ALASKA DEPARTMENT OF FISH AND GAME
JUNEAU, ALASKA

1971 walrus harvest

STATE OF ALASKA
William A. Egan, Governor

DEPARTMENT OF FISH AND GAME
James W. Brooks, Commissioner

DIVISION OF GAME
Frank Jones, Director

REPORT OF SURVEY & INVENTORY ACTIVITIES
WALRUS STUDIES

by
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Volume I
Federal Aid in Wildlife Restoration
Project W-17-3, Job 8.0 and
Project W-17-4, Job 8.0 (1st half)

(Printed January, 1973)

SURVEY-INVENTORY PROGRESS REPORT

State: Alaska

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Project Nos.: W-17-3 & W-17-4 Project Title: Marine Mammal S&I

Job No.: 8.0 Job Title: Walrus Studies

Period Covered: July 1, 1970 to December 31, 1971.

SUMMARY

The 1971 harvest of walruses in Alaska was 1915 animals. Of these, 1592 (83%) were bulls, 254 (13%) cows and 69 (4%) calves of either sex. The total number of walruses killed during this period was estimated at 3,670. Proportional harvests by season were 2 percent during late winter, 84 percent during spring, 7 percent during summer and 7 percent during early fall.

Atypical sea ice conditions during the winter and spring of 1971 resulted in a higher than average spring harvest near villages on the mainland coast. As a consequence, numerous walrus carcasses washed up along the beaches.

Potential value of the 1971 walrus harvest, estimated on the basis of revised values for walrus parts, was about $740,000. Realized value was probably between $400,000 and $500,000.

During 1971 walruses were known to have occupied hauling grounds on Round, Egg, Besboro, Sledge and Big Diomede islands.

A summary of annual walrus harvests since 1959 is presented. During that 13-year period the harvests have varied from a high of 2,788 to a low of 882 animals. The mean annual harvest has been about 1,650 walruses. The Pacific walrus population is presently continuing to increase.

CONTENTS

OBJECTIVES

Objectives of the work undertaken during this report period included primarily the accumulation of information concerning present walrus hunting effort, success, harvest composition, utilization and value. Secondary objectives included enforcement of current regulations pertaining to the taking of walruses and the acquisition of data and specimens necessary for investigation of walrus biology, population status and population trend. Intensive investigations of the latter are undertaken every five years.

BACKGROUND

The general background of the decline in Pacific walruses and the subsequent dramatic recovery of the population has been included in several previous reports (e.g., Burns, 1970).

At the present time, a monograph concerning the biology and ecology of walruses is being prepared by Dr. Francis Fay, Arctic Health Research Center, Fairbanks, Alaska. This monograph will, in part, be addressed to the questions of breeding biology and productivity. Therefore, every effort has been extended to provide Dr. Fay with material useful to his work.

The U. S. Fish and Wildlife Service, in a project headed by Mr. Karl W. Kenyon, will undertake an extensive aerial survey of Pacific walruses in an attempt to determine the present number of Pacific walruses and the population trend.

During 1971, efforts of the Alaska Department of Fish and Game were directed primarily toward: 1) assessment of magnitude and composition of the annual harvest, 2) enforcement of the bag limit on female walruses, 3) collection of biological material of specific worth to ongoing walrus research programs, and 4) documentation of the use of hauling grounds by walruses.

PROCEDURES

Information concerning walrus hunting, magnitude of the 1971 harvest and its utilization by Alaskan residents was obtained primarily by Department employees working at the major walrus hunting sites during the main spring hunting season. Magnitude and composition of the walrus harvest at less productive hunting sites were determined through correspondence with and interviews of hunters, resident clergymen, teachers and village leaders. Parameters of hunting success used as relative indicators of walrus abundance and availability included total harvest, hunting loss, total kill, hunting effort and success per unit of effort. Unfortunately, the latter two are mainly reflections of walrus availability.

