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CAPE PEIRCE WALRUS AND MARINE  
MAMMAL CENSUSING REPORT  
1987  
TOGIAK NATIONAL WILDLIFE REFUGE  
DILLINGHAM, ALASKA

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This report documents field data collected in the Cape Peirce area May 26 to October 12, 1987.

Key words:

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## INTRODUCTION

The Pacific walrus (Odobenus rosmarus divergens) spends nearly its entire life at sea, though it is not always spent in the water (Fay and Ray 1968). During the warmer months, when the pack ice recedes further north into the Bering-Chukchi Seas, adult males gather in large herds and frequently come out of the water onto shore. These terrestrial haulout areas are used for resting and molting purposes (Fay 1982). Different from other pinnipeds, walrus haulout timing and behavior may be related to the need for conserving energy and body thermo-regulation during the molt (Salter 1980). Haulout sites usually offer protection from the high winds and extreme weather conditions of this region. During storms with strong onshore winds and heavy surf, hauling grounds are usually abandoned (Nikulin 1947).

Although little is known as to why sites are chosen, nearness to food supply and freedom from disturbance when resting are important requirements (Fay 1974). These mammals, preying mainly on benthic invertebrates, probably require a rather large area in which to feed, since their prey are relatively immobile, of small size relative to the predator, and slow to reproduce (Fay 1982). Abandonment of haulout sites has been attributed mainly to continual disturbances.

Only recently have walrus begun to recolonize previously abandoned hauling grounds along the Alaskan coast (Lowry 1985). The main terrestrial haulout area used by walrus in the north Bristol Bay region has been the Round Island Sanctuary (56 02' N, 160 50' W) (Fig. 1). Walrus began to use Cape Peirce (58 35' N, 161 45' W) regularly during the summer of 1983 (D.A. Fisher, unpubl. data). Cape Peirce is the most heavily used mainland haulout area on the Bristol Bay coast (Hotchkiss 1987, pers. comm.). Prior to 1983, walrus had been sighted here sporadically since the area had been abandoned in the early 1900's (Hotchkiss 1987, pers. comm.).

Haulout activity had increased each year at this site from approximately 5,000 animals in 1983 to 8,600 in 1984 with 12,000 using this area in 1985. In 1986, the numbers began a slight decrease to 11,500 (Mazzone 1986, unpubl. data) and in 1987, peak haulout numbers were approximately 6,300 animals (Haggbloom and O'Neil 1987, unpubl. data). Studies conducted in the Cape Peirce area previous to 1983 only mention sightings of walrus, with no data indicating regular utilization of the hauling grounds (Dick and Dick 1971, unpubl. data; Johnson 1979, unpubl. data).

Population fluctuations and behavioral aspects of the Cape Peirce walrus herd was monitored and recorded by a field crew from June 1985 to October 1985, from May 1986 to October 1986, and from May

26, 1987 to October 12, 1987. The objectives of the study were to collect data on population size and distribution. In addition, tagged animals were identified and recorded as well.

#### METHODS

Data was gathered from two haulout sites at Cape Peirce. Maggy Beach was designated as area No. 1 and North/South Firebaugh Beach, as area No. 2 (Fig. 2). In previous years, animals have also used Parlier Beach and Odobenus Cove as haulout areas. However, only rarely were walrus observed using these areas in 1987.

The sites were visited daily, with Maggy Beach having been visited twice daily due to its proximity to the cabin. Censusing was done at approximately the same time each day to minimize inconsistencies. Exceptions to this were caused by the adverse weather conditions occasionally encountered at Cape Peirce. All animals in the water and on the beach were counted during these periods. Counts done by more than one person were averaged to obtain one estimate for that particular count.

Data collected during the observation periods were date, time, tide, weather, number of animals, and sightings of any tagged animals. Also noted were social interactions and observations of any disturbances to the walruses (i.e. aircraft, boats, human contact, or storms).

Observations were made from a location so as to minimize disturbance to the animals and maximize visibility of the herd. A 600 mm spotting scope and/or binoculars were used.

An 8 mm movie camera with time lapse capabilities was set up during the 1987 field season in an attempt to record haulout activities on Maggy Beach. The camera was set to take one frame every 20 minutes, continuously from June to October. However, due to technical difficulties, the camera did not produce the desired results.

Radio telemetry equipment was used to monitor three individual walrus with transmitters. The receiver was used to scan the herd at least once a day for any transmitted animals located on the beach.

