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**PROGRESS REPORT**  
**1984 PACIFIC WALRUS HARVEST, HEALTH, AND WELFARE STUDY AT**  
**LITTLE DIOMEDE ISLAND, ALASKA**

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## Abstract

Data on the spring walrus harvest on Little Diomedede Island were collected between April 26 and June 29, 1984. 1043 walrus were harvested; 269 (26%) were male, 657 (63%) female, 40 (4%) calves and 77 (7%) adults of unknown sex. 31 bearded seal, 14 spotted seal, 11 ringed seal and 6 ribbon seal were also harvested. 11 birds were observed in boats - most bird hunting is done on the island. 4360 man-hours were expended in 16 days of hunting for an average of 4.2 man-hours/walrus. 51 pairs of teeth were purchased for age determination. No tissue samples were collected. Boat ownership remained the same although actual captains varied. Most boats have 2 motors, 25 or 35 hp. Four skin boats are still used and skins were split to maintain them.

## Introduction

Since 1980, the U.S. Fish and Wildlife Service has monitored the annual hunting of the Pacific walrus, Odobenus rosmarus divergens, as mandated by the Marine Mammal Protection Act of 1972. Biologists were sent to observe the hunting methods and subsistence practices in the village they were assigned to, and to record the number and sex of walrus retrieved, the number of man-hours required to hunt them and other hunt data. Pairs of lower canines were purchased from boat captains. They were later sectioned and aged to provide information on the age structure of the population. Tissue samples from heart, liver, kidney and blubber were collected and analyzed for both heavy metal and chlorinated hydrocarbon contamination.

The current population appears to be large (250,000-300,000). However, data from studies of stomach contents and female reproductive tracts show that the traditional food source of the walrus, bivalve mollusks (clams and cockles), may be overgrazed, as the size of those found in the stomachs had decreased, and numerous new species of prey were being eaten. In addition, the reproductive rate in 1980 and 1982 was down, as measured by conception rate and live births (Fay, 1980, 1982).

The Eskimo of Little Diomedede depend heavily on the walrus for both subsistence and cash needs and the continued health and abundance of the Pacific walrus is vital to their well-being.

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I would like to thank all the residents of Little Diomedede Island for their friendliness and helpfulness during this study.

## Methods

Soon after arrival on Diomedede, a meeting of boat captains was held. The objectives of the study were explained, and some of the results from other years summarized. Captains were given bags with labels, grease pencils and small plastic bags for the collection of pairs of lower canines. They were familiar with the procedures from previous years, and some even kept extra equipment.

Several captains were not on the island at the time of the meeting, and I

visited them individually when they returned. Those who volunteered to bring in tissue samples for contaminant analysis were given larger plastic trash bags and a were requested to bring samples of heart, liver, kidney and blubber, along with labelled teeth.

When crews launched for hunting the time was noted. If their departure was not observed the crew was asked about their departure time upon their return. When snowmobiles or boats returned, I would go to the beach and note crew size, time, number and sex of walrus killed, location of kill amount and type of meat brought home, and other species brought in. Much of this could be done by observation. Other comments about weather, herd size or composition, lost kills, ice conditions, etc, were also recorded. If boats were missed I was able to obtain the information at a later time.

Captains were paid \$8.00/pair for the lower canines of walrus. Teeth purchased for analysis were cleaned of bone and tissue and each pair was placed in a separate envelope with a code number. These numbers were also recorded on the data sheets for the hunt, for reference to sex of the animal, and the captain and date of the hunt.

### Results

Walrus were seen near Diomedede before my arrival on April 26. The early sightings were mostly of females; the first calf was seen May 10 (newborn) and by May 17-18 numerous calves were seen.

The first boat was hauled to the open leads south of the island on May 6, and the first two walrus (female) were killed May 14, just south of the island. Hunting was generally to the south and west, towards Fairway Rock (about 10 miles off the south end) until May 26 when boats went as far as Wales. After that hunting was also possible to the north, and boats began going 20-35 miles in search of ice.

Boats were beached closer to the village as the ice began to rot, and by May 26 they were immediately in front of the village (Last plane, May 24; One helicopter, May 27; then none until June 15 and June 29). An abundance of meat, skin and tusks were stored on the beach until early June, when meat was cut and hauled home or into heat holes, and women spent long hours splitting skins. By June 18 hunting was getting casual, with younger hunters taking some of the aluminum boats out, and hunters were boiling their tusks as a sign that spring hunting was over. I left June 29 and in the good weather that followed more walrus were taken (exact number unknown).

