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Progress Report: 1983 Walrus  
Harvest, Health, and Welfare Study at  
Gambell, Alaska,

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John Sease  
Marine Mammal Project  
U.S. Fish and Wildlife Service  
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## INTRODUCTION

During the Spring of 1983, for the fourth consecutive year, the U.S. Fish and Wildlife Service (USFWS) monitored the harvest of Pacific walrus (Odobenus rosmarus divergens) in six Alaskan Native villages. The Eskimo Walrus Commission (EWC) participated in data collection in Gambell during the month of April. According to the terms of the Marine Mammal Protection Act of 1972, the USFWS is charged with the primary management responsibilities for the walrus in Alaska. Monitoring the Native harvest is a part of the ongoing management program. Although extensive collection of samples has been conducted in previous years, especially of stomach contents and reproductive organs, the program in 1983 was much more limited. Major objectives of the harvest monitoring were as follows:

- 1) to record the number, sex, and age of walruses harvested,
- 2) to collect a sample of teeth for ageing,
- 3) to collect tissue samples for contaminant analysis,
- 4) to record harvest of other marine mammals and birds, and
- 5) to record other aspects of the subsistence life style of the Eskimos and their utilization of marine resources during the spring harvest.

Harvest data were collected in Gambell from 18 April through 13 June by two monitors. A Biological Technician, John Sease, was employed by the USFWS during the entire observation period. A Village Native Assistant, Edna Apatiki, was employed by the EWC during the month of April and the USFWS during the rest of the observation period.

## STUDY AREA

The information presented in this report was collected in Gambell, Alaska, a village of approximately 450 Siberian Yupik Eskimos. Being located on the Northwest Cape of St. Lawrence Island, Gambell is well situated to take advantage of the spring walrus migration. The straight adjacent to Gambell is approximately 45 miles (72.5 km) wide, so walruses are well within reach of the Eskimo hunters. Another of the unique features of Gambell's location is two gravel beaches, one facing north and one west. Although ice is constantly being moved by the wind and currents, one of the two beaches usually allows access to the sea.

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## METHODS

### Harvest Data

Harvest monitors patrolled the beaches and met boats as they returned to the village. The catch from each boat was observed while assisting in unloading and pulling the boat up the beach. The number, sex, and age (calf or "adult") of all walruses were recorded, as well as the number and species of other marine mammals. When possible, species and number of birds in the catch were also recorded. Times of departure and return, direction and distance of travel, crew size, boat length, and horsepower of the motors were also recorded when possible. As several boats frequently hunted together, simultaneous arrival of several boats at the beach precluded interviewing the captains. On several occasions the boat captains were contacted at a later time if they had been missed at the beach.

No attempt was made to ask about animals struck and lost. For such information to be meaningful, an independent observer would have to be in the boat during the hunt. Even under ideal conditions, the excitement and chaos of the hunt makes it almost impossible to accurately keep track of all animals struck. Information about lost animals was recorded when volunteered by the boat captain or a member of the crew.

### Specimen Collection

Collections of specimen was quite limited in 1983 as compared to previous years. No stomach contents or reproductive organs were collected. The sample of teeth for ageing was restricted to 100 pairs of lower canines. The goal was to collect pairs of teeth from 50 males and 50 females. All teeth were given an accession number as they were brought in by the hunters and sealed in paper envelopes. All envelopes were marked with the sex of the walrus, date of capture, name of the boat captain, and in the case of females, if they were accompanied by a calf.

A limited number of tissue samples were collected for contaminant analysis. When available, samples of liver, kidney, and blubber were taken from the same animal. In many cases, only two of the three tissue types were available at the beach. All samples were trimmed using a stainless steel knife to remove any contamination from the butchering process or from transportation to the village in the bottom of the boats. Trimmed samples were wrapped individually in aluminum foil and sealed in "zip lock" plastic bags. All samples from an individual animal were included in a single larger bag. The sex of the animal was recorded, as well as any comments the hunters had regarding the observable health or status of the animal. An attempt was made to obtain teeth for ageing from all samples collected for contaminant analysis. Samples were kept frozen either in the Gambell community freezer or in the home freezer of Job Koonooka.

