

THE HARVEST OF PACIFIC WALRUS, 1931-1989

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ABSTRACT

The size and composition of the harvests of Pacific walrus (*Odobenus rosmarus divergens*) in Alaska and Chukotka were comparatively well documented during the 60-year period from 1931 to 1989. The Alaska-Chukotka total harvest averaged about 8,500 per year in the 1930s, not including a high struck-and-lost rate. In the 1960s to 1970s, the average harvest was reduced to about 3,000 animals per year and the proportion of females in it was markedly reduced from about half to less than one-third. Noteworthy are the harvests of 6,000-9,000 per year that occurred in the 1980s with an increase in the proportion of females being taken.

Key words: walrus, *Odobenus rosmarus divergens*, harvest levels, management, Bering and Chukchi seas.

INTRODUCTION

For thousands of years, the coastal Natives of Chukotka and Alaska (Figures 1 and 2) harvested walruses for food for themselves and their sledge dogs, hides for construction of their homes and boats, and for various other traditional uses. For Native people, the Pacific walrus (*Odobenus rosmarus divergens*) population was, and still is, a renewable resource of major importance, which contributed to their economy as well as their cultural foundations (Rudenko 1947; Ray 1975). With the arrival of Europeans, the number of walruses harvested and the manner of their utilization changed. First, in the 18th and 19th centuries there was intensive commercial exploitation of walruses by Russians and Americans, primarily for ivory and oil (Tikhmenev 1861-3; Golovin 1862; Bockstoe and Botkin 1982). This resulted in a severe reduction of the walrus population and contributed to starvation of the Native villagers that were dependent on it for subsistence (Allen 1880, 1895).

The introduction of firearms into walrus hunting in the mid-19th century (Clark 1887) brought further changes. Harvesting by harpoons and lances probably had little loss of dead and injured animals but harvesting with firearms resulted in many animals being shot but not retrieved. Based on data gathered from the Alaska harvest in 1952-1972, it has been estimated that for every animal harvested, at least one additional animal was struck and lost (Fay et al. in press). The terms "catch" and "harvest" are used synonymously in this report and define the number of animals actually retrieved; the terms do not include those walrus shot and lost.

Finally, in the 20th century came the Soviet government's conversion of marine mammal hunting in Chukotka from subsistence alone to commercial, in an effort to increase the economic output of the Far East (Zenkovich 1938).

This report summarizes the only available information on Pacific walrus harvest levels between 1931 and 1989. Population estimates during that period are available in Estes and Gilbert (1978), Gilbert (1989), Fay et al. (1990), and Gilbert et al. (1992).

THE SOVIET HARVESTS

Following several decades of exploitation of the marine resources of the Russian Far East by American, Canadian, and Norwegian sealers and whalers and their pervading influence on the Native inhabitants, the Soviet Union began an intensive effort in the 1920s to expel the foreign influence and to organize and develop the regional economy under the Soviet system (Arsen'ev 1927; Nechiporenko 1927; Rozanov 1931; Krylov et al. 1964; Berzin and Perlov 1986). This reorganization led to intensification of seal and walrus hunting, in order to generate a surplus of marketable hides, oil, and ivory. To achieve this, the government outfitted the Native hunting brigades with wooden whaleboats, outboard engines, and newer rifles to replace their old and deteriorating equipment and gave them the means to process the hides and render the oil. To supplement the Natives' catch further, the government also purchased two iceworthy, Norwegian-built schooners, the *Temp* and the *Nazhim*. The Russian crews began at once (1932) to hunt seals in the Okhotsk Sea and, later (1934), to hunt walruses in the Chukchi Sea (Krylov et al. 1964; Berzin and Perlov 1986).

Size of the Annual Soviet Catch

The average annual walrus harvest by the Chukotka Natives in the early 1920s was about 1,500 animals (Arsen'ev 1927; Nechiporenko 1927; Krupnik 1980). These were used almost entirely to meet subsistence needs, with very little surplus available for commerce. By the late 1920s and 1930s, however, the Native hunters had been outfitted with better equipment, and they were taking more than twice that number of animals (Tables 1 and 2), and surplus hides, oil, and ivory were being marketed (Zenkovich 1938; Krupnik 1980). The new schooners also were preparing the hides, oil, and tusks but discarding the meat, because they had no capability for storing it. This soon was recognized as a wasteful practice, and ship crews were instructed to save the meat and to deliver it to the Native communities (Zenkovich 1938; Krylov et al. 1964). This created a surplus of meat in those communities; hence, fur-farms were developed in a few, key locations to use the surplus meat as food for fur-bearing animals (Krylov et al. 1964; Krupnik 1984).

The increased catches by Natives, supplemented by animals taken from schooners, brought the total Soviet harvest of walruses in Chukotka to a peak of more than 8,000 animals per year in the late 1930s (Table 3). Catches declined to half that number during World War II, then increased in the 1950s, followed by a second decline after

1956. The latter decline resulted from two actions. First, beginning in the 1950s many of the small Native villages in Chukotka were consolidated into a few larger ones that had fur farms as their primary industry (Krylov et al. 1964; Krupnik 1984). That consolidation had an immediate effect in reducing the size of the shore-based catch (Table 4), because the hunters had less access to migrating walruses (Berzin and Perlov 1986). Second, in 1956 the Soviet government recognized that the Pacific walrus population had declined to unacceptable levels (Sdobnikov 1956; Geller 1957; Kleinenberg 1957), and protective actions had to be taken to restore it. Protective measures included: (1) terminating ship-based hunting and limiting harvests to Native subsistence; (2) ceasing the processing of hides and oil; (3) prohibiting the taking of females with calves and shooting of animals in the water; (4) forbidding the killing of animals on coastal haulouts; and (5) initiating an annual quota system to limit the catch (Kleinenberg 1957; Kleinenberg et al. 1964; Krylov et al. 1964; Tikhomirov 1964; Krylov 1968; Mineev 1971, 1975; Kosygin 1975).

Protective measures apparently were not implemented immediately in all areas, for some hunting from ships continued at least through 1962 (Mineev 1975; Krupnik 1984). Nonetheless, the size of the harvest was reduced gradually after 1956, and a quota of 1,100 animals landed per year was set in 1962. The Soviet catch declined to a minimum of less than 900 animals by 1965 (Krylov 1968), when the quota was reduced to 1,000 animals landed per year (Mineev 1971). This continued until 1972, when the walrus population was perceived as having increased again, and the government responded by raising the quota to 2,000 animals landed per year (V. N. Mineev, pers. comm., 1973). The size of the harvests rose gradually to that level over the next six years. Recognizing in 1980 that the walrus population had increased still further, the quota was raised again in 1981 to 5,000 landed per year (L. A. Popov, pers. comm., 1981), though harvests never reached that number (some experimental harvest cruises included struck and lost numbers as part of their quota). Finally, in 1985, the quota system was abolished entirely (Kibal'chich 1988).

The size of the Soviet harvests from 1931 to 1989 and their distribution between shore-based and ship-based operations are shown in Table 3. Some of the numbers in Table 3 differ from those reported earlier (e.g., Sease and Chapman 1988, Fay et al. 1989b), as a result of revaluation of data not available to authors of previous reports.

Distribution and Composition of the Soviet Catch

All of the data currently available on the sex and age composition of the Soviet harvests are shown in Tables 5 and 6.

The entire Soviet catch in the early 1930s was taken by Native, shore-based hunters. About one-third of the harvest occurred in the northern part of the Anadyr Gulf, between Uel'kal and Kivak (Figure 1); one-third was by the villages along the eastern coast of the Chukchi Peninsula, from Chaplino to Uelen; and the remaining one-third occurred along the northern coast, from Inchoun to Wrangel Island (Table 1). At that time, the catch in Anadyr Gulf was oriented principally toward females with young (Krupnik 1980, p. 70). Its composition elsewhere was not reported.

The first catch of walrus by the government schooners in 1934 was only 343 animals, taken in the East Siberian Sea (Berzin and Perlov 1986). Thereafter, the ship-based catch increased each year for several years, reaching a maximum of about 2,500 animals in 1938 (Nikulin 1941). These ships operated mainly in Anadyr Gulf and the Chukchi Sea, and their catch was composed about equally of adult males and females, as well as some young animals (Freiman 1941; Nikulin 1941).

In the 1940s, about two-thirds of the total annual catch was harvested by Natives and one-third by government ships. In the 1950s, however, with consolidation of the scattered, smaller villages into a few larger ones (Nikulin 1941; Krylov 1968; Krupnik 1984), the proportion of the catch taken from shore declined, while the proportion taken from ships increased. The composition of the shore-based catch in the early 1950s was about 40% females and sexually immature animals and 60% sexually immature and adult males (Sdobnikov 1956). More detailed sex and age composition information is lacking, except for Gol'tsev's (1968) data from the males taken on Rudder Spit. That sample, which was made up predominantly of immature males, is assumed to reflect the hunters' selection, since "the [Native] hunters do not kill very old walrus because of the low quality of the meat" (Gol'tsev 1968, p. 207).

The ship-based catch in the late 1940s and early 1950s was about 700 to 1,500 animals per year; it never exceeded 35% of the total catch (G. A. Fedoseev, pers. comm., 1992). Because the ship-based hunters strove to kill the largest animals available (Krylov 1965), their catch probably comprised more males than females. The age composition of those is unknown but probably was very similar to that of some scientific samples taken in the early 1960s (cf. Krylov 1968, Fedoseev and Gol'tsev 1969).