From the first few walrus caught, a large percentage of the meat, intestines and organs, (no skins until later) was brought home even though it had to be hauled 2 miles in sleds pulled by snow machines or by crews of hunters. It was all divided up ceremoniously on the beach. Later, on days of heavy kill (50-100 walrus per boat) only ivory and oosiks were retrieved. I also saw boats with only 5 or 6 tusks and no meat. In general, with a smaller kill there was more time and room in the boat to bring home meat, but if there was no need for it it was left on the ice. Calves were always brought in whole or just disemboweled. Only one adult was brought in whole, on June 18 when only swimming walrus were available. Almost all retrieved walrus were killed on the ice, except for June 18 and 19. Walrus lost in the water were not actively recorded but were consistently mentioned by hunters.

Pairs of lower canines were purchased on May 14, 15, and 16. After that, due to a misunderstanding with the hunters, no teeth were offered for sale, except two pair brought in May 30 with some tissue specimens. The specimens were too small and all packaged together in one bag and had to be discarded. A total of 51 pair of teeth was purchased. One pair was lost when my hostess cleaned house.

The total documented harvest for 1984 was 1043 walrus. Of these, 269 (26%) were male, 657 (63%) female, 40 (4%) calves, and 77 (7%) were adults of unknown sex.

#### Other species harvested

Three polar bear were killed in April. The skins were dried but one rotted due to improper fleshing. Bear meat was eaten but I saw no evidence of it. A grey whale with a float from another village (see Wales Village Report) was chased but lost on May 30. One June 21 all boats chased several grey whales. A float was sunk in one and it was followed for several hours before it swam over to the Russian border and the chase had to be abandoned. On July 4 or 5, after I left, a grey whale was killed and brought to the village. A dancer and feast was held.

31 bearded seals, 15 spotted seals, 11 ringed seals and 6 ribbon seals were brought in during walrus hunting, and more were killed and lost. The seals varied in size from too small to eat, 2' to 6' or more for bearded seal Oogrook. Oogrook were not considered seal by the hunters and are used differently. Ringed and spotted seal were often not differentiated by the hunters. Oogrook were brought in either whole or disembowelled. Both were eaten dried and the seal oil was used extensively as a condiment and a preservative for greens, eggs, and dried meat.

Crabs were a major source of nutrition in the spring, after dried and stored meat was getting scarce and the diet boring, and before fresh meat was available. Once the holes were drilled through 5' of ice (electric augers are now sometimes used), crabbing was usually rewarding - up to 20 8" crabs were caught in an afternoon. They were killed by freezing and kept in the deep freeze but not for more than two or three weeks. Spider crabs were not eaten but usually thrown back.

On slow days in the last spring there was also ice fishing for "dan cod" which are plentiful. This year in early August I heard that some salmon were caught, which had never happened before.

Bird hunting was rarely done by hunting crews, but by children and idle hunters on the island. Crested and least auklets were eaten, as were their eggs. Murre and gull eggs were also eaten. See Appendix B.

#### Discussion

This year's walrus harvest was the largest since the U.S. Fish and Wildlife Service has been monitoring it. This was due in large to ice and weather conditions, but was also an indication that the herds were still large. Several hunters commented on the large number of calves seen in the spring. However, not all walrus were fat, many had empty stomachs when killed, and stomach contents were varied. I had of one walrus with seal meat in the

stomach contents. Several of the older hunters spontaneously expressed some concern but this was generally drowned out by the successful hunting.

The sex ratio of the harvest was closer to that of 1980 and 1982 than of 1981 and 1983. See Table 2. Harvest of male/female seems to alternate in importance, but this was almost certainly fortuitous. Female tusks were generally smaller but were of better quality and were sold raw for \$14/lb at the Native store. Male tusks were larger but were sold for \$5/lb, as the ivory has more tendency to crack. However, hunters usually shot whatever was available since they can't be guaranteed of seeing more.

The average man-hours per walrus (4.2) was less than in previous years (See Table 2). This was due to the low total man-hours (compare with 1980) and a large harvest.

Motors and boats were similar to other years (Table 3). Some boats owned by elderly men were taken out by their sons or other men. It was best to go to the owner first and ask who was taking their boat out, even if they may not know until the last minute, and it may change during the season due to absences from the island.