## Hunter Contact

A meeting of the Gambell boat captains was held on the evening of 20 April. A brief synopsis of the results from previous years data collections was given. Objectives for the current season were explained, outlining changes from previous years programs. Types and quantities of samples to be collected were listed with a brief explanation of their importance. This meeting was supplemented with informal contact on the beach or in town, where many of the topics covered during the meeting were discussed in greater detail. Also in attendance at the boat captain's meeting were Kathy Hazard, biologist for the Alaska Eskimo Whaling Commission, and Dan Maier, Special Agent for the USFWS Law Enforcement Branch. Kathy Hazard reported the data collected from the bowhead whale caught several days earlier. Dan Maier explained the guidelines to be used by law enforcement personnel during the 1983 season for judging hunter compliance with the Marine Mammal Protection Act of 1972. A list of whaling and walrus boat captains active during the 1983 spring season is given in Appendix I.

## Incidental Observations

Incidental observations included weather and ice conditions, hunting conditions at sea, and miscellaneous information relayed by boat captains and crew members. This information was recorded in a log book. Abundance of seabirds and waterfowl were also recorded in the log, as well as the arrival of spring migrants. When time allowed, various locations around the village were checked for terrestrial birds.

## RESULTS AND DISCUSSION

The total documented harvest during the period of observation in 1983 was 642 walrus. This included 249 "adult" males (38.8%), 203 "adult" females (31.6%), and 190 calves (29.6%). For the purposes of this report, "adult" refers to any walrus older than a calf and does not refer to reproductive maturity. Of the 452 "adult" walrus, males comprised 55.1% and females 44.9%. The sex distribution of the harvest during 1983 was significantly different from both 1981 (chi-square  $.01 < P < .025$ ) and 1982 (chi-square  $P < .001$ ). The proportions of both males and calves was higher and the proportion of females lower in 1983 than both 1981 and 1982 (Table 1). The two most successful hunting days were 18 and 24 May, accounting for 151 (23.5%) and 205 (31.9%) walrus respectively. During the 8 day interval including 18 through 24 May, 468 walrus were landed. This was 72.9% of the total catch (Table 2).

The total harvest in 1983 was only about two thirds as large as either 1981 or 1982. Two factors are primarily responsible for this: poor weather and an extended whaling season. Wind in excess of 15 knots is usually sufficient to prevent hunting from boats. Early during the observation period, especially during the last 2 weeks of

Table 1. Comparison of 1981, 1982, and 1983 documented spring walrus harvest from Gambell, Alaska. Animals of unknown age or sex are not included. Data from Lourie (1981) and Malloy (1982). Adults are all animals older than calves.

	Adult Males	Adult Females	Calves	Total
1981	345	373	243	961
% of total	35.9	38.8	25.3	
% of adults	48.1	51.9		
1982	211	404	298	913
% of total	23.1	44.2	32.6	
% of adults	34.3	65.7		
1983	249	203	190	642
% of total	38.8	31.6	29.6	
% of adults	55.1	44.9		

Table 2. Date of capture for marine mammals during the spring walrus harvest at Gambell, Alaska, 1983.

Date	Walrus			Total	Seals			
	Males	Females	Calves		Bearded	Ringed	Spotted	Ribbon
April								
22	1			1				
May								
1	5			5	5	3		
2	5			5	5		2	
8	13	9	6	28	9		1	
10	3	12	11	26	9	1		
11	11	22	21	54	12	1	2	
12	5	9	12	26	5			
15						1		
18	71	39	41	151	1	1		
19	7	28	28	63	1	5	3	
23	1			1	4	4	2	
24	116	49	40	205	22	3	2	
25		25	23	48	1	2		1
26	1	2	2	5	1	5		
27		2	1	3		1	1	
28	3	2	4	9	1	2	1	
29	1			1		1		
30	4	2		6	3			1
June								
2	2			2		1	1	
10		2	1	3	1			1
Totals	249	203	190	642	80	31	15	3

Date	Whales
April	
18	52 foot male bowhead whale
June	
10	20-25 foot female gray whale
11	20-25 foot female gray whale

April, very few days were calm enough to launch boats. In addition, the wind was out of the north much of the winter and spring. Gambell hunters speculated that all the ice that was driven south either melted in deep water south of the shelf break or drifted back to the north far east of St. Lawrence Island. Whatever the cause, proper conditions of sufficient ice for walrus hunting did not persist near Gambell.