#### RESULTS

The most obvious characteristic of the census data is the frequent change in haulout numbers occurring in relatively short periods of time. The data suggests synchronous resting and feeding cycles (Fig. 3). During a 123-day activity period, 16 haulout peaks were observed at Cape Peirce (Fig. 3). The mean haulout time was 2.97 days. Minimum time spent offshore was 4.91



days, with maximum time spent offshore averaging 7.87 days.

The day-to-day variance in population peaks and lows indicates a common movement pattern of animals to and from the Bristol Bay area. There is much evidence suggesting a correlation between numbers of animals using the Round Island feeding grounds, located southeast of Cape Peirce, alternating with the Cape Peirce feeding grounds (Taggart and Zabel 1985). In early June, walrus began migrating to Cape Peirce in significant numbers from a southeasterly direction.

During the last portion of the season, the decline in numbers throughout the Bristol Bay region and the increase throughout the northern Bering-Chukchi Seas (Fay 1982) suggests a northwesterly movement of the walrus herd. The distance to the actual feeding grounds has not been determined. However, walrus are known to feed in water depths between 10 and 80 m. The Bering Sea shelf, with depths up to 80 m, extends approximately 130 km offshore (Fay 1982).

Both haulout sites used at Cape Peirce were west-facing beaches (Fig. 2). At the onset of the summer haulout, North/South Firebaugh Beach was most frequently used by the walrus. This beach is well-protected from the weather by high cliff walls. However, by mid-July, the animals began to abandon this site, moving to the Maggy Beach site. This seemed to be the preferred haulout site for the remainder of the season. Although, during a December 1987 aerial survey, approximately 250 walrus were sighted on South Firebaugh Beach (Hotchkiss 1987). The reason for the July change from North/South Firebaugh to Maggy Beach is not known, although two possibilities seem appropriate:

- (1) Maggy Beach is the only site high enough to provide protection from extreme high tides and wave action.
- (2) Once walrus numbers became large enough to cause considerable overcrowding of the smaller beaches, the animals moved to the larger Maggy Beach area (Mazzone 1986, unpubl. data).

The first significant haulout activity during 1987 began with the arrival of approximately 120 animals on June 11. After a series of peaks and lows, the population reached a maximum of 6,250 on July 26 (Fig. 3). Throughout the remainder of the season, population highs and lows were observed to be quite irregular, with numbers not exceeding 4,900. In 1985 and 1986, peak haulout numbers were 12,500 on July 27 and 11,600 on August 31, respectively (Figs. 4 and 5). Thus, the population trends from 1985 to 1987 appear to be highly variable.

Animals tagged between 1980 and 1984 at Round Island were sighted on 11 different occasions at Cape Peirce during the 1987 season.

These tags were made of colored, aquatic epoxy with some having metal bands used to reinforce the once-attached transmitters (De Master 1981). Photographs of the marked animals taken previously, aided in identifying and recording their occurrence.

During the 1985 and 1986 tagging effort at Cape Peirce, 29 animals were marked with yellow alfex cattle tags attached to surgical tubing and affixed to the walrus tusk (Mazzone 1986, unpubl. data). No walrus with cattle tags were observed during 1987 at Cape Peirce. However, one tag was found on the beach, presumably washed ashore.

In June and July 1987, 3 walrus were tagged with radio transmitters on Round Island. This was a preliminary tagging effort to be continued on a larger scale if the transmitters proved to be successful (Hills 1987, unpubl. data). On four separate occasions, one of these animals was sighted at Cape Peirce during the 1987 season. The first transmittered walrus was seen on July 9. Due to animal characteristics and the position of the transmitter, this walrus was believed to be the same animal resighted on the following four occasions. On two occasions, a radio signal was received from this animal's transmitter (frequency 5740). Approximately two weeks after the last signal was heard, the animal was seen with the transmitter still attached, but no signal was received. Upon closer inspection, the transmitter was found to have been destroyed beyond working order. Frequencies 5660 and 5821 were not received during the 1987 season.

Social behavior observed during haulout periods often involved olfactory/tactual investigations, naso-nasal greetings and flippering. However, the most obvious interactions involved tusk displays, including tusk threats and actual striking. Although tusks often function secondarily as weapons, their primary value is in ritualized dominance-threat displays in which fighting is minimized and frequently amounts to no more than a show of strength (Miller 1975a). Older, larger animals were seen to actively displace younger animals from their resting sights. Younger animals were observed more often on the periphery of the herd. Some younger animals appeared to show a bond relationship with older animals. Both large tusks and large body size were correlated with social dominance in male walrus (Miller 1975a).

