

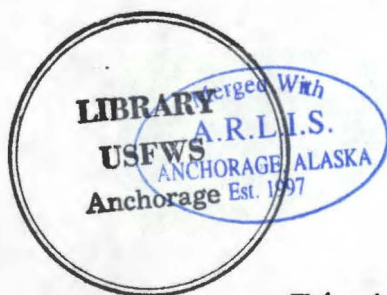
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Progress Report: 1982 Walrus Harvest,
Health, and Welfare Study at Savoonga, Alaska .

by
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Introduction

This report details the harvest, health, and welfare study of the Pacific walrus (Odobenus rosmarus divergens) as undertaken at Savoonga, Alaska, on St. Lawrence Island, for the spring of 1982. During the period of 16 April to 10 June, a U.S. Fish and Wildlife Service (USFWS) technician was present in the village to determine the size, age and sex composition of the harvest, and to monitor the health of the walrus population through the collection of biological samples. This was the third year that USFWS personnel were stationed in the major walrus-hunting villages to monitor the harvest. The samples purchased included pairs of lower canine teeth for use in aging, female reproductive tracts as an index to the productivity of the herd, and stomachs to determine prey and prey size. In addition, the technician recorded weather and ice conditions as applicable to the hunt. The study was conducted in cooperation with the Eskimo Walrus Commission (EWC).

Methods

The technician, assisted by the village monitor, conducted a boat captain/crew meeting as a means of making introductions, explain the program, distributing hunter packets, and providing a forum for a question and answer session.

The monitoring of the harvest and the purchase of specimens were carried out on the shore-fast ice as the crews returned from hunting. After assisting with beaching the boat, the USFWS representative surveyed the captain or crew members concerning the weather and ice conditions, the distances and

directions traveled, comments on observed herds, and the number and sex of walrus harvested and their condition. The biological samples were purchased, and further information concerning the retention of walrus parts and other animals harvested for subsistence purposes were recorded.

The biological specimens obtained from the hunters were cleaned, labeled, and preserved for further examination at a later time. Formaldehyde mixed with unfiltered sea water was the pereserving agent. Reproductive tracts (ovaries with uterine horns) and bagged stomach contents (5 lb./samples) were placed in the solution until well-pickled. The pairs of teeth were washed, bone fragments removed, dried briefly, and packed by pairs into tooth envelopes. The specimens were labeled in accession by the location code from which the hunt originated. The samples were shipped to laboratories for analysis.

Weather and ice observations were recorded daily at 0800 hrs. These observations included daily high and low temperatures, wind direction and velocity, visibility, and ice conditions.

Results

The total, documented harvest for Savoonga hunters was 167 walrus (Table 1). An additional 7 walrus were known to have been sank and lost. Two "floaters" were found and their tusks recovered. Occasional walrus hunting continued after the technician departed, and it was reported that "about 20 walrus" were taken (B. Penayah, personal communication).

Cooperation by hunters in the data collection was generally excellent. Two hundred and eight (208) lower canine teeth were purchased. Female reproductive tracts totaled 22. Five stomachs were collected. The stomach criteria stated that to be eligible at least 5 pounds of food must be contained within. The stomach samples were removed and the empty stomachs returned to the hunter for use in handicraft manufacturing. The total expenditure for biological specimens amounted to \$1,412.00.

Hunting took place on 17 days this spring. Of that, only 8 days of actual hunting originated from Savoonga. The other 9 days of hunting were from other locations in which only a few crews participated. At these locations no data could be collected unless the hunters reported to the technician. Some hunters stayed at these outlying camps for weeks. The locations included the NE Cape, SE Cape, and the SW Cape of St. Lawrence Island. It can be assumed that the harvest in these areas would be small because of the difficulty of logistics in supplying equipment and fuel. The primary task of the personnel at these camps was maintenance of houses to be used for various activities throughout the year. Walrus hunting from such locations would be considered of secondary importance to those personnel.

Other animals harvested in conjunction with walrus hunting were seals and marine birds. Eighteen bearded seals (mukluk), 17 spotted seals, and 7 each of ribbon and ringed seals were retrieved. Numerous murrelets, auklets, and eiders were harvested.

