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

by

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Abstract

The total documented retrieved harvest at Wales for the spring of 1982 was 119 walruses (Odobenus rosmarus), including 43 adult males, 58 adult females, 15 adults of unknown sex, and 3 calves. The number of animals shot and lost was not determined. Lower canine teeth unaccompanied by soft tissues were obtained from 90 walruses, reproductive tracts with teeth from 9 females, and stomachs with teeth were collected from 3 animals. The median age of 43 adult male walruses whose teeth were examined was 19 years. The median age of 58 adult females was 13 years. The number of man-hours spent per walrus retrieved was 8.32.

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INTRODUCTION

The U.S. Fish and Wildlife Service (USFWS) and the Eskimo Walrus Commission (EWC) jointly conducted a study of the spring walrus (*Odobenus rosmarus*) harvest by Native hunters at 6 coastal villages in northwestern Alaska. This is the 3rd consecutive year that the USFWS has monitored the spring walrus harvest to assess the health and welfare of the population. This report is a description of the harvest monitoring effort at the village of Wales. The objectives of this study were to:

- 1) determine the number, sex, and age of animals retrieved or lost;
- 2) examine the reproductive status of female walruses;
- 3) examine the food habits of harvested walruses; and
- 4) record additional observations of the wildlife resource and its use by Natives.

STUDY AREA

The village of Wales is located at the westernmost tip of the Seward Peninsula (approximately 65°18'N, 168°01'W) and is thus the westernmost town on the North American continent. The Peninsula forms the eastern shore of the Bering Strait, through which migrating walruses pass on their way to and from the Chukchi Sea. The approximately 150 residents of Wales are nearly all Alaskan Natives to whom the hunting of marine mammals is an important cultural tradition.

METHODS

A brief review of the field methods is contained in the following paragraphs. For an exhaustive description of the methods, see Lourie (1982).

Harvest Data

U.S. Fish and Wildlife Service (USFWS) personnel were stationed at Wales from 6 May to 18 June 1982. One village harvest monitor (Robert Tokeinna), hired through the EWC, collected harvest data throughout the period. The EWC staff biologist (Kae Lourie) collected data from 6 May to 9 May, and a temporary USFWS biological technician (James Stengle) collected data from 14 June to 18 June. We planned to meet returning boat captains on the beach to record the number, sex, and approximate age (adult or calf) of harvested walruses but rarely succeeded in doing so. It was necessary to attempt to reconstruct the harvest by interviewing hunters late in the spring concerning their success earlier in the season.

Hunting Effort

The crew size, boat and motor size, and duration of the hunt were noted when possible, either on the beach or by reconstructing the events after the fact. The field form on which this information was recorded is appended to this report (Appendix A).

Specimen Collection

Funds were allocated for the purchase of 15 female reproductive tracts accompanied by lower canine teeth, 15 stomachs containing 5 or more lbs. (2.3 kg) of food and accompanied by teeth, and 120 pairs of teeth unaccompanied by soft tissue specimens. Boat captains were provided with hunter kits containing an instruction card (Appendix B), plastic bags, specimen tags, and marking materials. The following prices were paid for specimens: \$8.00 for each pair of lower canine teeth, \$23.00 for female reproductive tracts with teeth (except those bought by Robert Tokeinna, for which \$33.00 was paid), and \$58.00 for stomachs with teeth. Boat captains were paid with checks drawn on an EWC account set up for that purpose.

Female reproductive tracts and stomach samples were fixed in a 10% formalin solution and shipped to the University of Alaska's Institute of Marine Science for analysis. The work is to be done by the Institute under the terms of a contract with the EWC. Paired lower canine teeth were sectioned and assigned estimated ages in a cooperative effort involving the USFWS, the EWC, and the Alaska Department of Fish and Game.

Hunter Contact

A meeting with the Wales boat captains was held on 6 May 1982 to explain the specimen collection procedures. A videotape presentation of USFWS management and research activities was later shown. Hunter kits were distributed on the beach and during visits to the boat captains' homes.