For at least 10 years after 1956, when most of the catch was taken from shore, it was made up almost exclusively of males (Tikhomirov 1964; Krylov 1968). Records of distribution and age composition of those shore-based catches are lacking. Although hunting from ships was forbidden during the late 1950s to 1970s (Kleinenberg 1957; Krylov 1968), four "scientific samples" of walrus were permitted to be taken by means of the government schooners (Tikhomirov 1964; Krylov 1968; Fedoseev and Gol'tsev 1969). These were collected in the Chukchi Sea in 1960 ($n = 281$), 1961 (495),

and 1962 (511), and a small sample also was taken in the Bering Sea in 1962 (43). Other scientific samples were taken in 1976 ($n = 158$) and 1978 ($n = 473$) from some new hunting vessels of the "Zveroboi" class (Gol'tsev 1978; Kibal'chich 1979). These latter collecting expeditions were, in effect, also tests of the functional aspects of the vessels, which were designed to operate interchangeably as ice-breaking stern trawlers and sealers.

In 1980, as a result of those tests and the discovery of a major aggregation of male walruses along the Koryak coast, south of Anadyr Gulf (Fedoseev 1979), the new vessels were commissioned to conduct an "experimental harvest" at that site (Berzin and Perlov 1986). In that year, 671 males were landed, and in 1981 the landed catch along the Koryak coast was 288. Thereafter, the experimental harvest rose to a maximum of 2,323 animals per year, nearly all of which were males (Volokhov et al. 1990). A few females were included, having been selected primarily for their old age (N. I. Mymrin, pers. comm., 1991), as recommended earlier by Krylov (1968). The products from those harvests, as well as from the earlier scientific samples, were not distributed to the coastal settlements in Chukotka but were transported back to the home port of the Zveroboi vessels in Korsakov, Sakhalin, where the meat was distributed to fur farms in that region. This experimental catch was continued until 1989. A substantial amount of data on the age composition of those harvests are now available (Kibal'chich 1981, 1988; Sadovov 1986; Grachev 1988; Volokhov et al. 1990; Lastovskii and Lachugin 1991). In addition, the sex and age compositions of at least nine scientific samples taken in the 1980s are known. These also were taken from ships of the Zveroboi type in both the Bering and the Chukchi seas, but most of the animals in those samples were females.

About half of the shore-based harvests in the 1980s were taken by Native hunters from the villages of Enmelen, Nunligran, and Sireniki, on the southern coast of the Chukchi Peninsula (Tables 3 and 4). About 40-50% of the animals taken were females. One-third of the catch was taken along the eastern side of the Chukchi Peninsula by the villagers of New Chaplino, Lorino, and Yanrakinot, and virtually all of those animals were adult males. The remainder of the annual harvest was taken along the northern coast of the Chukchi Peninsula by hunters from the villages of Uelen, Neshkan, and Enurmino, and it was made up of slightly more females than males (N. I. Mymrin, pers. comm., 1991). The age composition of these animals is unknown, with the exception of two small samples from the southern coast that were reported by Grachev (1988) and one from the eastern coast reported by Grachev and Mymrin (1991).

THE AMERICAN HARVESTS

The walrus harvests in Alaska also were changed by the arrival of Europeans, especially by the devastating commercial catches that took place in the last half of the 19th century and beginning of the 20th century. That exploitation apparently ceased by the mid-1920s, probably as a result of a combination of factors, one of which certainly was the Soviet government's efforts to prevent the foreigners from hunting in Soviet waters and trading with the Natives there (Arsen'ev 1927; Rozanov 1931). Another was the increased regulation by the American government against walrus hunting for ivory alone (Madsen and Douglas 1957; Chandler 1943; Fay et al. 1986b). But the ultimate factor may well have been the poor state of the walrus population itself. By the early 1920s, the commercial hunters had reduced the walrus population to its lowest level in many years (Brooks 1954). Since that time, harvesting by Americans has been carried out mainly by Natives.

Size of the Annual American Catch

In the 1930s, more than a dozen Native walrus-hunting villages were located along the Alaskan coast (Figure 2), and those same villages are still the primary harvesters of walruses today. Their harvests in the 1930s to 1950s were not monitored by the Territorial Department of Fisheries, but the average size of those harvests was estimated by Collins (1940), Brooks (1954), and Fay (1958) to have been between 1,000 and 1,500 animals per year, based on their own observations (Table 7). These are the only data available for that time period. Beginning in 1959, the annual harvests were monitored closely by an agency of the newly established State, the Alaska Department of Fish and Game (ADFG), and the size of the catch was reported annually for the next two decades (Table 8).

The ADFG did not regulate the overall size of the catch, but from 1960 onward it established a liberal "bag-limit" that allowed each hunter to take an unlimited number of adult males and not more than five adult females and their young per year. A small sport hunt was also allowed. Following the passage of the Marine Mammal Protection Act in 1972, responsibility for walrus management was given to the U.S. Fish and Wildlife Service (FWS), and ADFG no longer had legal authority over the harvest. However the State continued its harvest monitoring program and urged the Natives to continue to be conservative in their harvesting. Through federal administrative adjudication in 1975, the State's management authority over walruses was temporarily reinstated, with the provision that a harvest quota of 3,000 animals per year be imposed. In part because of problems with the quota system, the ADFG returned walrus management to the FWS in 1979.

The size of the annual Alaskan harvests from 1979 to 1989 is not known precisely, for they were only partially monitored in that period. In 1979, the catch was monitored by the ADFG from January to July; from 1980 to 1989 the harvest was monitored by the FWS and the Eskimo Walrus Commission from mid-April to mid-June each year in selected major hunting villages (Gambell, Savoonga, Little Diomed, Wales, and Nome-King Island) rather than state-wide (Lourie 1982; Seagars et al. 1989). The selection of these villages was based on the fact that their combined spring catch averaged about 80% of the annual spring Alaskan harvests in the 1960s and 1970s. The numbers taken in those five villages are included in Table 3 under the American harvest total; however, these are minima and are not directly comparable with state-wide numbers in the previous years. In 1988, the FWS also initiated a state-wide, year-round marking, tagging, and reporting program that required Native hunters to tag and record walrus tusks as mandated by law, although compliance has been variable (Stephensen et al. 1994).

Distribution and Composition of the American Catch

An average of 75 to 78% of the annual Alaskan catch in the 1930s to 1970s was taken by residents of villages situated on islands in the Bering Strait region (Tables 7 and 8) on the main migration routes of the walruses. Harvests elsewhere generally were small. The proportion of the total taken at St. Lawrence Island increased during that period averaging 38% during the 1960s, 44% during the 1970s, and 53% during the 1980s (Table 9), while the numbers taken elsewhere remained comparatively stable.

The sex ratio of adults in the annual Alaskan catch in the 1930s and 1940s was assumed to have been comparable with that in the 1950s, which was documented by Brooks (1954), Fay (1955, 1958, 1960), Harbo (1961), and Kenyon (1960). Regulation of the sex ratio in the catch was begun in 1960, and for the period from 1960 to 1978 it was documented by the ADFG's harvest monitoring program (Burns 1963, 1965a, 1965b, 1966, 1967, 1968, 1969, 1970, 1972, 1973, 1978; Grauvogel 1974; Burns and Nelson 1979a, 1979b). Between 1980 and 1989, the sex ratio was monitored by the FWS's harvest monitoring program but only for the spring catch at the primary hunting villages (Lourie 1982; Seagars et al. 1989). Overall, the sex composition of about 80% of the Alaskan harvests is known from the 1950s through 1989 (Table 10) and it is likely that the other 20% was similar in composition.

The age composition of the Alaskan harvests also was partially documented since the early 1950s, at first for the harvests on St. Lawrence Island alone (Fay 1960) and later for a few other locations as well, especially at Little Diomed Island (Harbo 1961; Burns 1965a, 1965b, 1966, 1967, 1969; Fay and Stoker 1982a, 1982b; Fay et al. 1986a, 1989a). The samples were mostly acquired intermittently and were of unequal size among villages, for they were collected mainly as time, opportunity, and funds permitted, rather than according to any prearranged plan. All of the age

distributions were similar, being nearly normally distributed. Because hunters selectively harvest larger animals, young animals (other than calves-of-the-year) are poorly represented in the samples (Tables 10-16).

The mean age of males in the Alaskan harvests was about 13-15 years in the 1950s and early 1960s at all villages, but it rose steadily after 1962, reaching about 20 years at all sites by the late 1970s or early 1980s (Sease 1986; Fay et al. 1986b, 1989b). This shift was apparently not the result of any change in hunter selection but was due to increasing availability of older animals. Factors which may have influenced this include: (1) a substantial increase in population size since the early 1960s; (2) a shift upward in age structure of the population as the population approached its asymptote; and (3) the increasing range of the hunters as faster, more reliable boats and engines became available.

The mean age of female walruses in the Alaskan harvest also shifted during this time, but the rate of change was not the same at all locations. At Little Diomed, the mean age of females increased steadily, comparable with the change in the males, but at Gambell and Savoonga it remained stable at 11-12 years until the mid-1970s, then increased abruptly to 17-18 years in the late 1970s (Sease 1986; Fay et al. 1986b, 1989b). Presumably, the primary reason for the difference was hunter-selection, which is primarily for animals with large tusks at Little Diomed and primarily for females with newborn calves at Gambell and Savoonga.

DISCUSSION

The importance of the Pacific walrus population as a renewable resource for the Native communities of the Bering-Chukchi region probably is as great today as it was 60 years ago. Only the pattern of use has changed. The insular communities, especially, could not have existed without this resource in the past (Brooks 1953), and they would be at a distinct disadvantage without it, even today. Forty years ago, the gross value of the walrus harvest in Alaska was estimated to be at least \$200,000 in 1950's dollars (Brooks 1953), and the current dollar value to Alaskan Natives is estimated to be in the millions (John J. Burns, Living Resources Inc., Fairbanks, Alaska, unpublished data), in part because of the increased tourist market for ivory. The value of the harvest on the Russian side probably is at least as great.

The available information on the size and composition of walrus harvests is fragmentary in some areas but remarkably complete in others. As a whole, it describes rather well the characteristics of the annual harvests of Pacific walruses over the past six decades. During that period, the distribution of the catch apparently changed somewhat, with proportional increases for the villages on the southeastern coast of the Chukchi Peninsula and on St. Lawrence Island. It also

changed markedly in size and composition, especially after the mid-1950s. Those changes are attributable in part to government regulation and in part to fluctuations in size and composition of the walrus population. Acquisition of newer and better equipment by the hunters, especially faster boats and engines, also played a part.