Discussion

Savoonga. Located on St. Lawrence Island in the northern Bering Sea, Savoonga is one of the more remote Eskimo villages. Access is by small plane year-round or by barge during the area's brief summer. As in the case of many island dwellers, the lifestyle is very marine-oriented. The current population is approximately 500 people.

Focal points of the community include the Native Store, high school gymnasium, churches, and several coffee houses. During the school year, the gymnasium provides recreation in the evening for the entire community. Basketball is the most popular activity with Friday and Saturday nights reserved for highly-contested team competitions. Other activities are card games, pool, church-sponsored events, and visiting. Snow machines and 3-wheelers provide transportation within the village and outlying areas.

Employment opportunities are extremely limited. Government agencies, service and construction industries offer temporary employment. A few permanent jobs are available with government agencies or service industries. State and federal welfare programs are a major element in the economy. An overwhelming majority of the population remains dependent on the subsistence use of marine mammals, birds, fish, and plants for livelihood. Supplementary income is provided by the manufacture of handicrafts. These handicrafts include ivory carvings, baleen products, and skin clothing. A small number of fox trappers operate throughout the winter. Lodging visitors is another important source of income, as is artifact digging during the summer.

Walrus Hunting. Walrus are hunted throughout the year with the heaviest harvest occurring during their northward migration in the spring. The migrations are closely associated with moving pack ice. Beginning in April with rising air and water temperatures, the pack ice recedes from its maximum extent and the wintering herds in Bristol Bay and southwest of St. Lawrence Island commence a northward migration through the Bering Strait. Most of the population summers in the Chukchi Sea (Fay, 1982).

Hunting in the northern Bering Sea requires a thorough knowledge of local ice, weather, and sea conditions. Navigable leads in the pack ice are subject to abrupt closures from shifting winds and currents. Although some of the more pleasant weather occurs in the spring, the area frequently experiences strong winds, snow, freezing rains, and dense fog, making boat hunting treacherous. In past instances crews entrapped by pack ice have been rescued by U.S. Coast Guard personnel with the ensuing loss of all equipment.

Crews are under the direction of the boat captain, usually an experienced and knowledgeable hunter. The crews vary in size and composition, ranging from 3-6 members with 4-man crews the most common. Generally, the crew members are related to the captain. The boat captain provides the best boat, motor and fuel.

Aluminum boats from 15'-18' are most commonly used by Savoonga hunters. Outboard motors range from 35-70 horsepower with most crews carrying a smaller engine as a backup in case of mechanical trouble. A few wooden boats are

operated, especially when weather conditions are expected to worsen. The wooden design allows less spray into the boat and offers more stability in rough waters than the aluminum craft. Skin boats are considered obsolete for walrus hunting because they are slower, but they are used exclusively during the bowhead whaling hunts.

All crews carry with them a nautical compass and citizens' band radio. Both are kept in waterproof containers for protection. Because of the hazardous conditions encountered while hunting in the moving pack ice, these instruments are of immense importance to the welfare of the hunters. Radio communication is in Siberian Yupik and conversations are monitored by both the crews and their families in the village. Savoonga is unique in that one of the residents has installed a directional antennae that has greatly aided crews lost in the fog.

A wide variety of rifles are employed in walrus hunting, some being much more effective than others. Calibers range in size from .22 to .460 with many hunters expressing a preference for .308 caliber rifles. The smaller rifles are used for dispatching calves and wounded animals.

Other equipment needed for hunting are harpoons, large knives, meat hooks, floats, and come-alongs. The come-alongs aid in pulling harvested walrus up onto the ice for butchering.

Hunters prefer to shoot walrus that are hauled out on the ice rather than swimming walrus. This preference results in fewer crippling losses and allows

for a much quicker and efficient butchering. A well-placed shot to the lower, rear side of the head kills immediately. If the walrus is in the water, the first shot is to the upper body, not the head. If killed instantly in the water, the animal may sink before it can be harpooned.