Incidental Observations and Ice Observations

Observations of other marine mammals and birds harvested during walrus hunts were recorded, as was the utilization of retrieved walrus parts. Daily ice observations were recorded on an ice observation worksheet (Appendix C).

RESULTS

Harvest Data

The total documented retrieved harvest at Wales this spring was 119 walruses, including 43 adult males (39% of the total), 58 adult females (53%), 15 adults of unknown sex (5%), and 3 calves (3%). Over 44% of the harvest occurred on a single day (26 May). The age and sex distribution of the harvest is shown graphically in Figure 1 and is tabulated in Appendix D.

The 1981 harvest of 128 walruses was slightly larger than this year's 119. The distribution of sexes in the adult harvest in 1982 was significantly different from the 1981 distribution (Chi-square test of fit, $p < 0.005$). The adult male harvest was lower and the female harvest higher this year. Harvest figures are not available for 1980.

The total number of documented lost walruses was 17. A total of 83 walruses was retrieved during trips for which sinking loss information was obtained, yielding a reported retrieval rate of 83%.

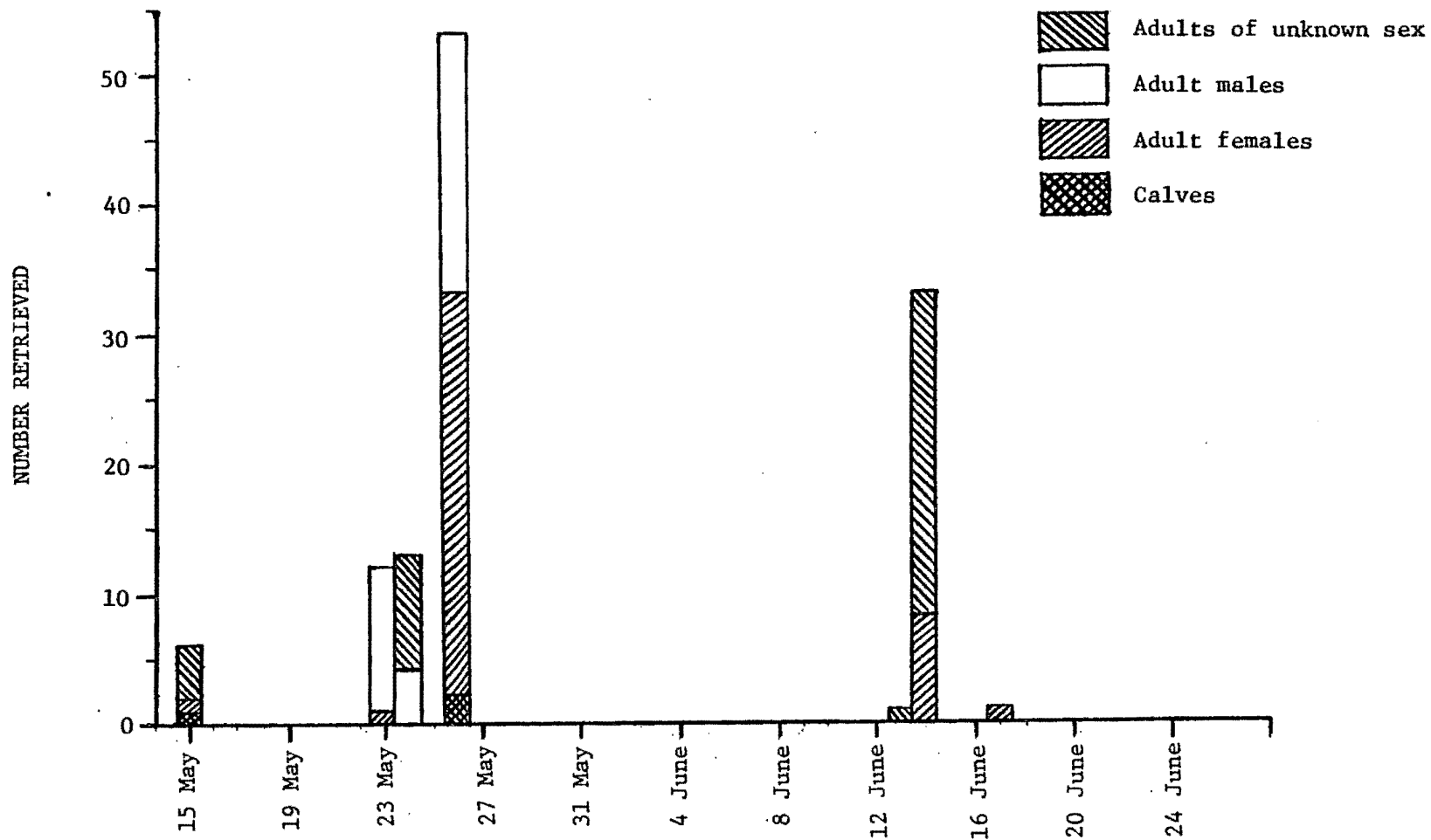


Figure 1. Retrieved walrus harvest by date at Wales for 1982. Histogram bars represent the number of each sex/age group retrieved.

Hunting Effort

During 11 trips of known duration, 76 walruses were retrieved. The number of man-hours spent per walrus retrieved on these trips was 8.32. Hunting effort was relatively high (9 to 17 man-hours spent per walrus) on all but 1 hunting day. On 26 May, the day on which almost half of the harvest occurred, hunting effort not surprisingly dropped to its lowest level, 3.25 man-hours per walrus retrieved.

The modal crew size this year was 5, and the modal boat size was 18 to 20 feet (5.5 to 6.1 m). The median outboard motor power rating was 50 hp (37.3 kw). These figures are based on sample sizes of 5 or 6 boats (Appendix E). Information could not be obtained for the boats of the remaining captains.