Combined Soviet and American harvests of 7,500-9,500 animals per year in the 1930s were of similar magnitude to the 19th century harvest levels (Allen 1895; Bockstoe and Botkin 1982). Considerably lower harvests of 4,500-6,500 per year occurred in the 1940s and 1950s and 2,000-4,000 per year in the 1960s and 1970s. Of course, the harvests themselves were only part of the removal, for a proportion were killed each year by the high struck-and-lost rate (Rozanov 1931; Zenkovich 1938; Brooks 1954; Kenyon 1960; Krylov 1968; Fay et al. in press).

One of the primary goals of a walrus management program is to provide a sustainable harvest of walruses from the Bering-Chukchi region because of the importance of the resource to the Native cultures and economies in both Alaska and Chukotka. The impact of the shore-based catch on the population is limited by the restricted range of the small boats and the small number of them involved in the harvest. The sustainable level is not likely to be exceeded so long as the composition of the catch does not become skewed toward females, there is no large increase in the number or range of small vessels harvesting walruses, and the focus of the harvest continues to be for traditional subsistence and handicraft purposes. Significant changes in any of these factors could result in the potential for population depletion and the need for restrictive measures. However, strict regulation is called for unequivocally if there is to be a ship-based harvest, for ships have far greater mobility, range, and capacity than shore-based boats and could easily overharvest and quickly reduce the population to, or past, the depletion point. The high combined catch in the mid-1980s is noteworthy; it may not be sustainable.

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Table 1. Average catches per year of walruses by Native hunters in 24 villages and several small, nomadic camps in Chukotka, 1926 to 1937 (from Krupnik 1980, table 8).^a

Village	Catch	Village	Catch
Uel'kal	225	Nunyamo	76
Small camps of coastal Chukchi on Anadyr Gulf	253	Naukan	342
Enmelen	102	Imaklik	59
Nunligran	128	Dezhnev & Tunitlen	83
Sireniki	319	Uelen	225
Avan & Ureliki	139	Inchoun	267
Kivak & Tasik	138	Seshan	50
Chaplino & Sikliuk	541	Enurmino	119
Small camps of coastal Chukchi on Bering Strait	133	Neshkan	16
Akkani	109	Nutapel'men	145
Yandogai	109	Wrangel Island	94
		Small camps of coastal Chukchi on the Arctic Ocean	737
		TOTAL	4,409

^a Averages for the villages of Nunyamo, Yandogai, Akkani, and Enmelen are from 1926 and 1937; those for Inchoun, Seshan, Enurmino, and Neshkan are from 1926, 1929, and 1937; those for Uelen, Dezhnev and Nunligran are from 1926, 1929, 1933, 1934, 1935, 1936, and 1937.

Table 2. Regional catches of walruses in Chukotka, 1938 (from Nikulin 1941, tables 7-9).

Area of catch	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Preobrazhenie Bay to C. Chaplino (from shore)	19	32	638	524	375	97	72	30
Cape Dezhnev (from shore)	-	-	317	253	30	41	99	152
Chegitun' to C. Vankarem (from shore)	-	-	-	-	17	70	4	4
Open part of Chukchi Sea (from ships)	-	-	-	-	500	2000	-	-

Table 3. Annual catches of Pacific walruses by Soviet and American hunters.^a Dashes indicate lack of data.

Year	Soviet catch			American catch total ^c	Overall total ^d
	From shore	From ships ^b	Total		
1931	3850	0	3850	1300	5150
1932	3700	0	3700	1300	5000
1933	6250	0	6250	1300	7550
1934	5600	343	5943	1300	7243
1935	5550	1400	6950	1300	8250
1936	6003	1817	7820	1300	9120
1937	5687	2340	8027	1300	9327
1938	5764	2500	8264	1300	9564
1939	-	-	6112	1300	7412
1940	-	-	4552	1175	5727
1941	-	-	3602	1175	4777
1942	-	-	4356	1175	5531
1943	-	-	5346	1175	6521
1944	-	-	3324	1175	4499
1945	-	-	2871	1175	4046
1946	-	-	3400	1175	4575
1947	-	-	3150	1175	4325
1948	-	-	3299	1175	4474
1949	-	-	3477	1175	4652
1950	-	-	4030	1175	5205
1951	-	-	4912	1337	6249
1952	-	-	3542	1337	4879
1953	-	-	2725	1337	4062
1954	-	-	4998	1337	6335
1955	-	-	4828	1250	6078
1956	-	-	5814	1250	7064
1957	-	-	4092	1250	5342
1958	-	-	4038	1250	5288
1959	-	-	3183	1303	4486
1960	2585	281	2866	2300	5166
1961	2078	495	2573	1860	4433
1962	1264	554	1818	1690	3508
1963	1249	0	1249	1725	2974
1964	1500	0	1500	975	2475
1965	891	0	891	1807	2698
1966	909	0	909	2808	3717
1967	940	0	940	1347	2287
1968	939	0	939	1436	2375
1969	965	0	965	882	1847
1970	988	0	988	1422	2410
1971	897	0	897	1915	2812
1972	1518	0	1518	1325	2843
1973	1291	0	1291	1581	2872

Table 3. continued.

Year	Soviet catch			American catch total ^c	Overall total ^d
	From shore	From ships ^b	Total		
1974	1205	0	1205	1410	2615
1975	1265	0	1265	2378	3643
1976	1095	158	1253	2989	4242
1977	1461	0	1461	2377	3838
1978	1647	473	2120	2224	4344
1979	1526	0	1526	2510	4036
1980	1982	671	2653	2289	4942
1981	2106	468	2574	3318	5892
1982	2259	1310	3569	2503	6072
1983	-	-	3946	2136	6082
1984	-	-	4424	3981	8405
1985	-	-	4708	3529	8237
1986	2821	1063	3884	2650 ^e	6534
1987	2350	2323	4673	2077	6750
1988	1985	2004	3989	1925	5914
1989	2513	1164	3677	488 ^e	4165

^a Soviet harvests 1931-1964 from Zenkovich (1938), Nikulin (1941), and Krylov (1968); 1965-89 from OKHOTSKRYBVOD (unpubl. data). American harvests in 1930s estimated by Collins (1940), in 1940s by Fay (1955), in early 1950s by Brooks (1954), in late 1950s by Fay (1958), and in 1959-60 by Harbo (1961). Harvests in 1961-78 reported by Burns (1963, 1965b, 1966, 1967, 1968, 1969, 1970, 1972, 1973, 1978), and Grauvogel (1974), in 1979 by Burns and Nelson (1979a, 1979b), and in 1980-89 by Seagars et al. (1989).

^b Ship-based catch includes scientific samples.

^c Catch data in 1979 from January to July only; catch data from 1980-89 in April - June at 5 villages.

^d Harvest totals from 1979-1989 are minima, since Alaskan data from 1979-89 are less than annual state-wide totals.

^e Alaskan harvest total corrected from Seagars et al. (1989).

Table 4. Reported annual catches of walrus in six Native villages of the Chukchi Peninsula, 1941 to 1980 (from Krupnik 1984, table 2). Dash indicates lack of data. Number or query in parentheses indicates the contribution by ships. Combination of two or more settlements into one is shown by consolidation of two columns into one.

Year	Sireniki	Kivak	Chaplino	Yanrakinot	Nunligran	Enmelen	Total
1941	185	24	190	87	136	100	722
1942	385	43	131	22	339	251	1171
1943	332	55	153	66	244	167	1071
1944	249	81	98	40	245	152	865
1945	249	25	112	5	205	263	859
1946	-	-	-	-	-	-	-
1947	210	38	83	-	-	-	-
1948	120	37	77	-	-	-	-
1949	351	95	197	-	-	-	-
1950	365	81	229	-	-	-	-
1951	-	-	-	-	-	-	-
1952	-	-	156	-	-	-	-
1953	-	191	-	-	-	-	-
1954	383 ¹	475	-	16 ^a	119 ^a	-	-
1955	884(?)	55(526)	-	-	400(?)	-	-
1956	307	97(537)	-	-	-	-	-
1957	180	41(139)	-	96	291	256	1003(?)
1958	238(150)	236(?)	-	208(?)	103	272	1207(?)
1959	252	155	-	44	169	265	885
1960	128	134	-	48	44	380	734
1961	141	67	-	43	104	152	507
1962	77	-	28	-	202	-	307
1963	48	-	18	-	145	-	191
1964	20	-	18	-	113	-	151
1965	65	-	40	-	139	-	244
1966	75	-	50	-	150	-	275
1967	83	-	50	-	140	-	273
1968	83	-	31	-	130	-	244
1969	100	-	70	-	115	-	285
1970	100	-	75	-	120	-	295
1971	96	-	23	-	140	-	259
1972	93	-	68	-	163	-	324
1973	144	-	117	-	204	-	465
1974	75	-	67	-	196	-	338
1975	136	-	89	-	245	-	470
1976	126	-	37	-	153	-	316
1977	195	-	55	-	300	-	550
1978	264	-	72	-	350	-	686
1979	275	-	41	-	307	-	623
1980	309	-	105	-	465	-	879

^a Catch up to 10 July

Table 5. Number of male walrus per age class in the catch from Soviet ships, 1960-89, and from shore, 1937-56 and 1985-89.^a