Value of the harvest and actual extent of utilization were also determined as measures of the importance of walruses to residents of western Alaska.

Biological investigations of the walrus were limited to the acquisition of material from old females obtained in the spring harvest and from material saved by hunters during the winter months.

During March and April 1971 a scientific cruise aboard the U.S.C.G.C. Glacier was initiated and lead by personnel of the Alaska Department of Fish and Game. Throughout this cruise records were kept of the distribution and relative abundance of all pinnipeds. Eventually, these data will be correlated with several factors including characteristics of sea ice and distribution of benthic invertebrates (Research Job 8.7R).

RESULTS

Walrus Harvest

During 1971, the retrieved harvest of walruses in Alaska was 1915 animals. Total kill (retrieved harvest plus estimated hunting loss including orphaned calves) was estimated at about 3,670 animals. Table 1 presents a summary of the 1971 retrieved harvest, including success at various villages, composition of the harvest, estimated hunting loss and estimated total kill.

Sea ice conditions during 1971 were unusual; according to long-time residents of areas such as Unalaska, Cold Bay and the Pribilof Islands, the sea ice cover was more extensive than at any time during the past 35 to 40 years. During April 1971, ice covered all of Bristol Bay and extended west, along the north coast of the Alaska Peninsula to its westernmost tip. The seasonal spring deterioration and northward retreat of sea ice in Bering Sea continued much later than usual. Additionally, heavy sea ice persisted in locations such as Kuskokwim Bay, Norton Sound and Kotzebue Sound. The late occurrence of ice along the Bering Sea Coast resulted in the presence and availability of walruses in significant numbers at locations where they usually appear only as stragglers.

Table 1. Retrieved and total kill of walrus in Alaska during 1971.

Location	Walrus Retrieved	Composition of Harvest*						Percent Hunting Loss	Estimated Total Kill
		Males		Females		Calves			
		No.	(%)	No.	(%)	No.	(%)		
Nunivak and Kuskokwim area	45	40	(89)	5	(11)	0	(0)	40	75
St. Michael	10	10	(100)	0	(0)	0	(0)	20	13
Golovin	17	17	(100)	0	(0)	0	(0)	50	34
Nome	21	18	(86)	3	(14)	0	(0)	20	26
King Island	141	127	(90)	11	(8)	3	(2)	50	282
Wales	146	76	(52)	47	(32)	23	(16)	40	243
Diomede	535	404	(75)	115	(21)	16	(3)	50	1070
Gambell	175	130	(74)	28	(16)	17	(8)	40	292
Savoonga	543	522	(96)	15	(3)	6	(1)	50	1086
Shishmaref	145	121	(83)	20	(14)	4	(3)	60	363
Kavalina	13	13	(100)	0	(0)	0	(0)	20	16
Point Hope	35	29	(83)	6	(17)	0	(0)	20	44
Wainwright	23	20	(87)	3	(13)	0	(0)	20	29
Barrow	51	51	(100)	0	(0)	0	(0)	35	78
Other Areas**	15	14	(93)	1	(7)	0	(0)	20	19
TOTALS	1915	1592	(83)	254	(13)	69	(4)	48	3670

* The columns "males" and "females" include all age groups with the exception of calves of the year.

**Includes animals taken in the course of various research activities, as well as a few animals reported from widely scattered locations, (e.g., Sledge Island).

Comparatively large harvests of walruses were obtained at St. Michael, Golovin, Nome, Shishmaref, Kivalina and Point Hope.

The traditional walrus hunting villages in or near Bering Strait (Gambell, Savoonga, King Island and Little Diomede Island) accounted for the greatest proportion of the annual harvest. Hunters from these four villages took 1394 walruses or 73 percent of the 1971 total harvest. Proportionally, this is below the approximately 80 percent usually accounted for by these four villages, and reflects the increased harvests at other locations during 1971.