The teeth collected have not been analyzed for age as of this writing. The problem with collection of teeth arose when one captain became angry when I didn't buy all the teeth he brought in one night. In trying to spread teeth-buying throughout the season I violated a principal of "first come, first serve" that was used for fairness. This problem could be avoided next year in several ways: 1) buy all teeth offered. This would be too expensive, but would keep the hunters happy; 2) buy all teeth offered until money runs out. This has been done but can cause problems with data collection late in the season, when the value of USFWS to the hunters has ended; 3) buy up to 50 pairs a week. This could also cause problems with fairness.

Most of the hunters recognize the value of data collection in maintaining the walrus at optimum levels and were very cooperative in offering information on their hunting.

TABLE 1  
DAILY HUNTING SUCCESS IN 1984

<u>DATE</u>	<u>M</u>	<u>F</u>	<u>CALE</u>	<u>UNKNOWN</u>	<u>COGROOK</u>	<u>SEAL</u>	<u>COMMENTS</u>	<u>MAN-HOURS</u>
5/14		2			1			139
5/15	17	89	9	24	3		2 Calve lost in water	390
5/16	15	18	4	20			5 females in water	198
5/23						3	spotted	48
5/24	6	61	5		5	1	spotted	
						1	ringed	
							5 cormorant, 2 ducks	342
5/26					1	3	spotted	37
5/28	84	185	13	33	1	3	spotted	
						1	ringed	119
5/29	4	5					4 auklets	57
5/30	27	12	1		4	2	ringed	
							2 bulls were killed	
							while floating (sleep)	324
6/2	15	200	2		7	2	ribbon	
						2	ringed	
							14 walrus found floating	
							(dead)	504
6/3	14	14	3		3	2	ribbon	
						1	ring	
							3 males floating	404
6/4	13	44	1		1	2	ring	
							calf came to beach	154
6/9	10	4	1			2	ring (1 calf)	
						2	ribbon	204
6/17	10	8	1				no ice-swimmers	95
6/18	53	13			4	1	spotted	
							no ice-swimmers	458
6/19	1	2			1	4	spotted	
							1 male walrus brought	
							in whole	287
Total	269	657	40	77	31	32	5 cormorants 2 ducks 1 parakeet auklet 2 crested auklet 1 least auklet	

4360  
Tot. M-H

Total M-H = 4.2 per walrus

TABLE 2  
 Summary of documented retrieved spring walrus harvest  
 Little Diomedede Island, 1980-84  
 (Data from Smith (80), Halpin (81), Merk (82), Merk (83))

<u>YEAR</u>	<u>MALE</u>	<u>FEMALE</u>	<u>CALE</u>	<u>ADULT UNKNOWN</u>	<u>TOTAL</u>	<u>MAN HOURS</u>	
						<u>AVERAGE MH/WALRUS</u>	<u>TOTAL MH</u>
1980	229 32%	437 62%	16 2%	27 4%	709	57.3	40653
1981	458 57%	304 38%	36 4%	10 1%	808		
1982	162 29%	315 56%	35 6%	46 8%	558	19.6	10689
1983	114 69%	46 28%	6 4%	1	166	32.8	5256
1984	269	657	40	77	1043	4.2	4360

TABLE 3  
BOAT CAPTAINS 1984

<u>CAPTAINS</u>	<u>TYPE OF BOAT</u>	<u>LENGTH</u>	<u>HORSEPOWER</u>	<u>USUAL CREW SIZE</u>
Orville Ahkinga	skin	25-30		7-8
Philip Ahkinga	Aluminum	18	35	4
Peter Ahkvaluk	Aluminum	18	35	5-7
Iyahuk* (Glen)	skin	30		7-8
John Iyapana	Aluminum	18	25, 35	8
Andrew Kunayak	Aluminum	18	25	6-7
Tommy Menedalook	skin	30		8-10
Andrew Milligrock**	Aluminum	18	25, 35	5
Ronald Ozenna	Aluminum	15-17	25	4-5
	; skin	30		7-10

\* Albert Lyahut's boat

\*\* Moses Milligrock's boat

; Lewis Ozenna's skin boat



TABLE 4  
INCOME TO DIOMEDE FROM USEWS, 1984

<u>Payment</u>	<u>Amount</u>
To Diomedes Student Council for apartment rental: 45 days @\$20/day	\$900.00
To hunters for lower canines: \$8/pair	408.00
To Diomedes Native store for handling teeth vouchers	102.00
To Diomedes Native Stor for supplies	554.00
	<hr/>
TOTAL	\$1964.00