Place & year	Age (years)																		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Rudder Spit (Shore) 1937-1956	0	1	2	8	19	19	37	37	48	28	28	27	16	12	13	5	5	3	4
Chukchi Sea 1960	6	2	1	1	2	2	3	2	7	5	9	9	21	6	7	9	15	8	10
Chukchi Sea 1961	1	0	1	0	2	1	1	0	5	10	15	22	21	41	39	44	46	36	31
Chukchi Sea 1962	0	3	3	5	8	8	13	24	22	20	34	19	25	17	16	26	32	36	31
Bering Sea 1976	0	1	0	0	1	1	2	2	4	7	9	12	12	14	10	6	6	2	8
Anadyr Gulf 1978	0	0	0	0	0	2	3	5	2	13	10	5	7	11	14	5	7	7	4
Chukchi Sea 1978	0	0	0	0	0	17	10	18	8	5	7	6	6	7	2	2	3	3	0
Koryak Coast 1980	0	0	0	0	0	0	1	2	7	8	8	6	8	4	9	9	9	5	6
Bering Sea 1981	0	0	1	2	2	0	1	1	0	2	0	3	0	6	2	0	7	7	7
Anadyr Gulf 1982	0	0	0	0	0	0	1	0	3	7	4	11	12	20	16	21	16	17	9
Chukchi Sea 1983	0	3	2	0	1	1	3	5	2	3	10	7	1	5	5	1	0	1	3
Koryak Coast 1984	0	0	0	0	0	0	0	2	4	4	3	6	2	7	10	10	10	12	16
Bering Sea 1984	2	0	2	1	0	0	0	0	0	0	3	1	0	1	0	0	0	2	1
Bering Sea 1985	0	0	5	1	1	0	1	0	0	0	1	0	2	1	0	1	1	1	1
Koryak Coast 1985 ^b	0	0	1	1	2	4	5	9	7	16	13	10	11	17	20	16	20	18	7
Koryak Coast 1985 ^b	0	0	0	0	0	0	1	3	1	5	5	3	1	10	13	12	16	16	15
Koryak Coast 1985 ^b	0	0	1	0	0	1	1	3	8	4	9	12	6	11	18	11	17	13	8
Koryak Coast 1985 ^b	0	0	2	1	2	5	8	11	13	20	24	22	19	28	39	28	36	32	12
Enmelen 1985 (Shore)	0	0	0	0	1	0	1	0	0	1	7	10	15	15	8	7	2	1	1
Kresta Bay 1985 (Shore)	0	0	0	0	0	1	0	1	0	9	5	5	9	9	7	6	4	2	2
Chukchi Sea 1985	0	2	1	1	0	3	2	3	11	7	8	12	14	17	24	28	32	35	31
Serdtsse-Kamen 1985	3	1	1	0	4	4	4	11	8	9	12	15	18	26	28	32	35	32	26
Chukchi Sea 1987	3	3	3	1	2	2	6	0	3	2	7	8	1	8	7	6	3	4	1
Serdtsse-Kamen 1988 ^c	0	0	0	0	0	0	0	0	0	0	0	0	3	7	14	15	17	24	22
Serdtsse-Kamen 1988 ^c	0	0	0	0	0	0	0	0	0	0	1	2	3	4	6	6	8	11	11
Koliuchin Bay 1988	0	0	0	0	0	0	0	0	0	1	3	2	11	14	21	21	22	27	32
Koryak Coast 1989	0	0	0	0	0	0	0	0	0	2	8	13	8	13	15	25	32	24	29
Anadyr Gulf 1989	0	0	0	0	0	0	0	0	0	3	0	3	2	7	6	8	12	8	17

Table 5. continued.

Place & year	19	20	21	22	23	24	25	26	27	Age (years)				31	32	33	34	35	Sum	
										28	29	30						>35	0-35	
Rudder Spit (Shore) 1937-1956	1	4	6	2	3	5	2	6	1	2	1	3	0	0	2	0	0	1	352	
Chukchi Sea 1960	6	5	2	1	2	2	1	2	1	3	1	1	1	1	1	1	0	0	156	
Chukchi Sea 1961	24	25	15	9	6	5	4	3	3	3	0	2	2	1	0	2	2	2	424	
Chukchi Sea 1962	31	23	15	7	19	14	16	12	1	11	6	9	2	2	2	2	1	0	513	
Bering Sea 1976	2	4	4	3	1	1	2	0	1	0	0	0	1	0	1	0	1	0	118	
Anadyr Gulf 1978	3	2	2	0	1	3	0	2	1	1	0	1	0	1	0	0	0	0	112	
Chukchi Sea 1978	5	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	108	
Koryak Coast 1980	7	8	7	4	4	1	0	1	3	0	4	1	0	1	0	0	0	0	123	
Bering Sea 1981	5	3	10	6	6	6	3	3	1	2	0	0	1	0	1	0	0	1	89	
Anadyr Gulf 1982	11	17	12	3	2	2	4	2	0	0	0	0	0	0	0	0	0	0	190	
Chukchi Sea 1983	1	1	0	1	0	0	2	0	1	0	0	0	0	0	0	0	0	0	59	
Koryak Coast 1984	14	14	12	21	5	6	12	5	5	3	5	0	3	0	0	0	1	0	193	
Bering Sea 1984	4	2	1	1	2	0	2	0	0	2	0	0	0	0	0	0	0	0	27	
Bering Sea 1985	3	0	1	1	2	3	0	0	0	0	0	0	0	0	0	0	0	0	26	
Koryak Coast 1985b	13	12	11	2	2	2	0	0	1	2	0	3	0	0	0	0	0	0	225	
Koryak Coast 1985b	30	30	7	20	18	15	19	6	5	1	1	0	0	1	0	0	0	0	254	
Koryak Coast 1985b	10	12	7	5	4	3	2	0	0	0	0	4	0	0	0	0	0	0	170	
Koryak Coast 1985b	25	25	18	8	6	5	2	0	1	2	0	0	0	0	0	0	0	0	394	
Enmelen 1985 (Shore)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	
Kresta Bay 1985 (Shore)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	
Chukchi Sea 1985	26	20	32	12	23	17	9	10	7	2	4	1	0	1	0	0	0	0	395	
Serdtsse-Kamen 1985	18	32	15	20	16	9	10	8	3	4	1	0	0	0	0	0	0	0	405	
Chukchi Sea 1987	3	2	0	3	2	2	1	1	0	1	1	0	0	0	0	0	0	0	86	
Serdtsse-Kamen 1988c	33	23	23	32	12	10	7	7	3	0	3	2	0	0	0	0	1	0	259	
Serdtsse-Kamen 1988c	13	12	10	9	8	3	4	3	1	2	1	0	0	0	0	0	0	0	118	
Serdtsse-Kamen 1988c	36	24	25	19	22	8	1	9	3	1	6	2	0	0	1	1	1	0	314	
Koliuchin Bay 1988	27	42	25	27	18	18	11	6	13	3	1	2	2	2	2	1	0	0	367	
Koryak Coast 1989	10	8	6	7	3	2	3	1	1	1	1	0	0	0	0	0	0	0	109	

^a Sources: Gol'tsev (1968), Krylov (1968), Kibal'chich (1979, 1981, 1988), Sadovov (1986), Grachev (1988), Volokhov et al. (1990), Grachev and Mymrin (1991), Lastovskii and Lachugin (1991), and Fay (unpublished data).

^b From different ships on the Koryak Coast in 1985.

^c From different ships in the Serdtse-Kamen area in 1988.

Table 6. Number of female walrus per age class in the catch from Soviet ships, 1960-87, and from shore, 1985-87.^a

Location	Age (years)																			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Chukchi Sea 1960	9	1	0	2	5	7	2	4	1	0	6	5	5	8	10	6	10	8	9	
Chukchi Sea 1961	1	1	1	2	2	3	2	2	3	4	2	1	2	3	5	3	7	6	4	
Bering Sea 1962	3	1	0	2	2	3	2	1	2	2	3	2	0	4	2	2	3	1	0	
Bering Sea 1976	0	0	0	2	0	1	0	1	3	1	2	2	1	8	3	2	2	3	2	
Anadyr Gulf 1978	0	0	1	0	1	0	1	1	2	4	{-----28 ^b -----									
Chukchi Sea 1978	3	1	2	8	1	5	5	5	5	8	{-----165 ^c -----									
Bering Sea 1981	0	2	0	1	7	2	3	6	4	2	8	5	2	6	3	2	10	7	1	
Anadyr Gulf 1982	0	0	0	0	0	0	1	0	1	0	1	3	3	5	0	1	2	1	0	
Chukchi Sea 1983	2	2	3	0	0	1	2	2	7	7	8	11	15	21	19	23	25	16	17	
Bering Sea 1984	3	3	5	0	1	0	0	1	3	0	3	5	9	6	2	9	5	3	9	
Bering Sea 1985	0	3	2	0	0	0	0	0	2	1	2	2	6	8	14	13	13	10	10	
Enmelen 1985 (Shore)	0	0	0	2	1	2	1	0	0	1	0	0	0	0	0	0	0	0	0	
Kresta Bay 1985 (Shore)	0	0	0	0	1	0	0	1	1	3	6	1	4	6	0	1	0	1	1	
Chukchi Sea 1985	0	0	2	0	1	1	0	4	2	2	3	4	13	14	20	12	15	18	12	
E. Chukchi Sea 1987	1	0	0	2	1	1	3	2	2	3	8	2	9	10	7	5	10	4	8	
W. Chukchi Sea 1987	3	1	2	1	2	2	3	3	4	4	1	6	9	11	23	16	13	19	11	
S. Chukchi Sea 1987	0	0	0	0	0	1	0	0	2	1	4	4	6	15	5	7	13	14	14	

Table 6. continued.