Walrus are among the largest of the pinnipeds exceeded in size only by the elephant seal (Sheffer, 1958). The average weight of an adult male is 1,200 kg. In general, the males tend to be about 45% heavier than the females (Fay, 1982). For such a large animal, surprisingly little meat is retained for human consumption. A definite parts preference exists in Savoonga. Choice parts were hearts, male livers, female breasts, and whole calves. Other retained pieces were intestines, ribs, flippers, skin with blubber (mangoona), face pads, and a little red meat. Stomachs were checked for clams which are considered delicacies. A few female hides were processed for skin boat coverings. Tusks, teeth, bacula (oosiks), and stomach linings were retained for handicraft manufacturing. In former times prior to the snow machine era, much more meat would have been utilized locally as dog food.

Spring Harvest. Savoonga hunters experienced one of the lowest spring harvests of recent years due primarily to poor ice conditions. Daily northeast winds kept the ice pack solidly in place with no open leads for weeks. When a navigable lead did form, strong winds usually made boating treacherous or impossible. When hunting finally began from Savoonga in late May, much of the ice and associated walrus had already passed out of hunting range.

The documented harvest of 167 walrus was a reduction of 63.4% and 74.8% under the two previous harvest levels (West, 1980; Smith, 1981). This large reduction can be attributed directly to adverse weather and ice conditions. Winds are a major factor in determining ice movements. Throughout the winter, prevalent northeast winds tend to pack the ice tightly against the northern shore of St. Lawrence Island (Fay, 1982). These winds continued for much of the study period keeping the pack ice solid with little noticeable movement.

The composition percentage (males, females, calves) of this spring's harvest was very similar to the 1981 harvest and differed immensely from the 1980 composition in that a significantly larger number of males were harvested in 1980 (Table 2). Reasons for this difference are not clear, but may reflect hunter preferences, changing migration patterns, or local weather and ice conditions.

The tooth samples were aged at the Alaska Department of Fish and Game laboratory in Nome, Alaska. The mean age of bull walrus was 18.4 years. The female mean was 14.7 years (Fig. 2). Overall a mean of 17.3 years was calculated from a sample size of 129 walrus.

Greater than 95% of all walrus taken were commented upon by the hunters as being in good condition and appeared healthy. One hunter caught a "totally blind" bull that was in good condition despite both eyes appearing opaque. Only 2 walrus were reported as sick with infected organs or tusks.

Not all crews were successful in harvesting walrus this spring. Those that did not take any walrus during the study period were successful in taking seals and marine birds. Hunters expended 21.55 man-hours per walrus. This figure excludes 30 walrus from the 167 total because certain data from a few individual hunts were incomplete. An unwritten law calls for the sharing of meat with unsuccessful hunters. This was routinely practiced in Savoonga. Walrus calves were also given by Gambell people to their Savoonga relatives.

The documented total of 7 walrus sank and lost probably is not a realistic figure for the entire season. A few hunters seemed resentful of questions related to hunting losses and the validity of their responses are questionable. In some instances certain crews were not asked whether they sank any animals. Of the average annual kill of walrus by Alaskan natives, only about half of the animals are retrieved (Burns, 1966).

The controversial topic of taking walrus for ivory alone (head-hunting) was discussed often with hunters. Many individuals expressed disgust and disdain over the wasteful practice. The general concensus was that head-hunting does occur in Savoonga by some crews. None was apparent this spring. This may have been due to the low harvest and the need for fresh meat. As the price of ivory stocks continue to rise worldwide, the economic return from this type of walrus hunting will probably increase in pace.

Recommendations

A great deal of time and effort must be expended by the technician to familiarize himself with the village, the people, and their customs. Cooperation in the program is directly proportional to the amount of time and effort thus spent. Resentment is present concerning unfamiliar and inexperienced personnel arriving each year to observe the harvest. Good working relationships and trusts are built slowly. A sound management practice would be to return the same technician each season.

A local resident hired to assist the technician is extremely helpful. Care must be taken in choosing the assistant. If a female assistant is chosen, it would be helpful if that person did not have young children or pressing family responsibilities (i.e. meal preparation). Cultural aspects should be considered in filling this position.

The price of lodging for the technician could be reduced by a better selection process. Housing with modern conveniences could probably be obtained reasonably in the BIA school. Adequate housing is available at less cost.