Hunting methods were also affected by the quota system initiated by the International Whaling Commission. As Gambell hunters were only allowed 2 bowhead strikes in 1983, most whale captains felt obliged to use both strikes. Whaling continued many days after walrus hunting would normally have begun. Perhaps 2 weeks of very productive walrus hunting was lost during early May.

Documented harvest of other pinniped species included 80 bearded seals (Erignathus barbatus), of which 35 were known to be young of the year, 31 ringed seals (Pusa hispida), 15 spotted seals (Phoca largha), and 3 ribbon seals (Phoca fasciata). All of the ribbon seals were pups (Table 2). Other marine mammals included a 52 foot bowhead whale (Balena mysticetus) which was caught on 17 April. A gray whale (Eschrichtius robustus) was struck and lost on 8 June but recovered two days later. A second gray whale was struck and successfully retrieved on 11 June. Both gray whales were females approximately 20 to 25 feet long (Table 2).

Birds were hunted sporadically throughout the observation period. The most heavily hunted species included thick-billed murres (Uria aalge), crested auklets (Aethia cristatella), and king eiders (Somateria spectabilis). Common murres (Uria lomvia), common eiders (Somateria mollissima), and spectacled eiders (Lampronetta fischeri) were hunted less heavily, but were still common in the harvest. Other species of birds included 2 yellow-billed loons (Gavia adamsii), 1 arctic loon (Gavia arctica), 1 black-legged kittiwake (Rissa tridactyla), and 1 female oldsquaw (Clangula hyemalis). Although oldsquaw are extremely abundant during the entire year, they are hunted only during the winter. Rarely was it possible to get an accurate count of birds in the harvest. Sometimes the birds were in a pile on the beach, but frequently they were already packed in a burlap or plastic bag. Any attempts to quantify the harvest of birds would undoubtedly be very conservative. The relative importance of species given above was essentially the same for all hunting crews.

Samples were collected from 113 walruses. Tissues for contaminant analysis were collected from 11 males and 3 females. Eight of these sets of tissues were complete, with samples of liver, kidney and blubber. The other 6 sets contain only 2 of the tissue types (Appendix II). Teeth were included with all except one set of tissue samples. Teeth were collected from an additional 99 walruses, 56 males and 43 females. The total sample of teeth was 66 males and 46 females (Appendix II).

No attempt was made to calculate hunting effort expended during the 1983 spring walrus hunt. Until 11 May hunting effort was almost exclusively for bowhead whales. Whaling is done in skin boats powered by sail. These boats are much slower than the outboard powered aluminum boats used for walrus hunting. As a result a much smaller area can be covered in a given amount of time. Because excessive noise scares bowheads away, hunters do not shoot at walruses, seals, or birds until they are returning to the village at the end of the day. All of these factors will greatly inflate calculated hunting effort. In addition, the crew required for skin boats may be 2 to 3 times those of the walrus hunting boats. This would increase calculated manhours more. During the interval from 11 to 15 May some hunters continued whaling while others hunted walruses. It was not until 18 May that all whale captains had completely stopped whaling. By this time 145 walruses had been caught. The total catch of walruses would have undoubtedly been much greater had more captains abandoned whaling sooner.

Early in the season, bird hunting was restricted to the return trip to Gambell or when conditions were not good for hunting marine mammals. By 23 May, however, many hunting trips went specifically after birds, although walruses and seals were still caught by some boats. Bird hunting was most successful north or east of Gambell, usually close to shore. Since these areas offered little opportunity for catching walruses, time spent in these areas would have to be separated from time spent walrus hunting. In addition, several boats were observed to be returning to the beach after walrus hunting and change course to the bird hunting areas. Separation of time expended on walruses and birds would be very difficult.