At the end of the 4 1/2-month observation period, 22 walrus carcasses were present on Maggy Beach. Ten of the mortalities are believed to be due to natural causes, and 12 due to hunting fatalities. The overall health of the Cape Peirce walrus herd seemed to be good, although some individuals appeared malnourished as late as September. Mazzone (1986) observed underweight animals at the beginning of the 1986 haulout season in June, but they appeared to have gained weight by August.

Approximately 70% of the walrus herd at Cape Peirce were adults, while the remaining 30% was evenly comprised of sub-adults and aged adults. This is comparable to data from 1985 and 1986 (Mazzone 1986, unpubl. data).

Pneumonia-pneumonitis is an inflammation of the respiratory tract, indicated by heavy coughing and a clear, yellow mucous discharge from the external nares (Fay 1982). Varying degrees of pneumonia were observed during the 1987 season, with the discharge frequently appearing white and foamy. The only other ailment observed was a bulbous, cyst-like growth under the eye of an older male.

### DISCUSSION

Since the Cape Peirce hauling grounds began to be used in 1983, walrus numbers had increased each summer. Not until the 1987 season has the area experienced a significant decline in herd use. Intervals between population peaks and lows are comparable to previous years. However, the highest peak for 1987 was only half that of 1985 or 1986 (Figs. 4 and 5).

Reasons for this decline in use of the Cape Peirce area could be attributed to the following possibilities:

- (1) overuse or movement of food base
- (2) cyclic change in population distribution
- (3) climatic factors
- (4) continual disturbances

Of these possibilities, continual disturbances have been monitored the most. Data has been gathered on the frequency and intensity of human disturbances since 1985. There were more walrus disturbances at Cape Peirce in 1987 (21) than in 1985 (16) or 1986 (15) (Mazzone 1986, unpubl. data). In the 1985 season, 75% of the disturbances were aircraft-related, 12.5% were boat-related, and 12.5% were caused by humans on the beach (hunting, harassment or otherwise). In 1986, 78.6% of the incidents were aircraft-related, 14.3% boat-related, and 7.1% human-related. For the 1987 season, 50% were aircraft-related, 9.1% boat-related, and 40.9% human-related.

Hunting incidents have increased in frequency and intensity at Cape Peirce since 1985. In 1987, the total number of incidents was five. Total walrus mortalities due to hunting during the 1987 season was twelve animals, with an additional five walrus having been wounded and not retrieved. Out of the twelve animals killed, all usable parts were removed from four (33.3%). This included the head, flippers, meat, and various internal organs. The other eight walrus were killed on two separate hunts. From one animal (8.3%), the flippers, head, and one piece of meat from the belly were taken. The remaining seven (58.3%) were



unprocessed except for two, which had a total of two flippers and one slab of meat from the back of the animal.

There may be a correlation between peak periods at Round Island and low periods at Cape Peirce, suggesting a movement pattern between the two areas. It has been stated that walrus may alternate between Cape Peirce and Round Island as the food source becomes depleted in one area (Mazzone 1986, unpubl. data).

It has also been suggested that the walrus herd using the Bristol Bay area has become overpopulated, with population levels in the last few years reaching an all-time high of approximately 225,000 animals in the Bering-Chukchi Seas (Lowry 1985). It is possible that this figure, which was obtained from a joint U.S./U.S.S.R survey conducted in September 1985, may represent carrying capacity for the Bristol Bay region. The probable result of a population that has exceeded its resource limits is a reduction in numbers.

During an August 1987 aerial survey, approximately 70 walrus were seen hauled out in a rocky cove on the northwest side of Cape Newenham (Fig. 1). This site has not previously been recorded as being used. However, during the 1986 season, approximately 700 walrus were seen hauled out on the south side of Cape Newenham (Fig. 1) (Hotchkiss and Campbell 1987, unpubl. data). In the future, it may be pertinent to monitor these areas on a regular basis.

#### CONCLUSION

The Cape Peirce hauling ground is an ideal site for extensive walrus population monitoring. There is easy access to the haulout areas and a cabin within close proximity to house the field crew. Tagging walrus with radio and/or satellite transmitters has not been as successful as anticipated due to drug-related mortality problems (Hills 1987, pers. comm.). However, once these problems are solved, tagging could be continued not only at the Round Island Sanctuary, but at Cape Peirce as well. Continuing this type of monitoring would be advantageous in determining walrus numbers and migration patterns in the Bering-Chukchi Seas. Due to the accessibility of the Cape Peirce haulout area and the sensitivity of the walrus herd to human disturbance, controlled access will be necessary to prevent the abandonment of these hauling grounds.

