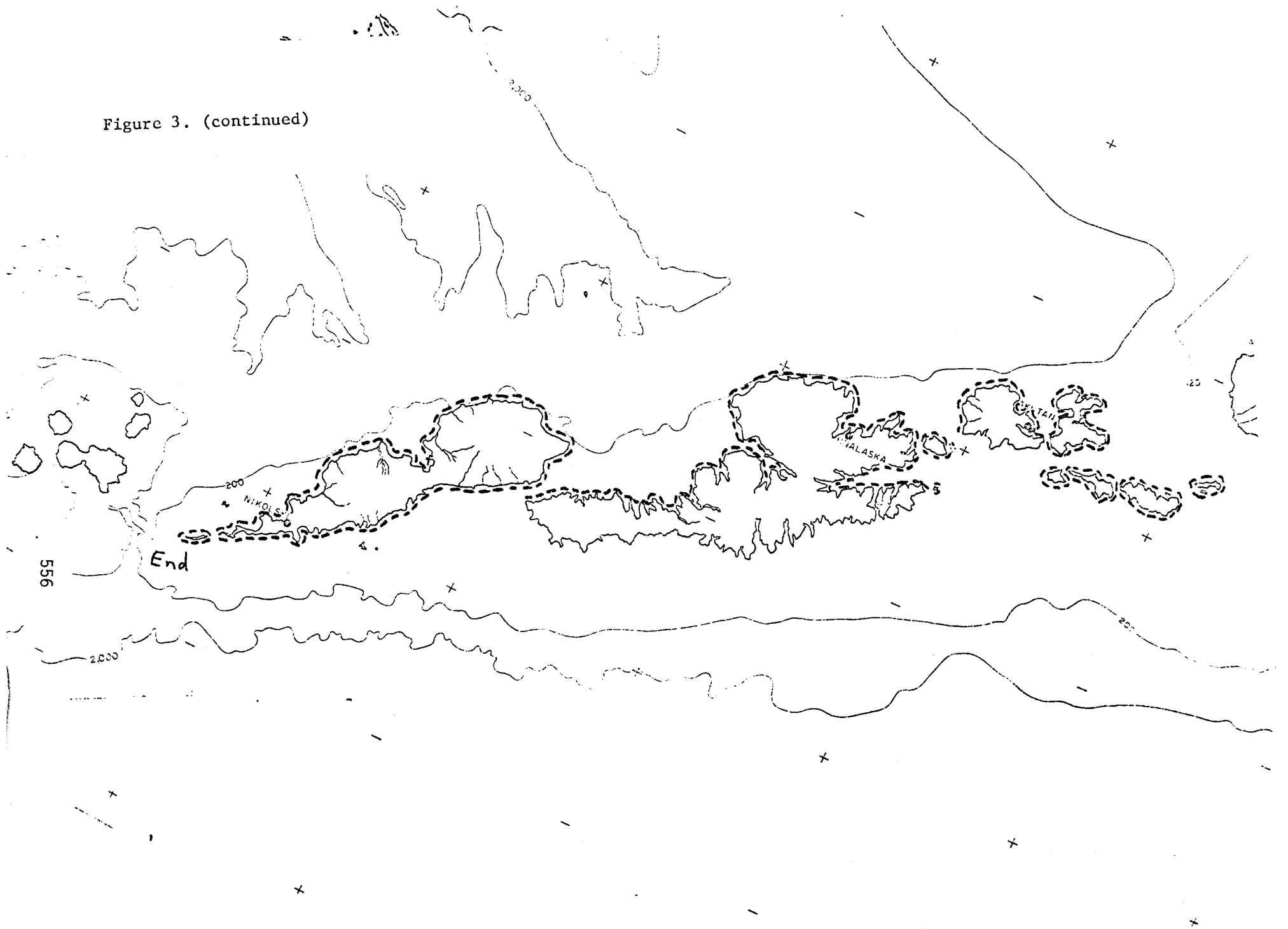
Figure 3. Trackline of aerial habitat mapping in Bristol Bay and Aleutian Shelf lease areas, October 13-27, 1976.