Utilization of meat from pinniped species varied with individual boat crews. Tusks were saved from all walruses older than calves, as were oosiks from all males. Very little meat was saved from male walruses when females or calves were available. Livers from the males, especially older animals, were frequently brought back. Several people, both hunters and visitors to Gambell, commented that much less liver was being retrieved during the 1983 harvest as compared with previous years. Concern over mercury and other contaminants was responsible. Utilization of female walruses was much greater than for the males. Intestines, stomach, heart, breasts, blubber, and flippers were saved along with large quantities of meat. Calves are very much sought by the Gambell hunters, and were brought back whole to be dried. Hides from female walruses are used to cover the skin boats used for whaling. Most families were able to obtain the 3 hides necessary to recover their skin boats. Very commonly a boat would return with a share of meat from another boat. Very little other than tusks was utilized from "sick" animals. These animals may have had abnormal growths or spots on internal organs, been in an emaciated condition, or just looked very "unhealthy". Very few boats returned to Gambell without some meat in addition to tusks and oosiks.



Almost all seals were brought back to Gambell whole and either butchered on the beach or at home. The only exceptions were adult bearded seals which were butchered on the ice. Almost all of the edible portions of seals were kept and frozen or dried. Very little other than muktuk (skin and blubber) was salvaged from the bowhead whale. Due to the extreme size of the whale and rough surf at the beach, butchering was delayed by 24 or 36 hours. By the time the whale had been pulled onto the beach, most of the meat had spoiled. The first gray whale was lost for 2 days before it was successfully retrieved. The meat had spoiled, so only the muktuk was utilized. The second gray whale was beached when fresh and only portions of the viscera were not saved. Sinews were saved from all 3 whales. These are braided into heavy thread and used to sew skins for boat covers.

One carnivorous male walrus was captured, identifiable by the yellow, oil-stained tusks and oil-stained neck and shoulders. Another male walrus had three tusks, a 5-6 inch tusk being located directly behind the larger normal tusk. One captain mentioned seeing a male walrus with crossed tusks but did not catch it. During the early stages of the walrus hunt, many captains commented on the "skinny" walruses, especially males. Such comments were rarely heard as the hunt progressed. Several hunters also mentioned that they were seeing many more calves than during some of the previous years. This was reflected by the higher proportion of calves in the harvest. Clams obtained from walrus stomachs are a great delicacy at Gambell. During the 1983 walrus harvest, very few if any walruses were caught with full stomachs. Several captains commented that they were not finding any food in the walruses' stomachs.

During the 1982 monitoring program, John Malloy saw only two tundra voles (Microtus oeconomus) during his 7 week stay in Gambell. To say that these voles were abundant during the spring of 1983 would be an understatement. Dr. Joe Wilson of the Alaska Native Medical Center in Anchorage was in Gambell with several assistants on 9 and 10 June. The purpose of their visit was to investigate the infection rate of voles with Echinococcus multilocularis, a tapeworm of canids. Voles are the alternate hosts for the juvenile stages of the parasite. Humans can also serve as the alternate host, infection resulting in hydatid cysts forming in the liver. During one afternoon and evening close to 100 "mice" were captured and taken to the clinic for analysis. Approximately 10% of the voles showed signs of infection.

A list of the dates of first sightings for birds is included in Appendix III. This includes both resident and migrant birds. Due to Gambell's unique location, many species of birds are frequently seen near Gambell that are very rarely seen elsewhere in Alaska or other parts of North America. As a result, bird watchers come to Gambell every year to observe the spring migration. Approximately 20 to 25 birders visited Gambell for visits varying from 2 to 14 days. Their observations are included in Appendix III in parentheses. The most interesting observation was probably a dusky warbler (Phylloscopus

fuscatus) . This was only the fourth record of this species in Alaska and fifth for the United States (Daniel D. Gibson, personal communication).

Appendix I. List of whaling and walrus boat captains.

Captains of Whaling Boats

Tom Antoghome	Leonard Nowpakahok
Leonard Apangalook	Hiram Okhtokiyuk
Anders Apassingok	Alex Oozeva
Ralph Apatiki	Conrad Oozeva
Wilbur Booshu	Gordon Oozevaseuk
Victor Campbell	Roger Silook
Hansen Irrigoo	Vernon Slwooko
Winfred James	Jerry Tungiyan
Willard Kaningok	Donald Ungott
Merlin Koonooka	Marvin Walunga
Allen Kulukhon	