Chronological aspects of annual walrus harvests are important from the standpoints of storage, preservation and utilization of meat, availability of animals and the supply of raw ivory available to carvers. Chronology and composition of the 1971 walrus harvest are presented in Table 2. Approximately 2 percent of the harvest was obtained during the period from January to April, 84 percent from April to July, 7 percent from July to October and 7 percent from October through December.

Utilization of the harvest

As has been pointed out many times in the past, utilization of meat varies depending upon the season when walruses are taken and the general hunting success. During 1971, hunting success was higher than average. Additionally, walruses were taken at some locations where there was little or no tradition in the use of walruses other then for dog food and some walrus by-products.

In recent years, the economic importance of walrus by-products to communities in western Alaska has greatly increased; the primary reason is increased demand for, and value of, native arts and crafts. During the past few years local demands for such things as meat have more or less remained the same, or slightly declined. Therefore, requirements have remained relatively stable in the face of variable harvests.

Utilization of walrus meat from the important spring harvest of walruses was estimated as follows: at Nunivak Island, the Kuskokwim area, Kivalina, Point Hope, Wainwright and Barrow, 85 to 95 percent; St. Michael, Gambell and Wales, 60 percent; Golovin, Nome, Savoonga and Shismaref, 50 percent; Little Diomede, 20 percent; and King Island, 5 percent.

During the other seasons of the year, when fewer walruses were taken and conditions for preservation were good, utilization was generally high, amounting to between 70 and 80 percent.

Value of the 1971 harvest

In past progress reports, potential cash value of walruses to village economies was calculated on the basis of values estimated by Fay (1958) and Harbo (1960). These values were as follows:

Table 2. Chronology and composition of the 1971 walrus harvest at the various hunting sites.

Location	Seasonal Walrus Harvest-1971															Grand Total
	Winter Jan. - April			Spring April - July			Summer July - Sept.			Fall Sept. - Jan			Totals			
	M	F	calves	M	F	calves	M	F	calves	M	F	calves	M	F	calves	
Nunivak and Kuskokwim area	0	0	0	40	5	0	0	0	0	0	0	0	40	5	0	45
St. Michael	0	0	0	10	0	0	0	0	0	0	0	0	10	0	0	10
Golovin	0	0	0	17	0	0	0	0	0	0	0	0	17	0	0	17
Nome	0	0	0	18	3	0	0	0	0	0	0	0	18	3	0	21
King Island	0	0	0	127	11	3	0	0	0	0	0	0	127	11	3	141
Wales	0	0	0	76	47	23	0	0	0	0	0	0	76	47	23	146
Diomede	4	0	0	385	111	16	0	0	0	15	4	0	404	115	16	535
Gambell	16	0	0	69	13	13	0	0	0	45	15	4	130	28	17	175
Savoonga	17	0	0	454	8	6	0	0	0	51	7	0	522	15	6	543
Shishmaref	0	0	0	121	20	4	0	0	0	0	0	0	121	20	4	145
Kivalina	0	0	0	0	0	0	13	0	0	0	0	0	13	0	0	13
Point Hope	0	0	0	0	0	0	29	6	0	0	0	0	29	6	0	35
Wainwright	0	0	0	0	0	0	20	3	0	0	0	0	20	3	0	23
Barrow	0	0	0	0	0	0	51	0	0	0	0	0	51	0	0	51
Other Areas	0	0	0	5	1	0	9	0	0	0	0	0	14	1	0	15
TOTALS	37	0	0	1322	219	65	122	9	0	111	26	4	1592	254	69	1915

Tusks of adult females valued at $10.00 per pair;
Tusks of adult males valued at $24.00 per pair;
Tusks, carved, either sex, valued at $125.00 per pair;
Bacula valued at $7.00 each;
Walrus meat valued at 10 cents per pound;
Skins of female walrus valued at $20.00 each.

Additionally, the recent demand for hides from bull walruses has resulted in an established value of $75.00 each.