Equipment issued to the technician should include a portable CB radio for communication while on the shore-fast ice. Some kind of personal floatation device for safety is highly recommended.

Hunters commented that each year the specimen packets have been improving. A problem still exists with labeling though. The small, plastic labeling tags were used sporadically by hunters this season. The tags are small and difficult to write on with cold fingers. A suggestion is to label directly on the plastic bags. This necessitates purchasing thicker bags but the cost would probably be less than the price of plastic tags.

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Table 1. Total 1982 spring walrus harvest at Savoonga, Alaska.

DATE	LOCATION	MALE	FEMALE	UNKNOWN	CALF
21 Apr	Savoonga	3			
22 Apr	Savoonga	8		5	
26 Apr	SW Cape			1	
3 May	SW Cape	3			
7 May	NE Cape	4			
14 May	SW Cape	3	2		2
15 May	NE Cape	6			
20 May	SW Cape		2		1
22 May	NE Cape	3			
25 May	SE Cape	3			
27 May	SE Cape	2			
27 May	Savoonga	13	53		14
28 May	Savoonga	3			
30 May	Savoonga	1	5		1
5 Jun	Savoonga	16			1
7 Jun	Savoonga	6			
8 Jun	Savoonga	5	1		
TOTAL		79	63	6	19

Table 2. Comparison of the spring walrus harvest at Savoonga,
Alaska, from 1980-1982.

YEAR	MALE	FEMALE	UNKNOWN	CALF	TOTAL
1980	417	34	0	5	456
	91.4%	7.5%	0.0%	1.1%	
1981	302	258	21	81	662
	45.6%	39.0%	3.2%	12.2%	
1982	79	63	6	19	167
	47.3%	37.7%	3.6%	11.4%	