#### Other Marine Mammal Data

On May 20, shortly after volunteers arrived at Cape Peirce, harbor seals (Phoca vitulina) and gray whales (Eschrichtius robustus) were sighted. The Nanvak Bay harbor seal population ranged from as few as three animals in the early spring, to as

many as 221 on September 15 (Fig. 6). In 1979, Johnson indicated a population of just under 3,100 seals inhabiting the Nanvak Bay area. Between 1983 and 1987, the highest harbor seal population recorded was approximately 550 in 1986 (Mazzone 1986, unpubl. data). The reason for this decline is not known, although commercial fishing in the area may be reducing the seals' food supply.

Small pods of whales consisting of adults and calves were seen feeding offshore during May and June. All whales were seen migrating in a northerly direction along the coast. A total of 32 whales were observed. This figure is most likely an underestimate of the actual number of gray whales moving through the area, as the coastal waters were not monitored continuously for whale migration.

During May and June, Steller's sea lions (Eumetopias jubatus) were occasionally seen in the area. Most sightings were made before the arrival of the walrus herd, however. Each time, the sea lions seemed to be feeding close to shore. Sea lion movement was generally in a northerly direction. A sea lion rookery exists along the westernmost tip of Cape Newenham. Approximately 950 sea lions were sighted here during a May 1987 aerial survey (Hotchkiss and Campbell 1987). During a December 1987 survey, approximately 130 sea lions were sighted here (Hotchkiss 1987).

No killer whales (Orcinus orca) were sighted at Cape Peirce during the 1987 season.