The above indicated values, with some exceptions, are no longer applicable. Native arts and crafts are presently in great demand. Native artisans, both individually and collectively, have explored many avenues for the wholesale and retail sale of their products. Additionally, increasingly large numbers of tourists and transients are traveling to areas where these products are made. The result is that a cribbage board which sold for $60.00 in 1964 will now command a price in excess of $200.00. The increased value of finished products has also resulted in the increased value of raw materials.

The current estimated value of component walrus parts, indicated below, has been used to determine the potential cash value of the 1971 walrus harvest.

Tusks of adult females valued at $22.00 per pair
Tusks of adult males valued at $50.00 per pair
Tusks, carved, either sex, valued at $225.00 per pair
Bacula valued at $15.00 each
Walrus meat valued at 10 cents per pound
Skins of females valued at $30.00 each
Skins of males valued at $75.00 each

Estimated values of component parts of the 1971 walrus harvest are presented in Table 3. Greatest potential value of the harvest to coastal residents was calculated to have been around $740,000. The actual realized value was probably between $400,000 and $500,000.

Miscellaneous observations

During the 1971 cruise of the U.S.C.G.C. Glacier, one adult female walrus was collected. This animal was weighed and measured intact, and completely autopsied. The skeleton was cleaned and saved for future reference by Dr. Francis H. Fay, Arctic Health Research Center, Fairbanks. Complete information from this animal, designated GLA-1-71, is available.

As stated previously, the unusual sea ice conditions which prevailed during the winter and spring of 1971 resulted in the occurrence of significant numbers of walruses in locations where they usually occur only as stragglers. From June through August, some bull walruses utilized island hauling grounds other than those on which they normally occur.

Table 3. Potential value of the 1971 walrus harvest in Alaska.

Location	Harvest			Value of Ivory		Bacula	Meat*	Value of Skins		Greatest Potential Value
	M	F	calves	Raw	Carved			M	F	
Nunivak and Kuskokwim area	40	5	0	$ 2,110	$ 10,125	$ 600	$ 4,300	$ 3,000	$ 150	$ 18,175
St. Michael	10	0	0	500	2,250	150	1,000	750	0	4,150
Golovin	17	0	0	850	3,825	255	1,700	1,275	0	7,055
Nome	18	3	0	966	4,725	270	1,980	1,350	90	8,415
King Island	127	11	3	6,592	31,050	1,905	13,379	9,525	330	56,189
Wales	76	47	23	4,834	27,675	1,140	10,569	5,700	1,410	46,494
Diomede	404	115	16	22,730	116,775	6,060	47,404	30,300	3,450	203,989
Gambell	130	28	17	7,116	35,550	1,950	14,790	9,750	840	62,880
Savoonga	552	15	6	26,430	120,825	7,830	53,139	39,150	450	221,394
Shismaref	121	20	4	6,490	31,725	1,815	13,326	9,075	600	56,541
Kivalina	13	0	0	650	2,925	195	1,300	975	0	5,395
Point Hope	29	6	0	1,582	7,875	435	3,260	2,175	180	13,925
Wainwright	20	3	0	1,066	5,175	300	2,180	1,500	90	9,245
Barrow	51	0	0	2,550	11,475	765	5,100	3,825	0	21,165
Other Areas	14	1	0	722	3,375	210	1,460	1,050	30	6,125
TOTALS	1592	254	69	$85,188	$415,350	$23,880	$174,887	$119,400	$7,620	$741,137

*Utilizable weight was calculated on the basis of 1,000 lbs. for adult males, 600 for adult females and 65 for calves.

During late June, 200 to 300 walruses were observed on Egg Island in Norton Sound (Regnart, personal communication). This is a small (0.4 mile long), low island, located 12 miles northeast of St. Michael. This island is atypical as a hauling ground in that it lacks the precipitous rock cliffs which occur at most locations where walruses haul out.

Walruses also occurred in St. Michael Canal, resulting in the harvest of 10 animals by residents of St. Michael.