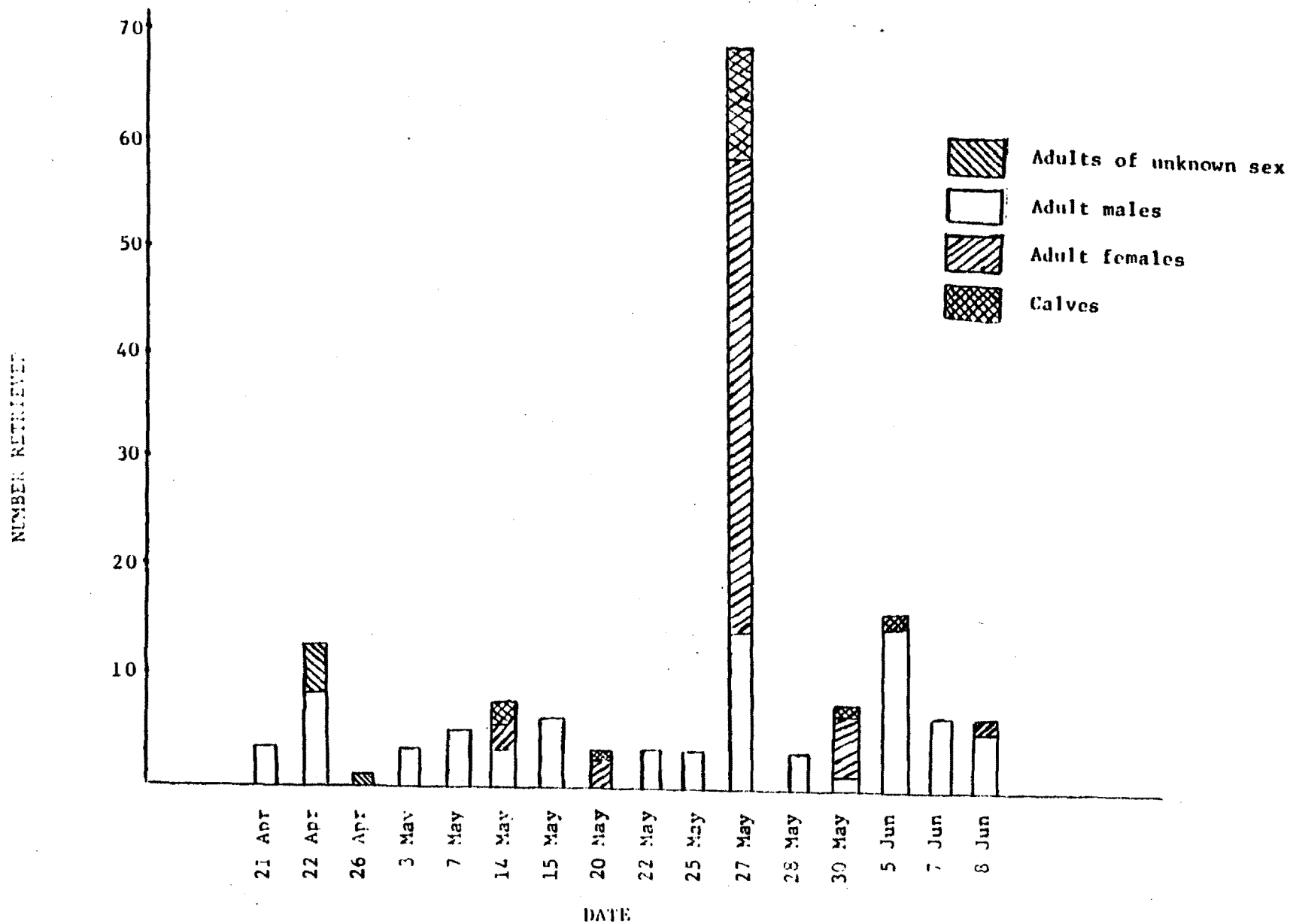


Figure 1. Retrieved walrus harvest by date for 1982. Histogram bars represent the number of each sex and age group retrieved.