Specimen Collection

Ninety pairs of lower canine teeth, 14 female reproductive tracts, 9 of which were accompanied by teeth, and 4 stomachs, 3 of which were accompanied by teeth, were collected. The analysis of soft tissue specimens has not been completed, but the report will be issued by 30 September.

The median age of adult walruses in the harvest, as estimated from cementum annuli counts, was 14 years ($n = 101$). The modal age was 14 and the mean was 15.2. The median age of adult males was 19 years (modes = 18 and 19; mean = 18.1; $n = 43$). Adult females showed a median age of 13 years (mode = 12; mean = 13.0; $n = 58$). Age distributions of adult males and females were significantly different (Fig. 2; Mann-Whitney U test, $p < 0.001$).

Hunter Contact

The meeting with the hunters of Wales was held on 6 May. James Baker (USFWS, Marine Mammal Project Leader), Matthew Iya (Executive Director of the EWC), Kae Lourie, Jonah Tokeinna (Chairman of the EWC), and Robert Tokeinna described the goals and procedures for this year's program. Later in the season, confusion developed as to the prices to be paid for specimens, particularly female reproductive tracts. Rather than risk alienating the boat captains, the higher price (\$25.00) was paid for reproductive tracts.

Incidental Observations and Ice Observations

No bowhead whales (*Balaena mysticetus*) were struck or landed at Wales this spring. Bearded (*Erignathus barbatus*) and ringed (*Pusa hispida*) seals were taken during walrus hunts. Eiders (probably *Somateria* spp.) were recorded on 1 hunting day. The retrieved harvest of birds and marine mammals other than walruses is presented in Appendix F.

The retrieval of walrus parts besides tusks was not well-documented. Information was available for only 5 trips, but 1 of them produced an estimated 500 lbs. (227 kg) of meat and another produced a whole walrus.

Ice observations were recorded for 12 days on which the sea was observable from Wales. This record is held on file at the office of the USFWS's Marine Mammal Project.