Captains of Walrus Boats

Archie Henry	Allen or Leroy Kulukhon
Tom Antoghome	Winfred Matuklook
Leonard Apangalook	Leonard Nowpakahok
Preston or Paul Apangalook	Hiram Okhtokiyuk
Anders or Edmund Apassingok	Aaron Oseuk
Ralph, Hugo or Jerome Apatiki	Alex Oozeva
Bruce Boolowon	Conrad Oozeva
Wayne Booshu	Duane Oozeva
Wilbur Booshu	Gordon Oozevaseuk
Iver Campbell	John Silook
Victor Campbell	Roger Silook
Hansen or Clarence Irrigoo	Farren Slwooko
Aaron Iworrigan	Junior Slwooko
Farrel or Lane Iyakitan	Vernon Slwooko
Dennis James	Bill Soonagrook
Winfred James	Branson or Jerry Tungiyan
Franklin Kaningok	Robert Tungiyan
Willard Kaningok	James Unglowook
Merlin Koonooka	Clement Ungott
Ned Koozaata	Marvin Walunga

Appendix II. Samples collected during the 1983 spring walrus harvest  
at Gambell, Alaska.

Sample #	Boat Captain	Date	Sex	Comment	Tissues collected		
GW- 1-83	Ralph Apatiki	1 May	M				
GW- 2-83	Conrad Oozeva	8 May	F	w/calf			
GW- 3-83	Leonard Apangalook	8 May	F	w/calf	L		B
GW- 4-83	Winfred James	8 May	M				
GW- 5-83	Tom Antogham	8 May	M		L	K	
GW- 6-83	Tom Antogham	8 May	M	"very old"	L	K	
GW- 7-83	Tom Antogham	10 May	M				
GW- 8-83	Conrad Oozeva	10 May	F				
GW- 9-83	Dennis James	10 May	F	w/calf			
GW- 10-83	Willard Kaningok	8 May	M		L		B
GW- 11-83	Vernon Slwoko	10 May	F	w/calf			
GW- 12-83	William Soonagrook	10 May	F	w/calf			
GW- 13-83	William Soonagrook	10 May	F	w/calf			
GW- 14-83	William Soonagrook	11 May	F	w/calf			
GW- 15-83	William Soonagrook	11 May	M				
GW- 16-83	William Soonagrook	11 May	F	w/calf			
GW- 17-83	Hiram Okhtokiyuk	11 May	M				
GW- 18-83	Hiram Okhtokiyuk	11 May	F	w/calf			
GW- 19-83	Vernon Slwoko	11 May	F	w/calf			
GW- 20-83	Franklin Kaningok	11 May	F				
GW- 21-83	Victor Campbell	11 May	M				
GW- 22-83	Donald Ungott	11 May	F	w/calf			
GW- 23-83	Alex Oozeva	11 May	M				
GW- 24-83	Donald Ungott	11 May	M				
GW- 25-83	Merlin Koonooka	11 May	M	no teeth	L		B
GW- 26-83	Vernon Slwoko	12 May	F		L	K	B
GW- 27-83	Winfred James	11 May	F				
GW- 28-83	Winfred James	11 May	M		L		B
GW- 29-83	Bruce Boolowon	11 May	F	w/ fetus & yearling			
GW- 30-83	Bruce Boolowon	11 May	M				
GW- 31-83	Bruce Boolowon	12 May	M				
GW- 32-83	Alex Oozeva	18 May	M		L	K	B
GW- 33-83	Conrad Oozeva	18 May	F				
GW- 34-83	Aaron Iwoorigon	18 May	M				
GW- 35-83	Bruce Boolowon	18 May	M				
GW- 36-83	Bruce Boolowon	18 May	M				
GW- 37-83	Allen Kulukhon	18 May	M				
GW- 38-83	Allen Kulukhon	18 May	M				
GW- 39-83	Wilbur Booshu	18 May	F	w/calf			
GW- 40-83	Wilbur Booshu	18 May	F	w/calf			
GW- 41-83	Wilbur Booshu	18 May	F	w/calf			
GW- 42-83	Conrad Oozeva	18 May	F	w/calf			
GW- 43-83	Conrad Oozeva	18 May	F	w/calf			
GW- 44-83	Conrad Oozeva	18 May	F	w/calf			
GW- 45-83	Winfred James	18 May	M				
GW- 46-83	Winfred James	18 May	M				