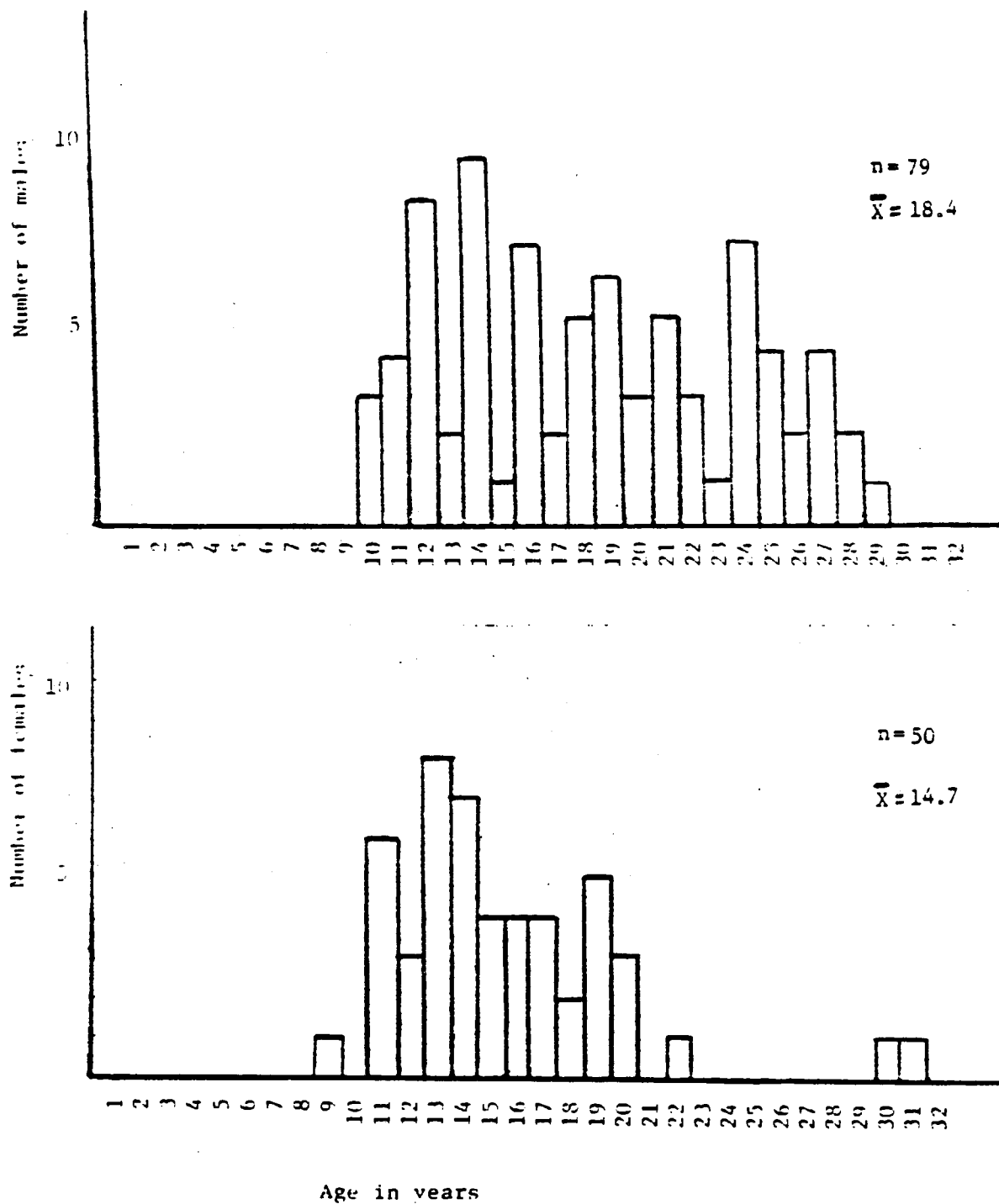


Figure 2. Age comparison of the 1982 spring walrus harvest at Savoonga, AK. Age determination based on the number of cementum layers observed in longitudinal-sectioned, lower canine teeth.

Appendix A.

Boat Captains in Savoonga, Alaska, Spring 1982

Akeya, Alexander
Akeya, Calvin
Alowa, Tim
Alowa, Roland
Annogiyuk, Johnathon
Annogiyuk, Merrill
Gologergen, Gabriel
Gologergen, Patrick
Gologergen, Ray
Iya, Gordon
Kava, Darrel
Kava, Larry
Kava, Maynard
Kava, Truman
Kingeekuk, Kermit
Kingeekuk, Lawrence
Kiyuklook, Franklin
Kiyuklook, Ike, Sr.
Kiyuklook, Kent
Kiyuklook, Mike
Kogassagoon, Martin
Koontz, Keith
Kulowiyi, Issac
Kulowiyi, John
Kulowiyi, Marvin, Sr.
Miklahook, Mark

Mokiyuk, Jackson
Noongwook, Chester
Noongwook, Elvin
Noongwook, Henry
Noongwook, Joe
Noongwook, Nathan
Pelowook, Carl
Pelowook, Tony
Penayah, Luke
Penayah, Wayne
Pungowiyi, Ivan
Rookok, Bryon, Sr.
Rookok, Clyde
Rookok, Paul
Seppilu, Cecil
Seppilu, David
Seppilu, Levi
Seppilu, Jotham
Toolie, Eugene
Toolie, Herman
Toolie, Raymond
Toolie, Walter F.
Waghiyi, Clarence
Waghiyi, John, Jr.
Wongittilin, Elmer
Wongittilin, Jerry, Sr.

ICE OBSERVATION WORKSHEET

512.1104

NORTH

Y1. AR

[illegible]**THE OBSERVATIONS WORSHELT (6/72)**

Appendix B. Daily weather and ice observation worksheet.

Appendix C. Collection data sheet.

CODE :

DATE _____ CREW SIZE _____ CAPTAIN _____

LOCATION	TIME LV	O/H	DIRECTION							
----------	---------	-----	-----------	--	--	--	--	--	--	--

OBSERVER	TIME AR	O/H	DISTANCE						
----------	---------	-----	----------	--	--	--	--	--	--

BOAT: ALUM., WOOD, SKIN, <15, 15-17, 18-20, >20 MOTOR: _____

OBSERVED HERDS: _____

HUNTING CONDITIONS (WEATHER & ICE)

SEX	NUMBER RETRIEVED			NUMBER LOST			NOT	COMMENTS
	ICE	WATER	?	ICE	WATER	?	ASK	
MALE								
FEMALE								
CALF								
UNKNOWN SEX								