Figure 3. (continued)



Figure 3. (continued)



III. Results

All bird surveys completed thus far in RU #3 have been keypunched, verified and are presently in final data processing stages. Fifteen surveys were completed in FY 76 including eight in Lower Cook Inlet, three on the north side of the Alaska Peninsula, two in NEGQA and one each on Kodiak and the north side of Bristol Bay. Two completed so far in FY 77 were in Lower Cook Inlet and the north side of the Alaska Peninsula.

Data analysis has been stymied by the unavailability of the ADFG computer programmer. It is anticipated that much analysis will be completed for the annual report, April 1, 1977. Data from the four seasonal shoreline and pelagic flights in Lower Cook Inlet are presently being summarized for an ADFG, Habitat Protection Section report. No attempt will be made to summarize that data in this report.

A preliminary summarization of birds in the estuaries of the north side of the Alaska Peninsula are shown in Table 1. In addition, miscellaneous bird observations were made on habitat mapping flights (Table 2). Mike Vivion, USFWS, Cold Bay made most observations from Unimak to Unalaska Islands.

An atlas of USGS 1:63,360 maps and another of 1:250,000 maps containing all habitat information collected to date from aerial surveys has been completed. Information included on the maps is shown in Table 3. The information is color-coded making reproduction difficult. Until the format for final disposition of this information is decided upon, the

Table 1. Summary of bird observations in estuaries of the Alaska Peninsula, aerial surveys, October 13-16, 1976.

	<u>Ugashik</u>	<u>Cinder R. Hook Lagoon</u>	<u>Port Heiden</u>	<u>Seal Is.</u>	<u>Mud Bay</u>	<u>Nelson Lagoon</u>	<u>Izembek Lagoon</u>
Loons (unid)	1						1
Large loon	2	2	1			15	18
Small loon			1	5			2
Grebe (unid)	1	1	1			8	6
R.N. Grebe		1				3	2
Cormorants (unid)		10	2				26
Swans	4	59	98	6			2
Geese (Dark)	35		230	250	175		
Canada	11,774	10,744	4,791	1,364	80	41	29,733
Brant			14				99,349
Emperor	422	3,601	4,073	10,102	3,418	14,220	5,507
Snow	545	2,250					2
Duck (unid)	77	808		114		3	931
Dabbler Ducks (unid)	6,046	2,371	5,667	812	135	1,418	462
Mallard	581	126	60	483		14	552
Pintail	259	1,718	834	5,966	959	495	2,068
G-W Teal	80	3	99				
Am. Wigeon	41	6		3			10
Diving Ducks	173	76	75	6			
Scaup	17	11				1	136
Goldeneye	52		3				
Bufflehead		3	5	5			
Sea Ducks (unid)	28	512	12,017	1,801	218	10,316	4,816
Oldsquaw	1		85	75		72	20
Harlequin							4
Eiders (mixed)			76		1	84	1,690
Steller's		249	460	943	3,011	17,294	15,532
Large eider (unid)	4	31	73			637	55
Common		1	195	25		80	4
Scoter (unid)	1,367	5	10,817	108	102	782	1,232
W-W scoter	45	3	51	1		23	18
Surf scoter		12	5			25	
Common scoter	38	99	320	2	372	1,447	123
Merganser (unid)	4						1
R-B Merganser	20						
Eagles (Q-ad, M-im)	2-M	1-Q,1-M	4-Q,2M	3-Q,3-M			6-Q,6-M
Gyrfalcon			1				
Ptarmigan	46						
Large shorebirds	85		503				20
Yellowlegs	7						
Medium shorebirds	907	1,858	3,559	841	3,700	2,651	4,908
Small shorebirds	1,375	15,805	3,466	1,860		19,148	4,346
Mixed shorebirds	1,113	1,500		1,500			3,800
Jaeger (parasitic)				2			
Gulls (unid)	285	1,769	337	2,000	1,500	652	529
Large gulls (unid)	18	70	305	92		9	
Glaucous-winged	161	625	190	1,579	385	3,656	4,055
Herring	3						
Small gull	175	1	2	40		132	546
Mew	209	7	157	10		46	59
Bonaparte's	16		31	1			62
Kittiwake	123	1	55	200		359	977
Sabines	1	15					
Murre						3	
Small alcid						2	1
Pigeon guillemot			1				
Raven	2	2	5	2			14
Passerine - small	7	132	65			8	
Snow bunting		35		25		50	4