Location	Age (years)																		Sum
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	>35	
Chukchi Sea 1960	6	5	2	0	4	1	2	0	1	1	0	0	0	0	0	0	0	0	120
Chukchi Sea 1961	2	4	3	1	2	4	0	2	0	1	1	0	0	0	0	0	0	0	74
Bering Sea 1962	2	2	0	1	0	0	2	0	1	0	0	0	0	0	0	0	0	0	43
Bering Sea 1976	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	36
Anadyr Gulf 1978	-----	-----	28 ^b	-----	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38
Chukchi 1978	-----	-----	-----	-----	165 ^c	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	0	208
Bering Sea 1981	4	6	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	88
Anadyr Gulf 1982	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
Chukchi Sea 1983	25	13	21	18	14	14	8	8	5	7	6	5	3	3	3	3	1	0	338
Bering Sea 1984	8	3	3	5	5	6	3	3	2	2	1	1	1	0	0	0	0	0	110
Bering Sea 1985	13	8	1	1	6	5	2	1	1	2	2	2	1	0	0	0	0	2	133
Emmelen 1985 (Shore)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Kresta Bay 1985 (Shore)	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	29
Chukchi Sea 1985	16	12	11	8	7	3	6	2	1	0	0	1	0	0	1	0	0	0	191
E. Chukchi Sea 1987	7	5	3	2	6	3	7	1	1	4	0	1	2	0	0	1	1	0	122
W. Chukchi Sea 1987	21	15	12	5	5	8	3	4	0	4	1	2	0	2	2	2	0	0	220
S. Chukchi Sea 1987	11	19	14	5	10	7	8	3	5	3	2	3	1	2	1	0	1	1	182

^a Sources: Krylov (1968), Kibal'chich (1979, 1988), Grachev (1988), Grachev and Mymrin (1991), and Fay (unpublished data).

^b Indicates number of females between the ages of 10 and 22.

^c Indicates number of females between the ages of 10 and 35.

Table 7. Estimated average percentage distribution of the Alaskan walrus harvests per year in the 1930s to 1950s and estimated average annual catch.

Estimated average annual catch	1300	1175	1317	1050	
Location	late 1930s ^a	1945-1955 ^b	early 1950s ^c	1950s ^d	Selected avg. 1930s - 1950s
Bristol Bay	-	6.4	5.7	4.8	
Nunivak I. - Hooper Bay	3.8	4.2	2.6	2.4	
Norton Sound	-	1.3	2.3	-	
St. Lawrence Island	23.1	27.2	31.1	30.5	27.9
Nome, Wales, Shishmaref	5.8	5.5	4.7	6.7	
King Island	23.1	21.3	22.8	23.8	22.7
Little Diomed Island	19.2	29.8	26.6	23.8	24.8
Point Hope	5.8	0.4	-	-	
Point Lay	5.8	0.4	0.9	-	
Wainwright	7.7	0.4	0.6	-	
Barrow	5.8	3.0	2.7	3.3	
Not specified	-	-	-	4.8	

^a From Collins (1940).

^b From Fay (1955: appendix IIIA).

^c From Brooks (1954: table 8).

^d From Fay (1958: appendix A).

Table 8. Percentage geographical distribution of the Alaskan walrus catch in the 1960s and 1970s.^a

Table 6. Percentage geographical distribution of the Hudsonian crabs caught at the 1960 and 1968														
Total catch	2300	975	1807	2808	1347	1436	882	1422	1915	1325	1581	2377	1978	2224
Location	1960	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1977	1978	Selected avg.
Bristol Bay	-	-	2.2	0.7	2.2	-	-	-	-	-	-	-	-	-
Nunivak/Kuskokwim	-	2.6	3.0	1.6	2.2	2.6	7.7	3.2	2.3	1.7	2.9	5.8	7.6	-
Gambell ^b	16.3	11.1	24.7	17.4	6.2	32.5	25.6	17.1	9.1	18.9	16.1	44.6	21.2	20.8
Savoonga ^b	17.7	24.4	21.5	18.2	22.2	8.1	20.3	12.7	28.4	17.8	32.6	26.9	25.5	21.5
Northeast Cape ^b	-	2.6	3.9	1.0	1.9	1.0	0.3	-	-	-	-	-	-	-
Norton Sound	-	0.8	0.7	-	0.5	-	1.5	-	1.4	-	-	1.1	1.7	-
Nome	1.0	-	-	0.4	-	-	-	-	1.1	2.6	1.3	-	-	-
King Island	10.0	19.5	11.5	21.2	9.6	2.6	0.1	9.6	7.4	1.6	9.7	2.9	9.4	9.5
Teller/Brevig Mission	-	-	-	1.2	-	-	-	-	-	-	1.2	0.5	4.3	-
Wales	2.8	0.7	0.5	5.0	0.3	4.6	0.7	5.4	7.6	1.1	2.2	1.6	7.8	-
Little Diomed I.	41.1	7.1	15.7	26.9	44.0	39.3	26.0	41.5	27.9	30.5	26.4	11.1	14.7	26.7
Shishmaref	-	-	0.3	-	1.7	-	1.8	-	7.6	1.9	2.1	0.8	5.4	-
Kivalina	-	1.5	-	-	-	0.0	-	-	0.7	-	0.4	0.0	0.0	-
Point Hope	0.3	1.0	0.3	0.6	0.2	1.5	0.6	0.4	1.8	3.4	0.8	0.4	0.0	-
Point Lay	-	-	1.1	-	-	-	0.0	-	-	-	-	0.4	0.0	-
Wainwright	3.3	23.1	10.7	5.0	3.5	5.9	10.4	6.3	1.2	4.2	2.0	1.0	0.9	-
Barrow	3.9	1.0	3.2	0.4	4.1	1.1	0.8	2.7	2.7	11.3	1.3	2.6	1.3	-
Not specified	3.5	4.6	0.5	0.5	1.3	0.8	4.2	1.1	0.8	5.0	1.0	0.2	0.0	-

^a Data from Harbo (1961), Burns (1963, 1965b, 1966, 1967, 1968, 1969, 1970, 1972, 1973, 1978), Grauvogel (1974), and Burns and Nelson (1979a, 1979b).

^b St. Lawrence Island

Table 9. Annual catch of walruses at St. Lawrence Island (SLI) as a proportion of the total reported Alaskan catch. Reported total data from 1979-1989 only includes 5 villages.

Year	St. Lawrence Island catch	Reported total	Percent SLI/total
1938	300	1300	23.1
1948	320	1175	27.2
1952	410	1317	31.1
1956	320	1050	30.5
1960	783	2300	34.0
1961	525	1860	28.2
1962	673	1690	39.8
1963	766	1725	44.4
1964	371	975	38.0
1965	907	1807	50.2
1966	1026	2808	36.5
1967	408	1347	30.3
1968	597	1436	41.6
1969	408	882	46.3
1960s average	646	1683	38.4
1970	423	1422	29.8
1971	718	1915	37.5
1972	486	1325	36.7
1973	770	1581	48.7
1974	465	1410	33.0
1975	1107	2378	46.6
1976	1398	2989	46.8
1977	1699	2377	71.5
1978	1038	2224	46.7
1979	809	2510	32.2
1970s average	891	2013	44.3
1980	1012	2289	44.2
1981	1623	3318	48.9
1982	1109	2503	44.3
1983	1266	2136	59.3
1984	2510	3981	63.0
1985	1529	3529	43.3
1986	1423	2650 ^a	53.7
1987	1474	2077	71.0
1988	975	1925	50.7
1989	387	488 ^a	79.3
1980s average	1331	2490	53.4

^a Alaskan catch total corrected from Seagars et al. (1989).

Table 10. Composition of the Alaskan walrus catch, 1950s to 1989.^a

Year	Adult males ^b	Adult females ^b	Calves	Unknown age/sex	Total ^c	Females as % adults ^d
1950	546	504	200	0	1250	48
1960	762	405	222	911	2300	35
1962	694	435	224	337	1690	39
1963	493	338	156	738	1725	41
1964	670	245	60	0	975	27
1965	991	513	275	28	1807	34
1966	1741	789	278	0	2808	31
1967	1192	132	23	0	1347	10
1968	932	330	174	0	1436	26
1969	620	186	76	0	882	23
1970	881	427	114	0	1422	33
1971	1593	253	69	0	1915	14
1972	847	344	134	0	1325	29
1973	1240	231	110	0	1581	16
1974	1097	263	50	0	1410	19
1975	1488	650	240	0	2378	30
1976	1820	867	302	0	2989	32
1977	1295	625	320	137	2377	33
1978	1095	601	329	199	2224	35
1979	874	319	79	1238	2510	27
1980	849	830	78	532	2289	49
1981	1578	1340	369	31	3318	46
1982	1039	960	362	142	2503	48
1983	863	629	307	337	2136	42
1984	1316	1562	661	442	3981	54
1985	943	2046	434	106	3529	68
1986	956	1154	292	248	2650 ^e	55
1987	624	966	471	16	2077	61
1988	757	791	177	200	1925	51
1989	251	155	82	0	488 ^e	38

^a Data from Fay (1958), Harbo (1961), Burns (1963, 1965b, 1966, 1967, 1968, 1969, 1970, 1972, 1973, 1978), Grauvogel (1984), Burns and Nelson (1979a, 1979b), Lourie (1982), Seagars et al. (1989).

^b Includes a few subadults.

^c Total includes unknown age/sex category.

^d Excluding calves and unknown age/sex category.

^e Catch total corrected from Seagars et al. (1989).

Table 11. Number of male walrus per age class in the catch at Little Diomed Island, 1958-1987.^a

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1958	1	1	0	1	0	0	1	0	0	1	0	0	0	2	0	0	1	0	0
1960	0	0	0	0	1	2	0	4	8	2	4	4	3	8	15	11	12	5	3
1961	0	0	0	0	1	2	5	7	9	7	2	9	9	7	13	8	4	6	5
1962	0	0	0	0	0	0	2	7	14	9	16	11	13	11	11	5	6	4	2
1964	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1967	0	1	1	2	1	6	10	9	14	20	16	29	20	38	34	29	46	36	38
1970	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	3	3	5	2	6	11	13	12	18	17	16	23	19	16
1975	0	0	1	1	2	1	2	2	8	9	5	14	13	20	20	23	20	29	21
1979	0	0	0	0	0	0	3	1	2	2	2	3	3	1	4	3	5	7	4
1980	0	0	0	0	0	0	0	1	1	3	2	1	3	6	6	3	7	9	8
1981	0	0	0	0	0	0	2	1	1	5	6	9	3	4	2	3	2	3	4
1982	0	0	0	1	0	2	0	2	4	1	4	5	3	0	3	3	7	0	3
1983	0	0	0	0	0	1	0	2	1	0	3	2	3	3	3	4	3	2	2
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
1985	0	0	0	0	0	0	0	0	1	0	1	2	2	3	2	1	1	0	0
1986	0	0	0	1	0	0	0	0	0	1	1	2	3	0	4	3	4	2	3
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	1	1	0

Table 11. continued.