L Liver K Kidney B Blubber

## Appendix II. continued

Sample #	Boat Captain	Date	Sex	Comment	Tissues collected		
GW- 47-83	Winfred James	18 May	M				
GW- 48-83	Winfred James	18 May	M				
GW- 49-83	Winfred James	18 May	M				
GW- 50-83	Winfred James	18 May	M				
GW- 51-83	Winfred James	18 May	F				
GW- 52-83	Wayne Booshu	18 May	M				
GW- 53-83	Wayne Booshu	18 May	M				
GW- 54-83	Wayne Booshu	18 May	M				
GW- 55-83	Wayne Booshu	18 May	M				
GW- 56-83	Wayne Booshu	18 May	M				
GW- 57-83	Clement Ungott	19 May	F	w/calf			
GW- 58-83	Vernon Slwooko	19 May	M				
GW- 59-83	Aaron Iworrigon	19 May	F	w/calf			
GW- 60-83	Duane Oozeva	19 May	F	w/calf			
GW- 61-83	Vernon Slwooko	19 May	F	w/calf			
GW- 62-83	Branson Tungiyen	19 May	F	w/calf			
GW- 63-83	Duane Oozeva	24 May	M				
GW- 64-83	Duane Oozeva	24 May	M				
GW- 65-83	Paul Apangalook	24 May	M				
GW- 66-83	Paul Apangalook	24 May	F				
GW- 67-83	Wilbur Booshu	24 May	M				
GW- 68-83	Wilbur Booshu	24 May	M				
GW- 69-83	Wilbur Booshu	24 May	M				
GW- 70-83	Wilbur Booshu	24 May	F	w/calf			
GW- 71-83	Wilbur Booshu	24 May	F	w/calf			
GW- 72-83	Conrad Oozeva	24 May	M				
GW- 73-83	Conrad Oozeva	24 May	F				
GW- 74-83	Conrad Oozeva	24 May	F				
GW- 75-83	Donald Ungott	24 May	M				
GW- 76-83	Donald Ungott	24 May	M				
GW- 77-83	Donald Ungott	24 May	M				
GW- 78-83	Donald Ungott	24 May	F				
GW- 79-83	Donald Ungott	24 May	F				
GW- 80-83	Wayne Booshu	24 May	F				
GW- 81-83	Wayne Booshu	24 May	M				
GW- 82-83	Ralph Apatiki	24 May	F	w/calf			
GW- 83-83	Wayne Booshu	24 May	M				
GW- 84-83	Wesley Apatiki	24 May	M				
GW- 85-83	Wesley Apatiki	24 May	M				
GW- 86-83	Wesley Apatiki	24 May	M				
GW- 87-83	Lane Iyakitan	24 May	M		L	K	B
GW- 88-83	Lane Iyakitan	24 May	M		L	K	B
GW- 89-83	Lane Iyakitan	24 May	F		L	K	B
GW- 90-83	Lane Iyakitan	24 May	M		L	K	B
GW- 91-83	Alex Oozeva	24 May	M		L	K	B
GW- 92-83	Alex Oozeva	24 May	M		L	K	B

L Liver K Kidney B Blubber

Appendix II. continued

Sample #	Boat Captain	Date	Sex	Comment	Tissues collected
GW- 93-83	Victor Campbell	24 May	M		
GW- 94-83	Victor Campbell	24 May	M		
GW- 95-83	Victor Campbell	24 May	M		
GW- 96-83	Bruce Boolowon	24 May	M		
GW- 97-83	Bruce Boolowon	24 May	M		
GW- 98-83	Conrad Oozeva	25 May	F	w/calf	
GW- 99-83	Conrad Oozeva	25 May	F	w/calf	
GW-100-83	Conrad Oozeva	25 May	F	w/calf	
GW-101-83	Aaron Oseuk	24 May	F	w/calf	
GW-102-83	Ned Koozaata	24 May	M		
GW-103-83	Ned Koozaata	24 May	M		
GW-104-83	Aaron Oseuk	24 May	F	w/calf	
GW-105-83	Robert Tungiyan	23 May	M		
GW-106-83	Leonard Nowpakahok	24 May	M		
GW-107-83	Leonard Nowpakahok	24 May	F		
GW-108-83	Iver Campbell	24 May	F	w/calf	
GW-109-83	Jerry Tungiyan	24 May	M		
GW-110-83	Robert Tungiyan	24 May	M		
GW-111-83	Robert Tungiyan	24 May	M		
GW-112-83	Hiram Okhtokiyuk	24 May	M		
GW-113-83	Hiram Okhtokiyuk	24 May	M		