Table 2. Miscellaneous bird observations on habitat mapping flights on Alaska Peninsula and Aleutian Shelf, October 1976.

Alaska Peninsula October 16	Em Go	Bl Br	Ca Go	Eide	Scot	Dabb	Lari	Shor	Corm	Murr	ShWa	Fulm	SmA
Bechevin Bay													
Hook Bay	117	2900											
St. Catherine Cove	151	10	5175			3000		300	25				
Hotsprings Bay	715												
Traders Cove	515		825			125							
Nichols Point							6000		75				
Isanotski Straits							5500						
Morzhovoi Bay	465	3125										10K's	
Thinpoint Cove	35												
Old Man's Lagoon	50		1250										
Kinzarof Lagoon	595	2400	1400										
Lenard Harbor	70												
Belkofski Bay							2400						
Bear Bay	55												
Volcano Bay							230						
Duschkin Bay	180												
Long John Lagoon	95				150								
Long Beach							65						
Black Point	91												
Chinaman Lagoon	65						50						
Jackson Lagoon	270							55	350				
Canoe Bay	306												
Deer Island	106												
Aleutian Islands													
October 25-27													
Unimak				74	108					10			
Ugamak							250						
Round	20												
Kaligagan	75												
Tigalda	50												
Avantanak	5												
Akun							40						
Akutan Pass										Pres	Pres	Pres	Pres
Unaiga									50				
Egg	60												
Unalaska	810					15				25			
Umnak	936			238	26			1185		Pres			
Adugak	35												
Samalga	695							350					

Key to abbreviations:

Em Go	Emperor Goose	Lari	Larids	SmAl	Small alcids
Bl Br	Black Brant	Shor	Shorebirds	10 K's	Tens of thousands
Ca Go	Canada Goose	Corm	Cormorants	Pres	Present
Fide	Eiders-mixed	Murr	Murres		
Scot	Scoters-mixed	ShWa	Shearwaters		
Dabb	Dabblers-mixed	Fulm	Fulmars		

Table 3. Color-coded habitat mapping system for coastal zone from Cape Fairweather to Cape Newenham.

Substrate: Color Code

Dk. Blue	Mud	
Yellow	Sand	
Red	Gravel	
Black	Rock	
Dk. Blue & Yellow	Mud and Sand	} Many more combinations exist
Red & Yellow	Gravel with Sand	
Black & Red	Rock with Gravel (Rubble)	
Green	Vegetation - Mixed grasses, sedges, forbs	
Purple	Vegetation - Beach Rye	
Orange	Vegetation - Eelgrass	
Pink	Algae - Kelp	
Brown	Stormtide line	
Lt. Blue	Changed water course	

Slope of Bank

1 Flat	0-20°
2 Slight	20-40°
3 Moderate	40-60°
4 Steep	60-80°
5 Vertical	80-100°

Height of Bank

A	0-3 m	0-10 ft.
B	3-6 m	10-20 ft.
C	6-12 m	20-40 ft.
D	12-30 m	40-100 ft.
E	30+ m	100+ ft.

bound atlases are available for perusal in the Anchorage ADFG office. As more information is gathered on subsequent flights, it will be added to the atlases. Quantities of each habitat type have not yet been summarized.