An unknown but relatively small number of walruses were reported on Besboro Island during late June and early July.

From mid-July through early August, approximately 1000 male walruses frequented Sledge Island, 25 miles west of Nome. These animals were first observed on 16 July. Sledge Island is 1.5 miles long, 760 feet at the highest point and is primarily composed of granitic rock. Most of the island is precipitous, the only extensive beach consisting of a spit on the north end. The perimeter of this spit comprises the beach, which is coarse gravel and small rocks strewn with driftwood. At its widest point, the northern tip, the beach is approximately 20 yards wide. Walruses hauled out on this beach.

The walruses remained on and near this island until their presence was discovered by hunters from Nome, and 13 bulls were killed.

Throughout the summer of 1971, male walruses utilized the long established hauling grounds on the Walrus Islands, in Bristol Bay. As usual, Round Island was the center of walrus activity. Unverified reports indicate that a maximum of 2,000 to 3,000 animals were present during the period of peak walrus use.

Big Diomede Island (Soviet Territory, 2.7 miles west of American Little Diomede Island) continued to increase in importance as a major hauling ground. Big Diomede Island was formerly the location of two Eskimo settlements, but is presently unoccupied except for a small military and scientific outpost. The east side of Big Diomede is clearly visible to Eskimo residents of the smaller island.

Starting in 1965, walruses began hauling out on the beaches of Big Diomede, usually during late November and December, and then abandoning the beaches when the sea ice arrived. Each year since then the walruses have frequented Big Diomede in greater numbers and beginning earlier in the fall. In 1971 walruses were first observed in late August. By November, more than 4,000 animals occupied most of the suitable beaches visible to residents of Little Diomede. It was unknown whether other suitable beaches around the island were similarly utilized by walruses. Big Diomede Island may presently be the major hauling ground in the northern Bering Sea area.

Beginning in about mid-July of 1971 a great amount of local and national attention was focused on what was described as the wasteful slaughter of excessive numbers of walruses. This resulted from the

occurrence of several hundred walrus carcasses along the beaches, mainly in the area from Cape Prince of Wales to Point Hope. The occurrence of these carcasses was even noted at Congressional hearings concerning proposed marine mammal legislation, where the exaggarated statement was made that 8,000 carcasses washed up on the beaches.

In fact, the actual number of carcasses along the entire beach from Bering strait to Barrow was around 500, with approximately 380 of these occurring between Shishmaref and Kivalina.

In retrospect, the conditions which resulted in this situation seem relatively clear and deserve comment.

As with several aspects of the preceding discussion, the atypical ice conditions which prevailed during the winter and spring of 1971, and the resulting occurrence of walruses close to shore, should be stressed.

During the 1971 spring hunting season a total of 506 walruses were taken near villages along the mainland coast. Of these, 291 were obtained at Wales and Shishmaref alone. Hunting loss was exceptionally high at Shishmaref (estimated at 60 percent) because the hunters were poorly equipped and unfamiliar with intensive walrus hunting. Small caliber rifles suitable for seals were mainly utilized, as were small boats. Reportedly, hunters were reluctant to closely approach herds of tightly packed animals, as is the practice of the island hunters. The net result was that many animals were lost close to shore, and washed up on the beaches. The near-shore loss was augmented by that occurring at some of the island hunting sites, notably King and Little Diomede islands, where 653 walruses were harvested and an equal number lost. Many of the animals lost at King and Little Diomede islands eventually wash up on the beaches as indicated by carcass counts made during years when hunting success at mainland sites was very low.

In my opinion, the number of carcasses which appeared on the beaches was due to hunting activity near the mainland and in the Bering Strait region. It did not reflect an "excessive slaughter of walruses," in terms of biological productivity of the walrus population. On the other hand it does strengthen the view that one of the major immediate needs with respect to walrus management is to reduce hunting loss.