Year	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	>35	Sum of 0 - >35
1958	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1960	7	5	5	1	6	2	1	0	1	0	0	0	0	0	0	0	0	0	110
1961	3	6	3	5	3	1	0	0	0	0	0	0	0	0	0	0	0	0	115
1962	0	2	3	2	0	0	1	1	1	1	1	0	1	1	0	0	0	0	125
1964	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1967	30	31	14	12	16	7	9	10	3	2	2	2	2	0	1	1	0	0	492
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	17	13	12	5	1	9	9	4	6	6	3	0	2	0	1	1	1	0	254
1975	18	10	12	12	7	8	6	6	5	10	8	2	2	1	1	1	0	0	300
1979	3	6	5	5	1	1	0	0	1	1	0	2	0	2	0	0	0	0	67
1980	7	9	5	5	3	3	4	2	5	1	0	1	0	0	0	0	0	0	95
1981	1	1	1	2	2	1	0	0	0	0	1	1	0	0	0	0	0	0	55
1982	4	5	2	3	4	0	1	0	0	0	1	0	0	0	0	0	0	0	58
1983	7	2	6	7	8	5	2	5	3	0	0	0	0	0	0	0	0	0	74
1984	0	1	1	2	4	2	0	1	0	1	0	0	0	0	0	0	0	0	15
1985	3	1	1	1	1	0	0	0	0	2	0	0	0	0	0	0	1	0	23
1986	2	0	0	4	1	1	3	1	1	1	0	0	0	3	0	0	0	0	41
1987	0	0	0	2	1	2	0	2	0	0	1	0	0	0	0	0	0	0	16

^a Data from Burns (1965a, 965b, 1966, 1967, 1969), Fay (1960), Fay and Stocker (1982a, 1982b), Fay et al. (1986a, 1989a), Harbo (1961), and unpublished data from J. J. Burns and F. H. Fay.

Table 12. Number of female walrus per age class in the catch at Little Diomed Island, 1958-1987.^a

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1958	1	0	1	2	0	0	0	7	3	2	0	4	2	3	0	3	1	2	0
1960	0	0	0	0	0	0	0	2	2	2	1	7	3	4	4	5	3	2	2
1961	0	0	0	1	1	0	3	12	18	22	29	25	24	16	10	20	8	4	4
1962	0	0	0	0	0	1	4	4	7	15	16	4	14	8	4	5	1	2	2
1963	0	0	0	0	0	0	0	4	5	8	7	4	6	10	4	6	5	2	1
1964	0	0	0	0	0	0	0	0	0	2	1	2	2	0	0	0	0	0	1
1965	0	0	0	0	1	2	1	3	1	4	4	5	5	3	2	2	0	1	1
1966	0	0	0	0	0	0	3	0	0	2	3	2	2	3	4	2	3	3	2
1967	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1968	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
1970	0	0	0	0	0	0	0	0	2	0	1	1	0	1	0	0	0	0	1
1971	0	0	0	1	0	0	0	0	0	0	3	1	1	2	5	1	2	2	1
1972	0	0	0	0	0	0	0	1	5	4	10	3	14	8	9	11	9	5	3
1975	0	1	0	3	1	1	2	3	11	16	14	24	18	24	17	17	13	12	9
1979	0	0	0	0	0	0	1	0	0	3	1	2	3	1	3	9	1	3	2
1980	0	0	0	1	0	1	0	3	2	7	7	5	8	7	8	6	7	10	9
1981	0	0	0	0	0	0	2	0	7	11	9	9	17	11	12	14	8	5	11
1982	0	0	0	0	0	0	1	2	6	4	10	14	10	8	16	16	13	6	4
1983	0	0	0	0	1	0	0	0	1	0	1	3	3	3	2	2	3	2	2
1984	0	0	0	0	0	0	0	1	0	0	4	3	1	2	3	5	4	2	2
1985	0	0	0	0	0	0	0	0	2	1	4	5	7	9	14	8	8	7	15
1986	0	0	0	0	0	0	0	0	0	2	3	3	3	7	17	8	18	8	7
1987	0	0	0	0	0	0	0	0	0	1	2	0	3	4	4	6	7	4	3

Table 12. continued.

Year	Age (years)																	Sum of 0 - >35
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
1958	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	32
1960	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44
1961	2	2	3	1	1	0	0	0	0	1	0	0	0	0	0	0	0	207
1962	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	90
1963	0	1	2	2	1	0	0	0	0	1	0	0	0	0	0	0	0	69
1964	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1965	0	0	1	0	2	0	2	0	0	0	0	1	0	0	0	0	0	41
1966	1	2	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	36
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
1970	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1971	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	21
1972	1	3	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	91
1975	7	3	8	4	3	2	2	4	3	2	0	0	1	0	2	0	1	228
1979	4	6	3	0	5	2	2	1	0	0	0	0	0	0	0	0	0	52
1980	9	9	11	6	7	5	6	1	3	1	2	1	1	1	0	0	0	144
1981	2	9	6	2	3	2	1	4	0	2	1	1	0	1	1	0	0	151
1982	8	7	6	7	1	4	4	3	4	4	1	2	3	3	1	2	0	172
1983	4	4	2	3	1	0	1	1	1	1	1	0	1	1	0	0	0	44
1984	0	3	0	1	3	1	0	1	0	0	0	0	0	0	0	0	0	36
1985	7	11	11	6	5	2	4	0	5	5	1	0	1	2	0	0	1	141
1986	10	6	6	2	0	0	2	4	1	0	1	1	0	0	0	0	1	110
1987	5	4	2	0	1	5	1	1	1	2	0	0	0	0	0	0	1	58

^a Data from Burns (1965a, 965b, 1966, 1967, 1969), Fay (1960), Fay and Stocker (1982a, 1982b), Fay et al. (1986a, 1989a), Harbo (1961), and unpublished data from J. J. Burns and F. H. Fay.

Table 13. Number of male walrus per age class in the catch at Gambell, St. Lawrence Island, 1952-1987.^a

Year	0	1	2	3	4	5	6	Age (years)											14	15	16	17	18
1952	2	0	1	2	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1953	19	1	1	1	2	2	1	1	1	2	3	1	2	3	0	0	0	0	2	4	1	0	1
1954	0	2	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	2	0	2	1	0	0	1	1	1	1	3	0	1	1	1	1	1	1	1	1	0	0	1
1957	0	0	0	1	0	0	2	0	2	3	3	1	3	1	1	2	2	2	2	2	2	1	0
1958	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	2	1	2	2	3	1	1	3	5	3	3	4	4	4	2	3	5	3	3	5	8	5
1961	2	0	0	0	1	1	0	0	0	3	2	3	1	0	0	1	3	1	3	1	1	0	1
1962	0	2	0	0	0	2	0	2	1	0	2	3	6	6	3	3	4	3	4	4	3	4	2
1965	2	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1966	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1969	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1972	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2	2	2	2	2	0	0
1975	0	0	0	1	0	1	0	0	1	0	3	2	1	2	2	4	3	2	3	3	2	4	3
1979	0	0	0	0	0	0	0	0	0	0	1	1	3	2	2	0	2	1	2	2	1	2	2
1980	0	0	0	0	0	1	3	1	6	3	3	2	3	3	3	2	2	3	2	2	3	2	7
1981	0	0	0	0	0	0	0	1	1	2	0	3	4	3	3	11	5	2	4	4	2	4	7
1982	0	0	0	0	0	0	1	0	1	1	4	1	2	1	1	4	3	5	3	3	5	2	3
1983	0	0	0	0	0	0	0	0	0	0	0	1	2	3	3	2	3	1	4	2	1	4	2
1984	0	0	0	0	0	0	0	4	2	2	3	0	2	5	3	3	3	3	3	3	3	4	6
1985	0	0	0	0	0	0	0	3	1	1	4	4	1	7	4	4	5	4	4	5	4	2	7
1986	0	0	0	0	0	0	0	0	0	0	1	0	2	0	3	1	1	6	1	1	6	1	3
1987	0	0	0	1	1	1	1	0	0	0	0	0	1	0	0	4	0	2	4	0	2	1	3

Table 13. continued.

Year	19	20	21	22	23	24	25	25	27	28	29	30	31	32	33	34	35	>35	Sum of 0 - >35
1952	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1953	0	0	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	53
1954	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1956	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	18
1957	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	24
1958	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1959	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1960	2	4	3	2	1	1	0	1	1	1	1	0	0	0	0	0	0	0	73
1961	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
1962	1	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	44
1965	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
1966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1969	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1972	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	10
1975	3	6	2	0	3	2	1	0	2	1	1	0	0	0	0	0	0	0	48
1979	2	2	2	3	1	1	1	1	1	3	1	0	2	1	0	0	0	1	40
1980	7	3	4	7	3	3	4	1	0	1	0	0	0	0	0	0	0	0	74
1981	3	6	6	5	3	5	3	4	3	2	0	0	0	0	0	0	0	0	83
1982	6	7	5	6	11	3	7	2	1	1	1	1	1	0	0	0	0	0	80
1983	1	8	8	6	6	4	5	6	1	2	1	0	0	0	0	0	0	0	66
1984	1	4	4	0	5	2	5	6	1	0	1	0	0	0	0	2	0	0	66
1985	7	4	3	3	3	1	3	2	0	2	1	0	0	0	0	0	0	0	71
1986	0	2	1	4	3	6	3	1	3	1	0	0	0	0	1	0	0	0	42
1987	2	1	1	0	5	3	1	0	1	0	0	0	0	0	0	1	0	0	30

^a Data from Burns (1965a, 965b, 1966, 1967, 1969), Fay (1960), Fay and Stocker (1982a, 1982b), Fay et al. (1986a, 1989a), Harbo (1961), and unpublished data from J. J. Burns and F. H. Fay.