[illegible]

OTHER ANIMALS AND BIRDS - NUMBERS HARVESTED:

[illegible]

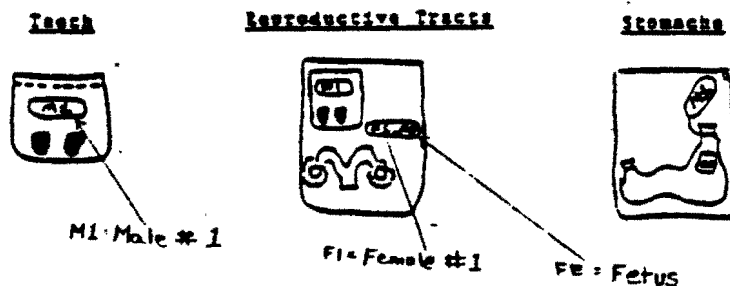
BIRDS (#, TYPE):

COMMENTS:

IT IS VERY IMPORTANT TO KEEP ALL SPECIMENS FROM THE SAME ANIMAL TOGETHER. EACH BOAT CAPTAIN WILL BE GIVEN COLLECTING BAGS AND TAGS TO DO THIS.

1. TEETH. PLACE THE 2 FRONT LOWER JAW TEETH IN A SMALL ZIPLOCK BAG WITH A TAG WITH THE SEX OF THE ANIMAL (M OR F) AND THE NUMBER (IN ORDER TAKEN) WRITTEN ON IT. FOR EXAMPLE: THE FIRST ANIMAL TAKEN WAS A MALE (M1), THE SECOND A FEMALE (F1) AND THE THIRD A MALE (M2), AND SO ON. USE A BAG FOR EACH PAIR OF TEETH.
2. FEMALE REPRODUCTIVE TRACTS. THE FEMALE WALRUS' REPRODUCTIVE TRACT IS LOCATED UNDERNEATH THE BUTS, ALONG THE BACK, JUST BELOW THE KIDNEYS. BRING IN BOTH HORNS FROM WHERE THEY ATTACH, ALL THE WAY UP INCLUDING THE OVARIES. PUT THE TRACT IN A MEDIUM SIZED PLASTIC BAG WITH A TAG LISTING F1, OR F2, ETC. (FOR FEMALE 1, FEMALE 2, ETC.) AND FE OR C IF THE FEMALE HAD A FETUS OR A CALF. PUT THE BAG OF TEETH FROM THAT ANIMAL IN THE BAG ALSO.
3. STOMACHS. PLACE THE TEETH BAG IN THE ESOPHAGUS END OF THE STOMACH AND TIE OFF BOTH ENDS WITH A STRING. USE ONE OF THE STRINGS WITH A TAG ATTACHED AND WRITE M1, M2, OR F1, F2, ETC. TO IDENTIFY THE ANIMAL. LARGE HEAVY WEIGHT BAGS ARE INCLUDED TO USE FOR THE STOMACHS.
4. MORE THAN ONE SPECIMEN FROM AN ANIMAL. IF YOU GET A FEMALE WITH FOOD IN HER STOMACH AND YOU COLLECT THE STOMACH, REPRODUCTIVE TRACT, AND TEETH THEN PUT THE TEETH IN A ZIPLOCK BAG AND ALL THE SPECIMENS TOGETHER IN A LARGE HEAVY WEIGHT PLASTIC BAG WITH A TAG LISTING THE ANIMAL'S NUMBER (F1, F2, OR M1, M2, ETC.) IN THE BAG TO IDENTIFY IT.

WHEN YOU RETURN FROM HUNTING THE BIOLOGIST OR VILLAGE MONITOR WILL BUY YOUR SPECIMENS AND COLLECT OTHER NEEDED INFORMATION. YOUR VILLAGE MAY HAVE A SPECIMEN QUOTA. IF SO THE BIOLOGIST AND VILLAGE MONITOR WILL EXPLAIN WHAT SPECIMENS THEY WILL BE BUYING, WHEN, AND HOW MANY.



More than One Specimen from One Animal