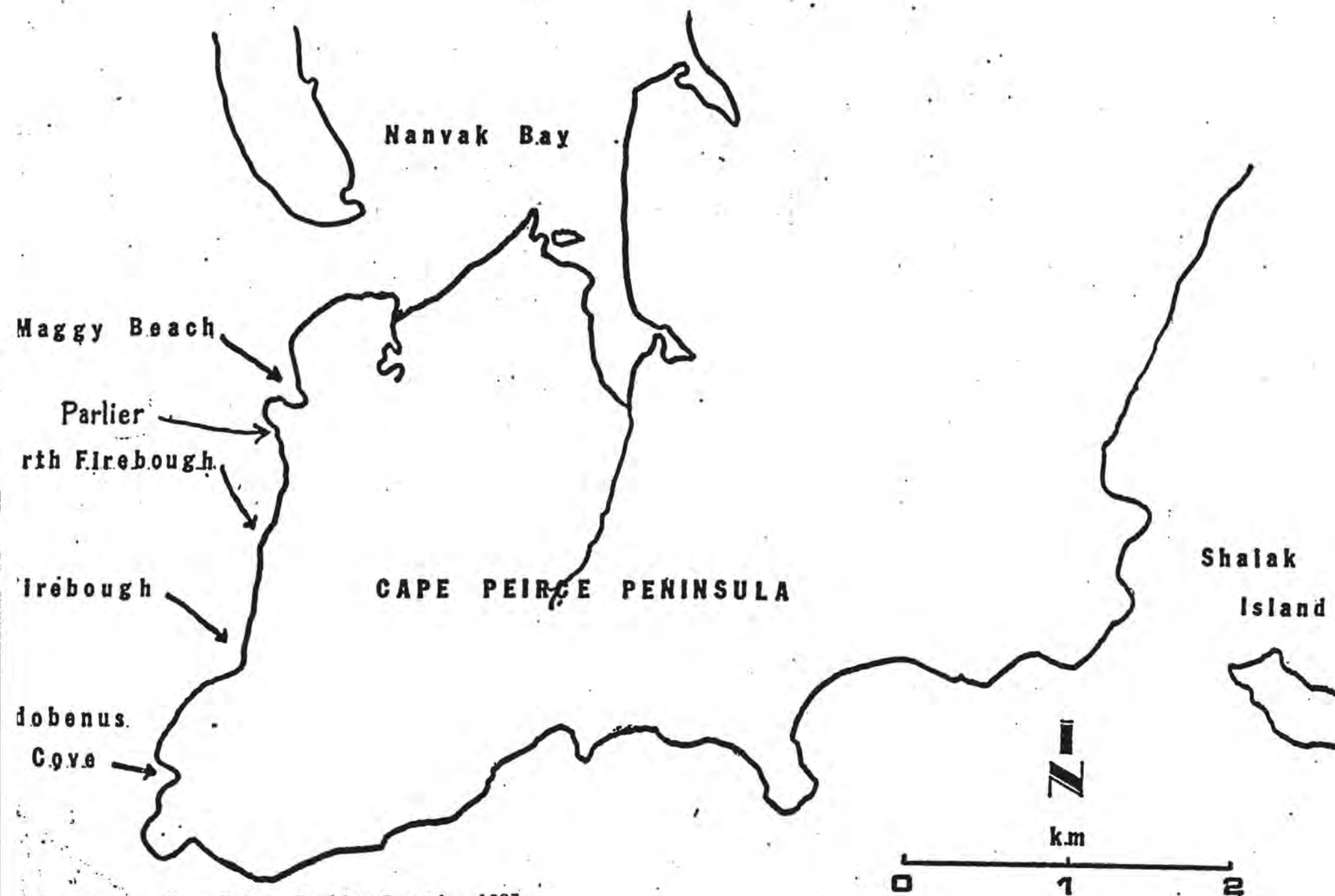
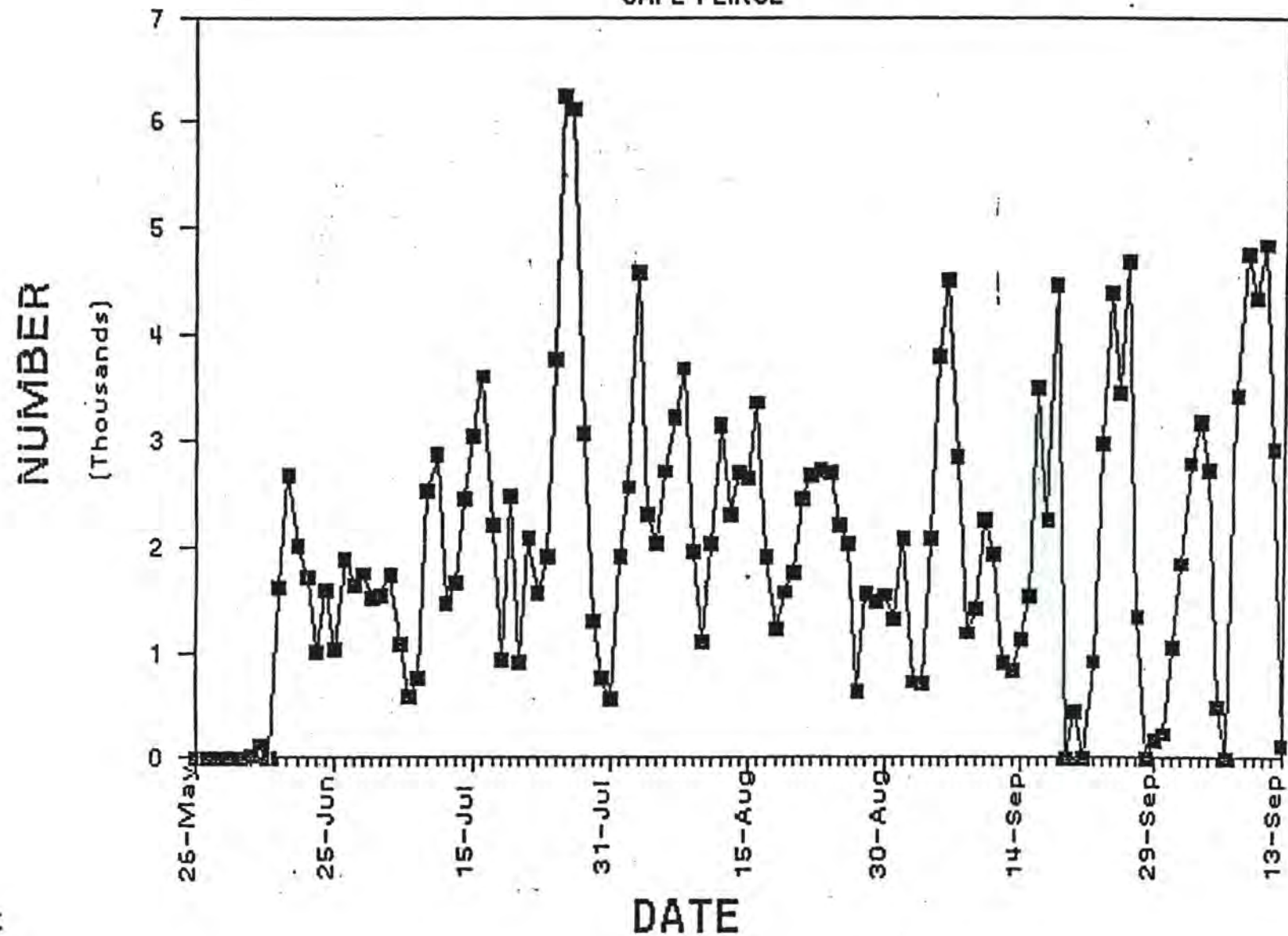