Table 14. Number of female walrus per age class in the catch at Gambell, St. Lawrence Island, 1952-1987.^a

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1952	5	1	1	2	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0
1953	16	2	0	1	1	1	1	1	2	1	3	0	1	3	0	0	1	0	0
1954	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	6	0	0	0	0	0	0	0	2	0	1	2	0	0	1	1	0	2	0
1957	0	0	1	0	0	0	0	1	1	6	4	8	4	4	7	1	2	3	0
1958	5	0	0	0	0	0	0	0	0	0	1	1	1	1	0	3	1	0	0
1959	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	1
1960	0	0	0	1	2	0	5	6	7	11	13	10	18	13	12	6	3	5	3
1961	1	0	0	0	1	1	2	5	4	6	10	7	10	7	3	1	4	1	1
1962	0	0	0	1	1	1	8	14	16	6	12	10	10	12	2	4	1	0	0
1963	1	0	0	0	0	0	1	2	5	5	4	4	3	7	7	6	5	3	2
1964	0	0	0	0	0	0	0	1	0	3	1	1	1	0	1	2	2	0	0
1965	2	0	2	1	1	1	2	11	11	15	5	22	8	14	11	9	6	3	4
1966	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	1	0	0	0
1967	0	0	0	0	0	1	0	0	0	0	0	1	1	0	1	0	0	0	0
1972	0	0	1	0	0	1	0	1	7	13	7	18	8	7	7	1	4	0	3
1975	0	0	0	2	0	0	0	2	5	4	8	8	8	9	5	3	5	3	0
1979	0	0	0	0	0	0	0	0	0	1	4	4	3	2	3	0	3	2	0
1980	0	0	0	0	0	2	2	0	4	6	7	5	10	15	16	9	14	10	7
1981	0	0	0	0	0	0	0	1	1	1	7	5	3	7	11	12	12	6	7
1982	0	0	0	0	0	0	0	1	1	2	6	8	7	16	14	14	13	3	8
1983	0	0	0	0	0	0	0	1	0	0	0	3	2	3	4	2	7	3	2
1984	0	0	0	0	0	0	1	0	0	2	4	8	10	8	7	7	8	7	11
1985	0	0	0	0	0	0	0	2	0	1	2	5	6	9	10	9	4	7	7
1986	0	0	0	0	0	0	0	0	0	0	3	5	8	14	8	10	10	8	3
1987	0	0	0	0	0	0	0	1	0	0	3	1	3	12	14	11	20	8	10

Table 14. continued.

Year	Age (years)																		Sum of 0 - >35
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	>35	
1952	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	13	
1953	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	34	
1954	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
1956	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	16	
1957	3	2	0	1	2	0	0	1	0	0	0	0	0	0	0	0	0	51	
1958	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14	
1959	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	8	
1960	2	1	1	2	5	0	0	1	0	0	0	0	0	0	0	0	0	127	
1961	1	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	
1962	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	
1963	2	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	61	
1964	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	
1965	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	131	
1966	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	7	
1967	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
1972	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	
1975	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	
1979	2	1	2	3	0	1	1	0	0	0	0	1	0	0	0	0	0	33	
1980	8	10	8	8	5	4	4	3	3	1	1	0	5	0	0	1	1	169	
1981	3	4	2	2	1	2	1	0	0	1	1	0	0	0	0	0	0	90	
1982	11	8	6	3	7	6	5	0	2	2	0	0	0	1	0	0	0	144	
1983	3	3	2	0	6	1	0	0	0	0	0	1	0	0	0	0	1	45	
1984	14	10	7	4	4	2	4	0	1	0	0	0	0	0	1	0	1	121	
1985	7	3	2	1	3	4	4	2	0	0	0	0	1	0	0	2	0	91	
1986	7	6	5	1	3	3	2	0	3	1	0	0	0	0	0	0	0	101	
1987	9	6	7	2	3	3	4	1	0	0	1	0	2	0	0	1	0	122	

^a Data from Burns (1965a, 965b, 1966, 1967, 1969), Fay (1960), Fay and Stocker (1982a, 1982b), Fay et al. (1986a, 1989a), Harbo (1961), and unpublished data from J. J. Burns and F. H. Fay.

Table 15. Number of male walrus per age class in the catch at Savoonga, St. Lawrence Island, 1953-1987.^a

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1953	0	0	0	1	3	2	2	5	5	5	4	5	9	12	2	8	6	4	8
1954	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1956	0	0	1	2	1	3	4	5	16	15	21	23	26	39	25	22	21	9	9
1957	0	1	0	0	2	3	3	3	6	6	9	14	10	12	22	17	9	12	4
1958	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0
1960	0	0	0	1	2	2	1	3	11	11	14	13	16	19	17	29	19	14	17
1961	0	0	0	0	1	1	0	2	1	0	2	1	2	3	2	8	7	8	2
1962	0	1	0	0	0	3	5	7	8	8	18	17	18	20	18	22	18	9	10
1966	0	0	0	0	0	0	1	1	8	9	9	18	21	25	29	23	19	29	29
1967	0	0	0	0	1	1	1	3	1	8	7	6	6	13	10	13	10	11	12
1972	0	0	0	0	0	0	0	0	2	3	0	0	1	4	1	5	2	5	4
1975	0	0	0	0	1	1	1	0	5	2	1	8	6	8	17	10	17	17	11
1979	0	0	0	0	0	0	0	0	1	2	0	0	1	3	4	7	4	5	7
1980	0	0	0	1	0	1	0	1	3	0	2	1	5	6	8	12	13	11	19
1981	0	0	0	0	0	0	0	0	1	3	6	4	9	9	5	7	9	5	6
1982	0	0	0	0	0	0	0	0	3	2	3	4	3	2	2	5	1	1	2
1983	0	0	0	0	1	0	1	0	3	0	2	4	3	5	1	5	5	4	2
1984	0	0	0	0	0	1	0	0	0	0	5	1	0	3	4	4	8	6	4
1985	0	0	0	0	0	0	1	0	0	0	0	0	6	3	1	6	0	5	7
1986	0	0	0	0	0	0	0	0	0	2	0	1	3	7	6	5	11	16	11
1987	0	0	0	0	0	0	0	0	1	0	3	1	5	5	2	7	12	8	5

Table 15 continued.

Year	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	>35	Sum of 0 - >35
1953	7	2	6	1	1	1	3	3	3	5	1	0	0	2	0	0	0	0	116
1954	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1956	10	7	9	8	1	5	2	5	5	2	0	0	0	1	1	0	0	0	298
1957	6	6	4	4	7	5	3	3	1	2	0	1	2	0	0	0	0	0	177
1958	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	6
1960	13	13	16	7	6	5	4	4	0	1	2	2	0	0	0	0	0	0	262
1961	5	2	3	3	3	0	0	2	0	0	0	0	1	0	0	0	0	0	59
1962	9	8	5	2	1	2	0	5	1	2	1	1	0	0	1	0	0	0	220
1966	18	16	11	12	9	7	4	14	8	3	2	2	3	2	3	0	0	0	335
1967	8	8	7	2	6	2	2	2	3	1	1	1	0	0	0	0	0	0	146
1972	6	2	8	4	0	2	3	0	0	2	0	2	0	2	1	0	0	0	59
1975	12	16	10	10	3	7	3	6	3	9	5	4	1	4	3	3	5	0	209
1979	9	11	6	7	7	10	8	5	2	7	2	1	2	6	0	0	0	0	117
1980	9	5	11	4	9	3	7	4	3	3	0	0	1	0	0	0	0	0	142
1981	4	6	7	6	3	2	2	4	1	1	0	0	0	0	0	0	0	0	100
1982	5	2	3	3	4	3	1	2	1	0	1	2	0	0	0	0	0	0	55
1983	1	4	1	3	4	2	4	2	2	1	1	0	1	0	0	0	0	0	62
1984	7	4	12	9	7	2	3	2	3	1	0	1	1	1	1	0	0	0	90
1985	10	8	4	10	5	4	4	4	2	4	0	0	0	0	0	0	0	0	84
1986	13	12	9	14	6	7	2	4	4	3	0	0	0	1	0	0	0	0	137
1987	4	5	5	4	5	4	4	1	9	0	0	0	2	2	0	0	0	0	94

^a Data from Burns (1965a, 965b, 1966, 1967, 1969), Fay (1960), Fay and Stocker (1982a, 1982b), Fay et al. (1986a, 1989a), Harbo (1961), and unpublished data from J. J. Burns and F. H. Fay.

Table 16. Number of female walrus per age class in the catch at Savoonga, St. Lawrence Island, 1956-1987.^a

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1956	0	0	0	0	1	1	2	1	2	4	5	4	3	5	2	1	0	1	1
1957	0	1	1	1	0	1	0	3	0	2	1	0	1	1	2	0	0	2	0
1958	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1959	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1960	0	0	0	0	0	0	0	2	2	3	2	1	2	1	0	1	0	1	1
1961	0	0	0	0	0	0	1	0	1	2	2	3	5	4	1	2	1	1	0
1962	0	0	0	0	0	0	3	2	2	5	3	3	1	2	1	1	0	1	0
1963	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0
1966	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1	0
1967	0	0	0	0	0	0	0	1	2	0	0	2	1	2	0	0	0	0	0
1972	0	0	0	0	0	0	1	7	9	5	8	3	6	2	2	2	3	0	0
1975	0	0	0	1	0	1	1	1	3	3	6	2	3	7	3	4	0	0	0
1979	0	0	0	0	0	0	1	1	1	2	2	1	1	2	1	1	0	1	1
1980	0	0	0	0	0	0	0	0	1	0	1	0	1	0	3	0	0	2	1
1981	0	0	0	0	0	0	1	1	2	3	10	11	12	8	5	9	5	7	4
1982	0	0	0	0	0	1	1	0	0	1	1	0	4	1	2	1	5	2	1
1983	0	0	0	0	0	0	0	0	1	1	5	2	3	6	2	1	5	4	5
1984	0	0	0	0	0	0	0	0	0	0	1	4	4	2	4	2	4	8	6
1985	0	0	0	0	0	0	0	0	0	0	0	0	3	7	4	5	4	4	6
1986	0	0	0	0	0	0	0	2	0	0	0	2	1	2	2	2	1	0	2
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0

Table 16. continued.