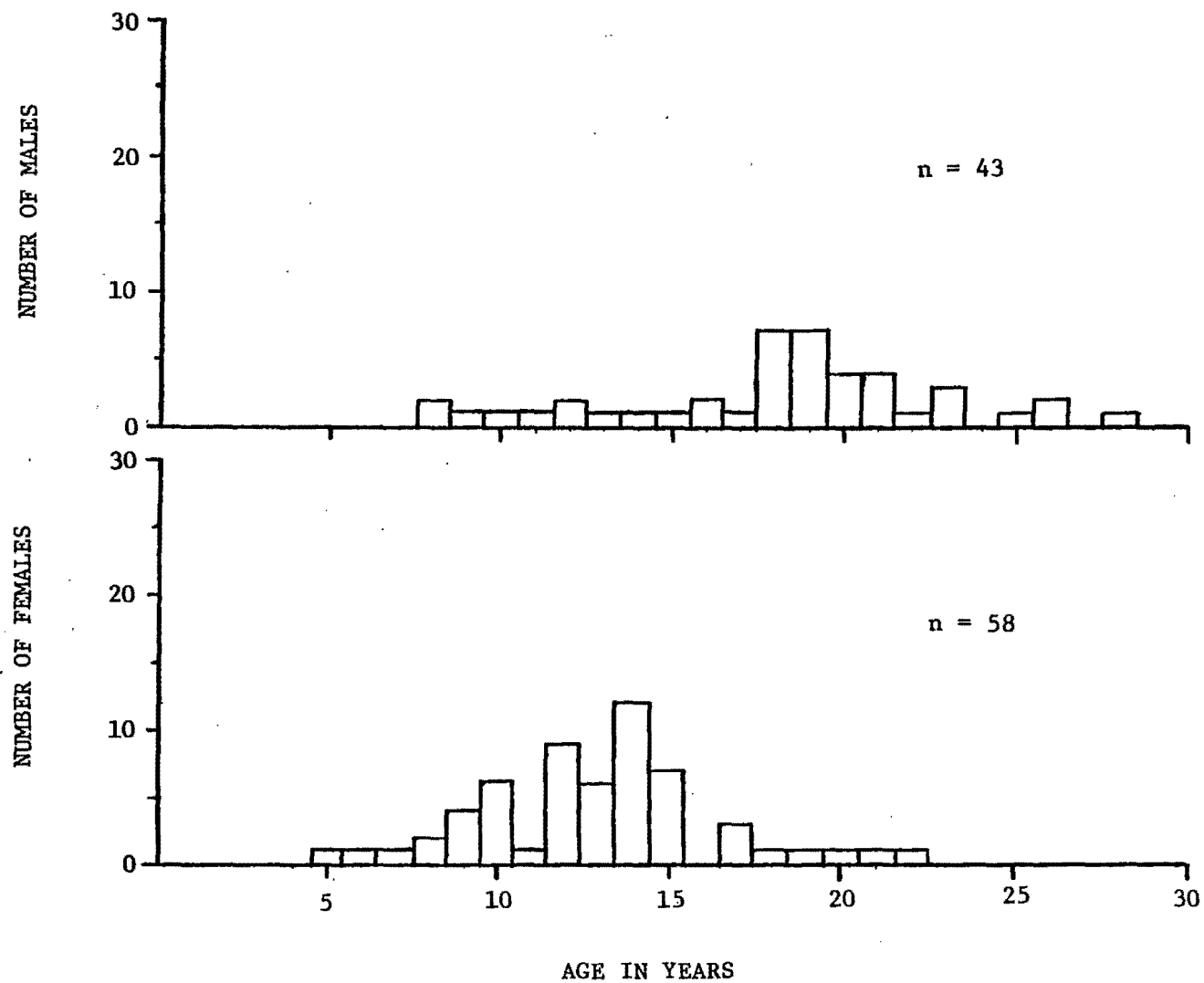


Figure 2. Age distribution of walrus harvested at Wales in 1982 as estimated from counts of cementum annuli in sectioned teeth.

DISCUSSION

Harvest Data

I cannot explain the lower proportion of males in this year's harvest. Although documentation of the harvest at Wales was unusually incomplete this year, there is no reason to suspect it was biased against males. The low number of calves harvested this year and last probably reflects the Wales hunters' lack of selection for them.

The reported recovery rate of 83% for all animals shot is probably unrealistically high. A recovery rate of 50% is considered typical (Fay 1982:222).