Fig. 2. Cape Peirce Hauling Grounds--1987

# 1987 WALRUS HAUL-OUT CENSUS

CAPE PEIRCE





# 1986 WALRUS HAUL-OUT CENSUS

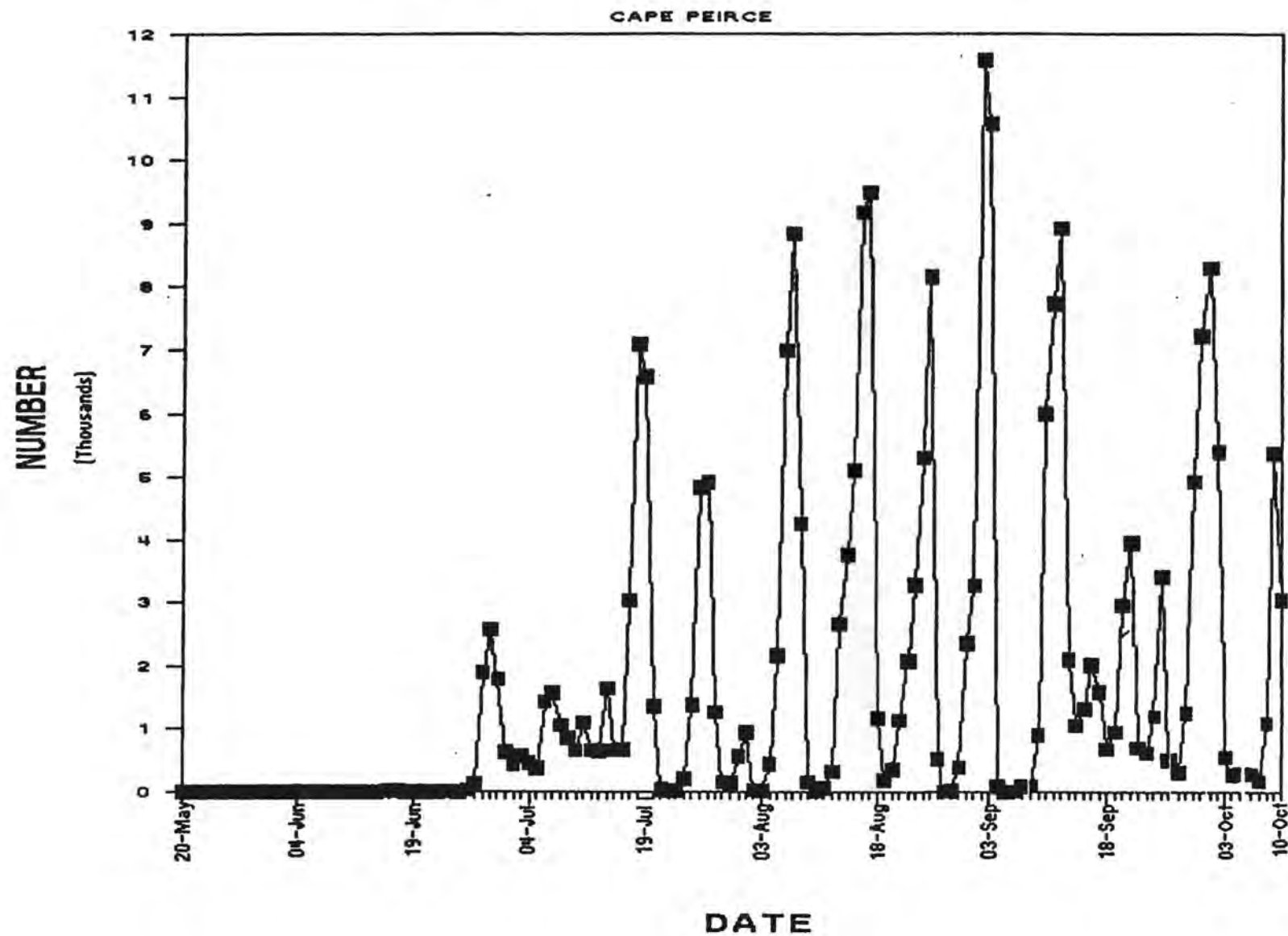


Fig. 4. Daily walrus haulout data--1986; Cape Peirce, Alaska

# 1985 WALRUS HAUL-OUT CENSUS

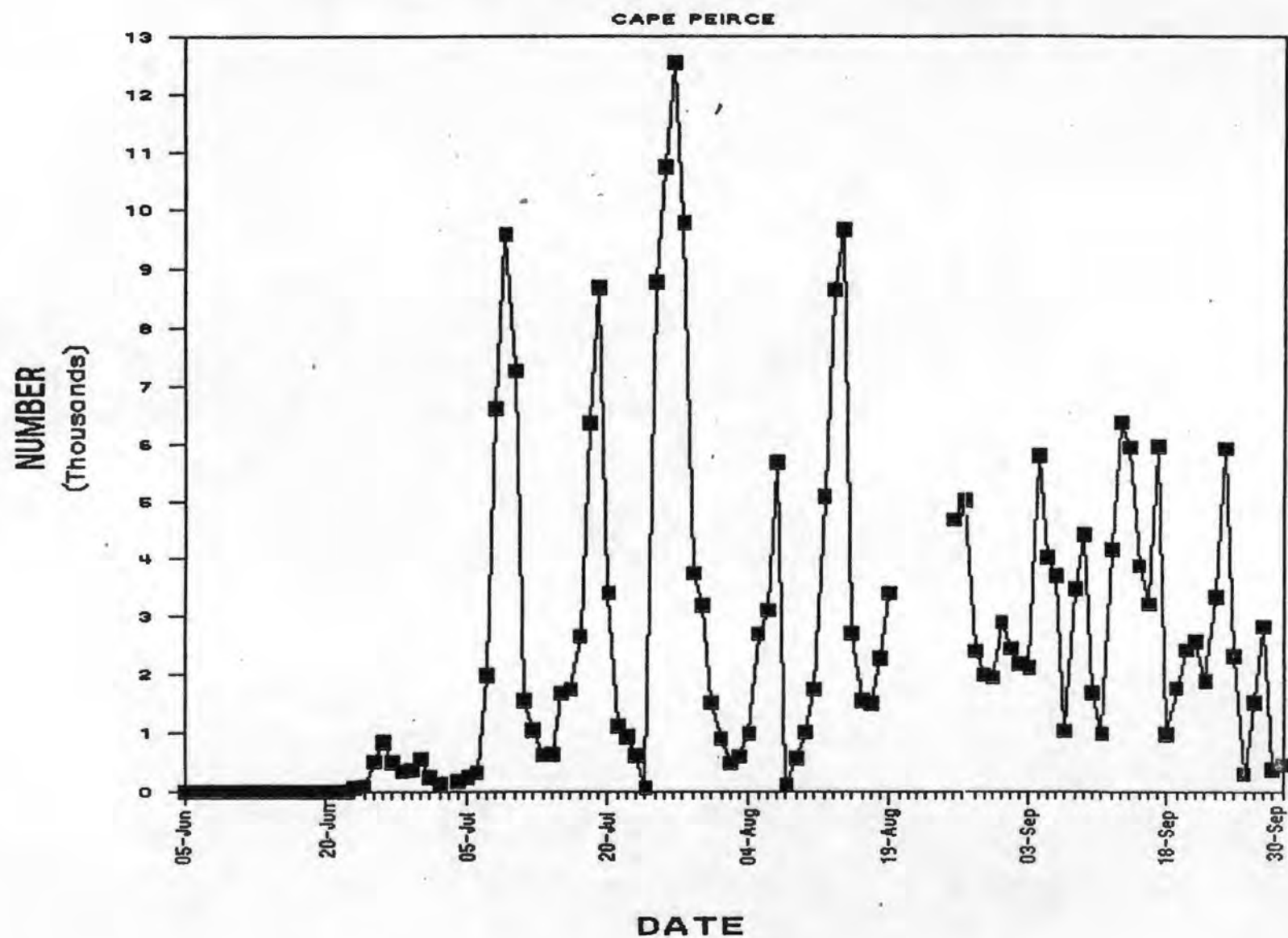


Fig. 5. Daily walrus haulout data--1985; Cape Peirce, Alaska