IV. Interpretation of Results

Due to the large volume of data collected on each survey, analysis is difficult until a program is completed for computer analysis. General impressions and "gut feelings" are all that is available for interpretation of the data.

Timing of this year's flight along the north side of the Alaska Peninsula coincided with that of last fall. Several differences were noted in species abundance although quantitative results are not directly comparable since the flight last year was the first under this project and slightly different techniques were used. However, it appeared that in the Ugashik-Cinder River/Hook Lagoon areas more Canada geese, snow geese and shorebirds were observed in 1976. Although many Canada geese apparently were still on the Yukon-Kuskokwim River Delta and many snow geese had already passed through the area, we were able to catch more of the peak of migration. Almost 12,000 Canadas and over 500 snows were seen on Ugashik and almost 11,000 Canadas and 2,250 snows on Cinder River/Hook Lagoon. It appeared that the species composition and numbers utilizing these two estuarine complexes were quite similar.

Port Heiden and Seal Islands contained a somewhat different species composition and abundance than the previously mentioned estuaries, yet between themselves were similar. Fewer Canada geese and shorebirds, and virtually no snow geese were observed, while more emperor geese and sea ducks were found. Comparable numbers of dabblers and larids were found among all these estuaries.

Large numbers of emperor geese but few Canada geese and dabblers used the Nelson Lagoon/Mud Bay area and food availability studies would likely reveal why. This area was used heavily by sea ducks and shorebirds also. Species diversity appeared to be somewhat less than the other estuaries.

Richest of all in species diversity and abundance of birds is the Izembek-Moffett Lagoon area. Large numbers of Canada geese, black brant, emperor geese, dabblers, sea ducks, shorebirds and larids are found there, but relative abundance can vary from year to year with the possible exception of black brant. Although many more brant were observed in 1975 than 1976, it was felt this was due to observer error rather than a change in population size. Brant were the most difficult bird to aerial census since they frequently flushed long before the plane approached, were often in tight three-dimensional masses and often flew back to areas that had already been censused or returned to the census area to be counted more than once. The total of 99,349 enumerated this year, plus those seen in other bays in the vicinity, likely represent a relatively accurate estimate of the total population of black brant.

Many fewer Canada and emperor geese were observed in Izembek this year than last year. Apparently the Canadas simply bypassed Izembek for staging in 1976. They staged for longer periods on the Y-K Delta and simply flew directly south with favorable winds. Emperors also may have been staging farther up the Peninsula or farther north and had not yet arrived at Izembek at the time of the survey. Fewer dabblers than expected were observed, but the usual large number of sea ducks were seen. Most shorebirds had already passed through this region.

No noteworthy bird observations were made during the mapping flights of the Aleutian Shelf. The emperor goose migration out the Chain was well underway since this species was well distributed throughout all islands as far out as we went. Most surprising was how faunistically rich per unit area that Samalga Island was.

V. Problems

Increasing costs with decreased funding will greatly decrease the amount of data gathered during this fiscal year. Nine of the 17 surveys completed to date (those in lower Cook Inlet) were funded by the Alaska Department of Fish and Game, Habitat Protection Section. Two others were conducted concurrently with OCS marine mammal surveys. Also, all data processing costs including keypunching and programming are to be born by project funds this fiscal year. Therefore, it is anticipated that only three or possibly four aerial surveys will be conducted during the present fiscal year.

VI. Funds Expended

Salaries	\$11,250
Travel/per diem	1,250
Logistics	
(air charter, etc.)	5,345
Commodities	100
Equipment	<u>0</u>
Total	\$17,945

Environmental Assessment of the Alaskan Continental Shelf

October-December 1976 quarterly reports from Principal Investigators participating in a multi-year program of environmental assessment related to petroleum development of the Alaskan Continental Shelf. The program is directed by the National Oceanic and Atmospheric Administration under funding from and for use by the Bureau of Land Management.

ENVIRONMENTAL RESEARCH LABORATORIES

Boulder, Colorado

February 1977