Year	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	>35	Sum of 0 - >35
1956	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	34
1957	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
1958	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1959	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
1960	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
1961	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	26
1962	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
1963	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1966	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1967	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1972	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	51
1975	0	1	1	1	1	0	0	0	2	1	0	0	0	0	0	0	1	0	43
1979	0	2	0	1	3	2	1	1	0	0	1	1	0	0	0	0	0	1	28
1980	1	3	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	17
1981	1	5	1	0	8	0	3	1	1	1	0	1	0	1	0	0	0	0	101
1982	3	4	2	1	1	2	2	0	1	1	2	1	0	3	0	0	0	0	43
1983	2	2	1	2	3	2	2	1	1	0	0	1	0	0	3	1	0	0	56
1984	1	4	3	2	2	3	0	0	2	2	0	1	0	0	0	1	0	0	56
1985	3	6	0	3	1	0	1	3	0	2	1	0	0	0	0	0	1	0	54
1986	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
1987	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	6

^a Data from Burns (1965a, 1965b, 1966, 1967, 1969), Fay (1960), Fay and Stocker (1982a, 1982b), Fay et al. (1986a, 1989a), Harbo (1961), and unpublished data from J. J. Burns and F. H. Fay.

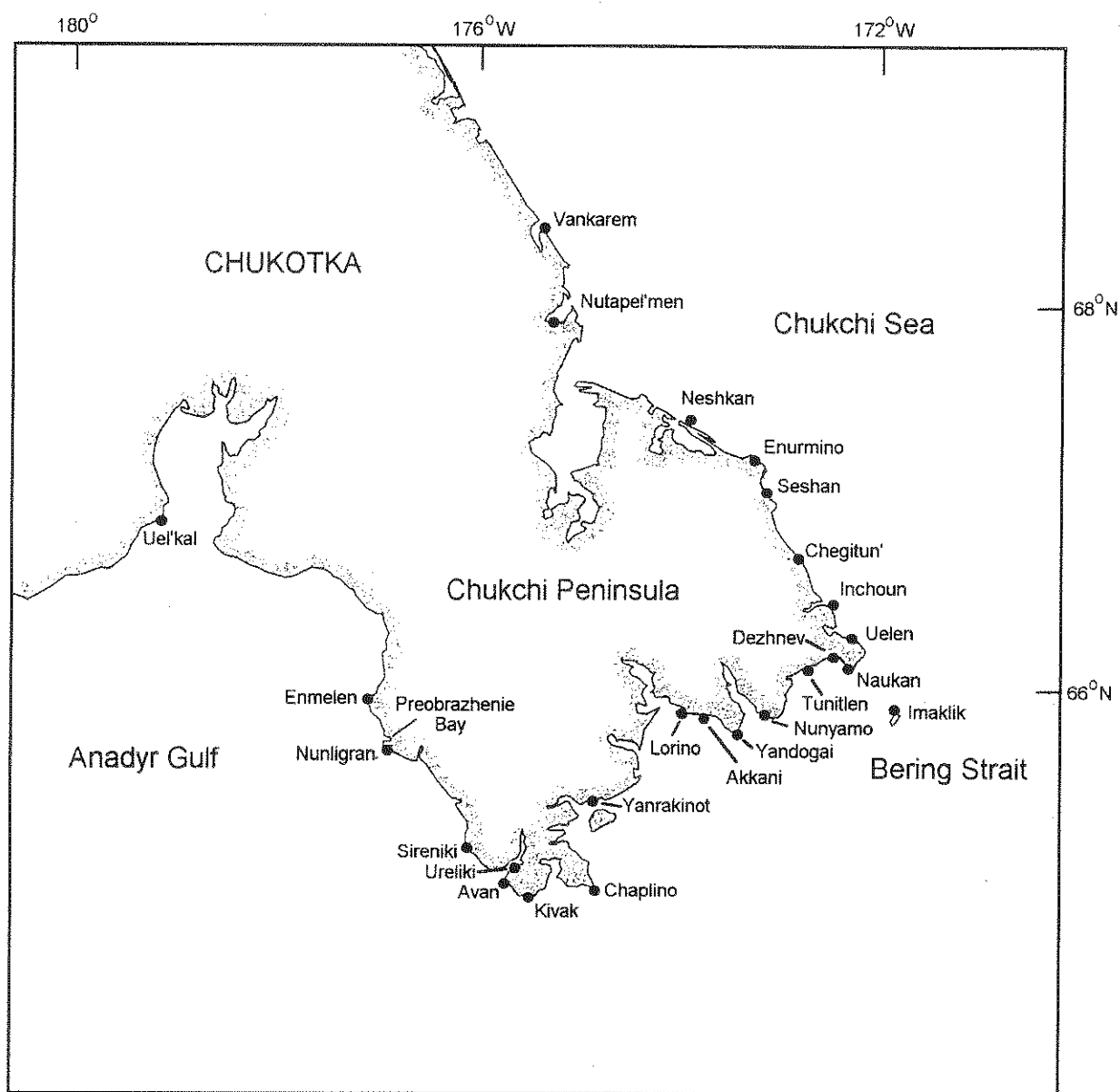


Figure 1. Northeastern Chukotka, Russia, showing locations of the primary walrus hunting villages, 1930s to 1989.

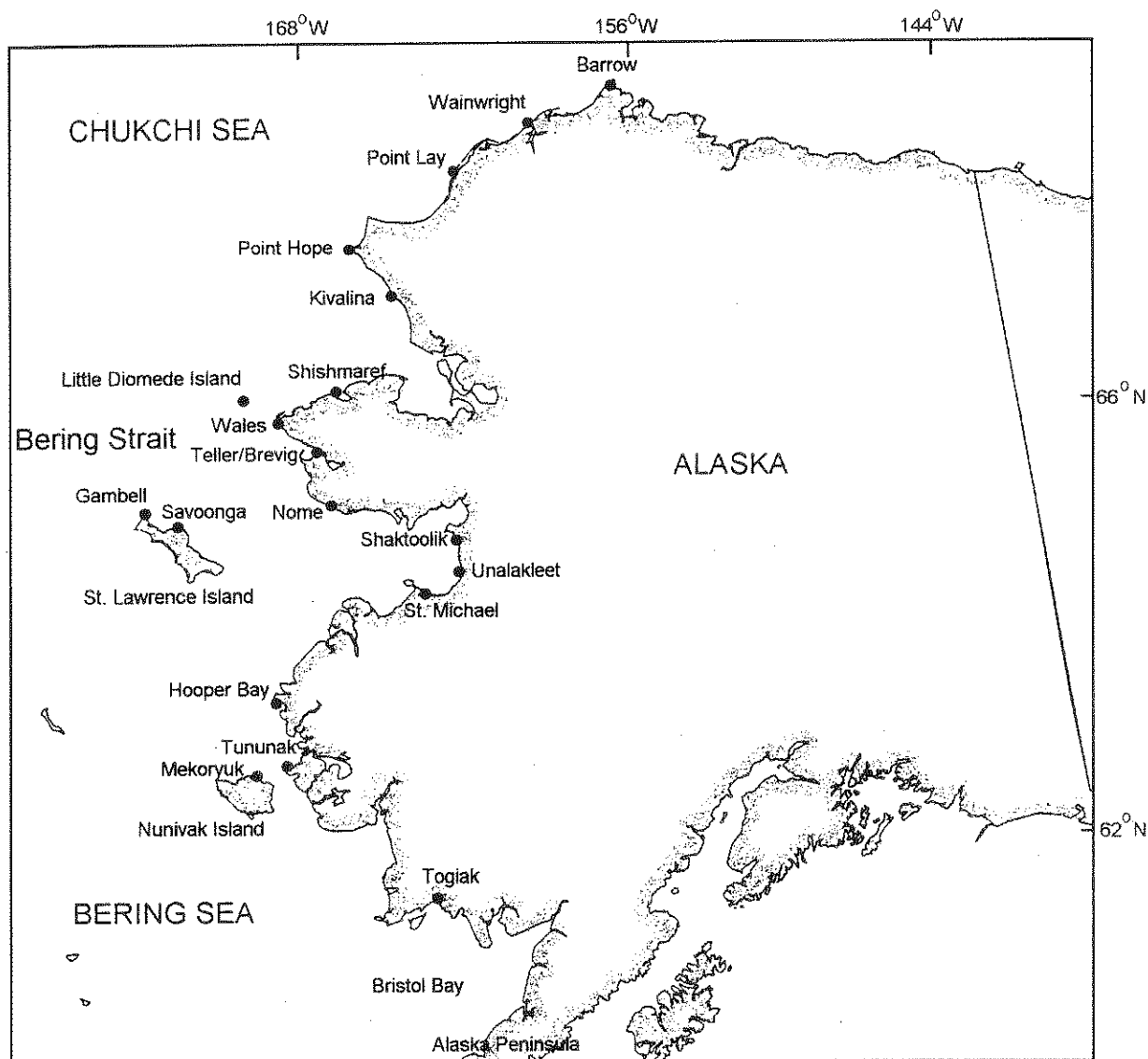


Figure 2. Alaska, United States, showing locations of the primary walrus hunting villages, 1930s to 1989.