APPENDIX A  
USE OF SUBSISTANCE RESOURCES ON DIOMEDE ISLAND

The Eskimo of Diomedes continue to rely heavily on walrus and other marine mammals for sustenance. Every man defines himself as a hunter, even those with cash-paying jobs. Boys start hunting long hours in the boats at 14 or 15 and may accompany their fathers at a younger age to observe but not to shoot. Women spend almost all their time cutting and preparing meat, plucking birds, splitting skins, crabbing, picking greens, cooking, hauling snow for water and washing (lot of diapers).

The food at the store is mostly flour, cake mix, oil, cookies, soda and a freezer full of reindeer meat. However lost of food is ordered personally and I had lamb and other meats at private homes.

Although relying on subsistence foods, cash needs continue to increase. Motor gas was nearly \$5/gallon, bullets \$15/box, stove oil over \$21/gallon. Electricity was \$.17/Kwh and will double if not triple this year when the generator, which was in the school, will be transferred from U.S. Bureau of Indian Affairs to state ownership. Travel to Nome was \$120 round trip or more. In addition, most clothes and utensils were purchased by mail order. One hunter had sealskin pants and a few have sealskin hunting bags, but the rest have nylon and hollowfill overalls. Sealskin was used for sewing slippers, which were sold for good prices. Similarly, skin boats were considered "better" and safer, and were well maintained, but it is unlikely that new ones will be built to replace the existing four.

In general, Eskimos on Diomedes were becoming more and more dependant on cash while their major source of cash was the walrus. One older hunter referred to walrus as their "paycheck". In spite of the good hunting year, some families were still in debt. Some families were on food stamps but welfare was scorned. With the current large populations of walrus there wa no immediate problem. Were the population to decline, regulation of hunting would be very difficult and undoubtedly some people would leave the island.

## APPENDIX B BIRD HUNTING

Crested, Least, and Parakeet Auklets all nest on Little Diomedes in easily accessible slopes of the island and were hunted for meat and eggs. Hunting of murres and gulls were harder to hunt as they made their nests on steeper cliffs making access more difficult. As a result the eggs of the murres and gulls were collected and the birds hunted to a lesser degree. Puffins, cormorants and other birds, although nesting on the island, were rarely hunted.

Gulls and snow buntings were the first to arrive in the spring. They arrived before April 26 this year. Cormorants were first seen on May 22, auklets on May 26. Ravens, kittiwakes and snowy owls were present, as well as an unidentified hawk. An eagle was seen by Fairway rock by several hunters.

Least auklet eggs were first collected on June 24. Eggs from crested auklets and murres were collected the last few days of June.

Least auklets, nesting in the deep crevices found in the rocky slopes of the island, were the most common auklet on the island. Crested auklets, also common on the island, were preferred eating because of their larger size. During the summer the auklets and eggs of auklets, murres and gulls were a significant food source as they became an alternative to walrus and seal meat. Late in the summer the fledglings were taken as a food source.

Hunting of the birds occurred in a variety of methods. Children used small steel traps set on rocks, overturned rocks to locate nesting birds, shot at them with B.B. guns, and used steel and rubber slingshots with rocks. The older boys and the men of the village used 10' - 12' poles with nets. They would hide behind rock-wall blinds and attempt to scoop low-flying birds. Occasionally the women and children would assist in the netting efforts by beating pans and drums along the rocky slopes to scare the birds into flight. Other methods such as using decoys to attract birds and placing large nets over the rocks to entangle bird flying to and from their nest sites were used.

Hunting success was erratic. Depending on the winds, a hunter may come back empty handed or catch as many as 30+ birds.

Egg gatherers overturned rocks attempting to find nesting sites. At times this method was destructive to the area as vegetation, nests and occupants of the nests rolled down the slopes with the boulders. Egg spoons, a less destructive method used by gatherers, were approximately 3' in length and were worked gently into likely crevices to remove the eggs one by one.

Young men suspended by ropes descended the cliffs to gather the otherwise inaccessible murre and gulls eggs. This technique was very efficient as two gatherers could collect 100+ eggs in a day.

Owls and hawks were collected, as were cranes, when available to add a variety to their diet.

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