Recent historical harvests

Currently pending federal legislation concerning marine mammals includes a 15-year moratorium on the taking of all marine mammals, with certain exceptions. One of these exceptions is that the Secretary (in the case of walruses, the Secretary of Interior) may provide for the harvest of a species or population if it can be shown that such taking is not detrimental to the welfare of the species or population. In this context it is desirable to review the magnitude of recent historical walrus harvests.

One of the first and major considerations is that during the past 20 years the walrus population has been steadily increasing. In 1963 the population of Pacific walruses was estimated at about 90,000 animals (Burns, 1965). The current 1971 estimate, based on all available information, is 100,000 to 130,000. Thus, harvests in the recent past have continued to allow a steady increase in the total Pacific walrus population.

Table 4 presents a summary of the annual walrus harvests and the total kill from the time Alaska became a state in 1959, through 1971. During that 13-year period the maximum harvest was 2,788 animals and the minimum, 882 animals. The average annual harvest for this same 13-year period was 1,652 walruses. The average annual total kill was estimated at 3,300 walruses.

Harvest composition information has been available since 1964. During the 8-year period from 1964 through 1971 the average annual harvest has been 1,563 walruses. Composition of this average annual harvest was 1,065 adult males (68 percent), 362 adult females (23 percent), and 136 calves of either sex (9 percent).

It is safe to assume that sustained harvests of the magnitude which occurred during the past 12 years can be continued without endangering the total Pacific walrus population. If it is desirable to impose a maximum statewide limit, this limit should be set at 1,700 animals. Additionally, the bag limit of five females per resident hunter should be maintained.

RECOMMENDATIONS

It is recommended that every effort be made to reduce hunting loss associated with walrus and other marine mammal hunting. This effort should include regulations pertaining to the minimum caliber size of rifles utilized for walrus hunting. In view of the current national interest concerning walruses, a maximum, statewide annual quota should be established. This quota should provide for the real needs of residents dependent upon walruses as a major source of food and limited cash income. However, the quota should also eliminate the high harvests and total kills such as occurred in 1960, 1966 and 1971. Based upon considerations including the biological productivity of the Pacific walrus population, the walrus harvests made by Soviet residents (a quota of 1,100 walruses is presently imposed), and the potential contribution of the walrus resource to residents of northern Alaska, the maximum annual quota should be established at 1,700 animals. In addition to this, the presently existing bag limit of five adult females per resident hunter should be maintained.

Hauling grounds should be accorded protection from hunting and other forms of disturbance during those periods when walruses are present.

Table 4. Comparison of annual walrus harvests in Alaska from 1959 through 1971.

Year	Total Walrus Harvest	Harvest Composition*			Estimated Hunting Loss(%)	Estimated Total Kill
		Males	Females	Calves		
1959	1,400	-	-	-	49	2,745
1960	2,300	-	-	-	50	4,600
1961**	1,860	-	-	-	49	3,647
1962**	1,690	-	-	-	55	3,756
1963	1,725	-	-	-	53	3,670
1964	975	649	255	71	53	2,074
1965	1,767	966	520	281	47	3,334
1966	2,788	1,721	789	278	50	5,576
1967	1,317	1,162	132	23	43	2,485
1968	1,436	932	330	174	45	3,055
1969	882	620	186	76	39	1,446
1970	1,422	881	427	114	50	2,844
1971	1,915	1,592	254	69	48	3,683
$\bar{x}$	1,652	1,065	362	136		3,301

* Harvest composition data available starting in 1964.
**Total annual harvest based on known spring harvests, plus 20 percent.

At the present time the major contribution of the Pacific walrus, as a renewable natural resource, is this animal's contribution to regional human welfare, through the production of meat and salable by-products. However, in view of current national interest and concern, coupled with increasing numbers of tourists and other visitors to northern coastal areas, efforts should be made to accommodate those people who wish to view these unique and interesting animals. At present, there is a good potential for local businesses based on providing services to people who wish to view walruses.

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