Teeth only	56 Males	43 females
Teeth and Tissue samples	10 males	3 females
Tissue sample only	<u>1</u> male	<u>      </u>
Total	67 males	46 females

Appendix III. Species list and date of first sighting for birds observed during the 1983 spring walrus harvest at Gambell, Alaska. Observations in parenthesis were from visiting birdwatchers.

Pelagic cormorant	Phalacrocorax pelagicus	18 April
Northern fulmar	Fulmaris glacialis	
Glaucus gull	Larus hyperboreus	
Oldsquaw	Clangula hyemalis	
Thick-billed murre	Uria aalge	
Common murre	Uria lomvia	
Raven	Corvus corax	
Spectacled eider	Lampronetta fischeri	21 April
Common eider	Somateria mollissima	
Snow bunting	Plectrophenax nivalis	24 April
Slaty-backed gull	Larus schistisagus	30 April
Common redpoll	Acanthis flammea	8 May
McKay's bunting	Plectrophenax hyperboreus	12 May
Mew gull	Larus canus	14 May
Herring gull	Larus argentatus	
Western sandpiper	Ereunetes mauri	
Sandhill crane	Grus canadensis	
Lapland longspur	Calcarius lapponicus	
Ivory gull	Pagophila eburnea	15 May
Black-legged kittiwake	Rissa tridactyla	
Pigeon guillemot	Cephus columba	
Dunlin	Erolia alpina	
Ruddy turnstone	Arenaria interpres	
Green-winged teal	Anas carolinensis	17 May
Short-eared owl	Asio flammeus	
Steller's eider	Polysticta stelleri	18 May
Common loon	Gavia immer	19 May
Crested auklet	Aethia cristatella	23 May
Pomarine jaeger	Stercorarius pomarinus	24 May
Least auklet	Aethia pusilla	25 May
Long-tailed jaeger	Stercorarius longicauda	
Red-necked grebe	Podiceps grisegena	26 May
Yellow-billed loon	Gavia adamsii	
Long-billed dowitcher	Limnodromus scolopaceus	
Ringed plover	Charadrius hiaticula	
Ruff and reeve	Philomachus pugnax	
Arctic loon	Gavia arctica	27 May
Mongolian plover	Charadrius mongolus	
Yellow wagtail	Motacilla flava	
Wheatear	Oenanthe oenanthe	
Water pipit	Anthus spinoletta	
(Wood sandpiper	Tringa glareola)	
(Common sandpiper	Actitis hypoleucos)	
(Bluethroat	Luscinia svecica)	
(Rufus-necked stint	Calidris ruficollis)	

Appendix III. continued

Pectoral sandpiper	<i>Erolia melanotos</i>	28 May
Golden plover	<i>Pluvialis dominica</i>	
(Semipalmated plover	<i>Charadrius semipalmatus</i> )	
(White wagtail	<i>Montacilla alba</i> )	
Emperor goose	<i>Philacte canagica</i>	29 May
(Dotterel	<i>Eudromias morinellus</i> )	
Black turnstone	<i>Arenaria melanocephala</i>	30 May
Baird's sandpiper	<i>Erolia bairdii</i>	
Black-backed wagtail	<i>Montacilla leucopsis</i>	
Red-throated pipit	<i>Anthus cervinus</i>	31 May
Swainson's thrush	<i>Hylocichla ustulata</i>	
Arctic tern	<i>Sterna paradisaea</i>	1 June
Eurasian widgeon	<i>Mareca penelope</i>	5 June
Common tern	<i>Sterna hirundo</i>	
Dusky warbler	<i>Phylloscopus fuscatus</i>	
Brambling	<i>Fringilla montifringilla</i>	
(Terek sandpiper	<i>Xenus cinereus</i> )	

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