Hunting Effort

The overall number of man-hours expended at Wales per walrus retrieved in 1982 (8.32) was comparable to values from other villages (e.g. Gambell, 8.91 man-hours per walrus). Crew, boat, and motor sizes for 1982 cannot be compared with previous years, since such information is not available for earlier studies. However, crew sizes at Wales (mode = 5) seem larger than those of other villages (e.g., Gambell, mode = 3; Savoonga, mode = 4).

Specimen Collection

The difference in ages between male and female walruses harvested is probably due to selection of large-tusked males by the hunters. Females with calves seemed not to be preferentially taken by Wales hunters, but the female age distribution for Wales (median = 13) was very similar to the distribution for Gambell (median = 14). The difficulty of accurately counting cementum annuli in female teeth may have biased counts toward younger age estimates.

Hunter Contact

The village harvest monitor at Wales was unsupervised by USFWS or EWC personnel for most of the season. Problems arose in documenting and accessioning the specimens purchased and in fixing the soft tissues. As mentioned previously, there was a misunderstanding over prices to be paid for specimens. A more active effort to meet hunters at the beach would have eliminated many of these problems.

Incidental Observations

The reported harvest of marine mammals other than walruses is probably incomplete. The reported bird harvest is probably even less representative, since information was recorded for only 1 hunting day. The available information on retrieval of walrus parts besides tusks suggests that a substantial proportion of the walrus harvest was used for food.

REFERENCES CITED

- Fay, F. H. 1982. Ecology and biology of the Pacific walrus, Odobenus rosmarus divergens Illiger. N. Am. Fauna 74. 279pp.
- Lourie, K. S. 1982. 1982 biological data and harvest monitoring manual. Unpubl. rept. on file. Kawerak, Inc. Nome, Alaska. Unpaginated.

CODE :

Appendix A. Field data form.

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) _____

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

[illegible]

OTHER ANIMALS AND BIRDS - NUMBERS HARVESTED:

[illegible]

BIRES (=, TYPE):

COMMENTS:

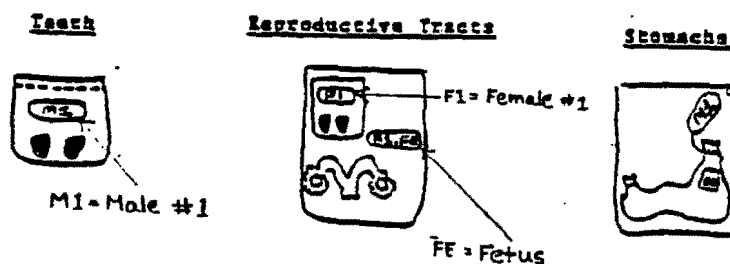
Appendix B. Hunter instruction card.

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 GUTS, 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.

Side 1



More than One Specimen from One Animal



Side 2

Appendix C. Ice observation form.

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Appendix D. Retrieved walrus age and sex information for the 7 days on which walruses were taken at Wales in 1982.

Date	Adult males	Adult females	Calves	Adults of unknown sex	All groups combined
15 May		1	1	4	6
23 May	11	1			12
24 May	4			9	13
26 May	20	31	2		53
13 Jun				1	1
14 Jun		8		25	33
17 Jun		1			1
Total	35	42	3	39	119

Appendix E. Crew, boat, and motor sizes at Wales for 1982.

Boat captain	Crew size	Boat length	Type	Motor
Roland Angnaboogok, Sr.	?	?	?	?
Toby Anungazuk, Jr.	5-6	18-20	Alum.	50
Vincent Okpealuk	5	"	"	35+35
Patrick Ongtowsruk	?	?	?	?
Victor Ongtowsruk	5	18-20	Alum.	35+35
Ernest Oxereok	?	?	?	?
Frank Oxereok, Sr.	6	18-20	Alum.	35
Raymond Seetok	5-6	"	"	25
Winton Weyapuk, Jr.	6	?	?	?

Appendix F. Harvest of birds and marine mammals other than walruses.

Date	Bearded seal	Ringed seal	Eider spp.
15 May	2		> 6
23 May		1	
24 May	1		
26 May	6		
12 Jun	> 4		
13 Jun	2		
14 Jun	1		
Total	> 16	1	> 6

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