# 1987 HARBOR SEAL HAUL-OUT CENSUS

## NANVAK BAY

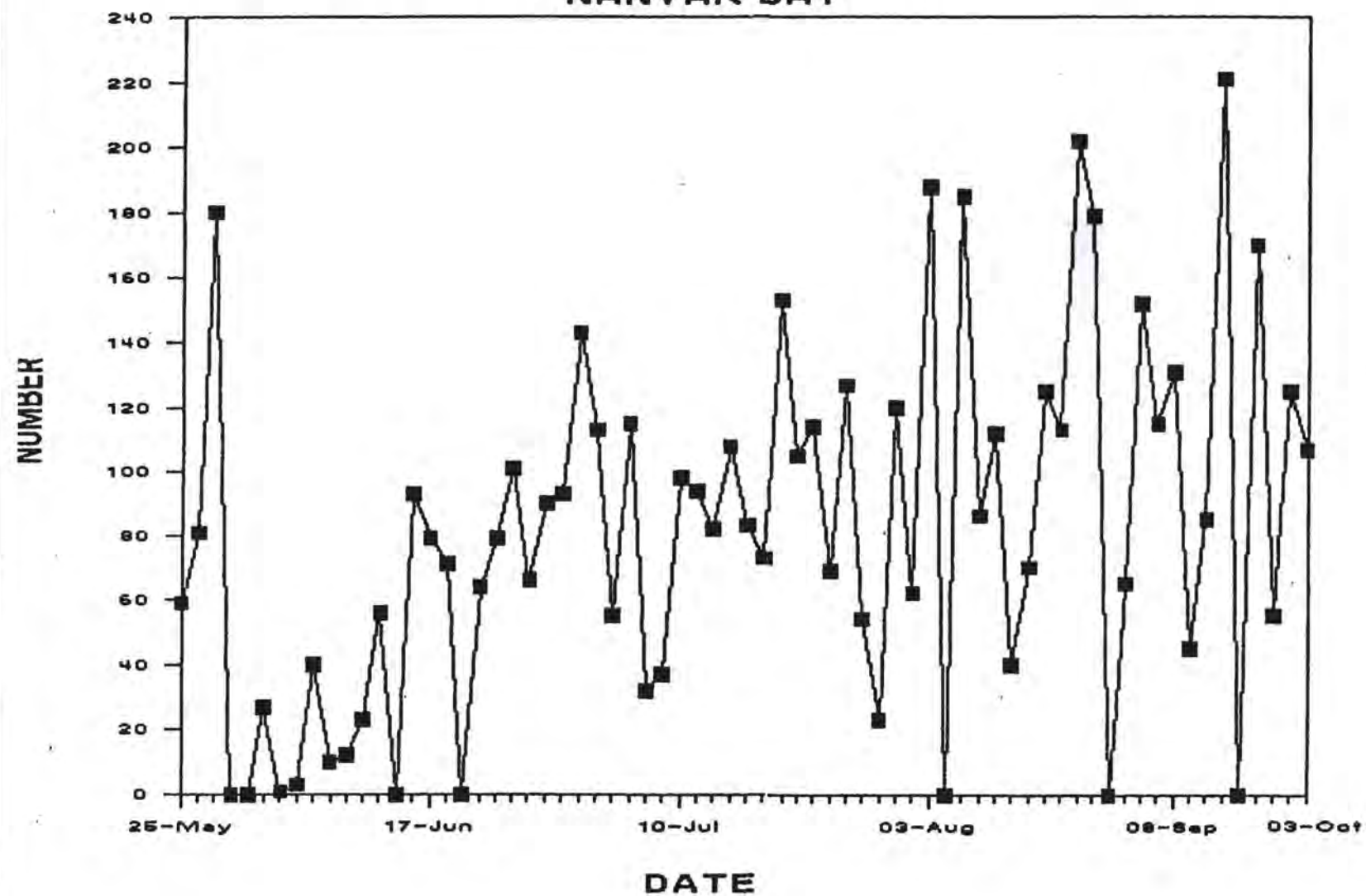


Fig. 6. Harbor seal haulout numbers--1987; Nanvak Bay, Alaska



# REFERENCES CITED

- De MASTER, D.P., J.B. Faro, J.A. Estes, S.J. Taggart, and C.J. Zabel. 1981. Drug immobilization of walrus (Odobenus rosmarus). Can. J. Fish. Aquatic. Sci. 38:365-367.
- DICK, M.H. and L.S. Dick. 1971. The Natural History of Cape Peirce and Nanvak Bay. Unpublished. Available from Togiak National Wildlife Refuge files.
- FAY, F.H. and C. Ray. 1968. Influence of climate on the distribution of walruses, Odobenus rosmarus (Linn.). I. Evidence from thermoregulatory behavior. Zoologica, 53 (1):1-18.
- FAY, F.H. 1974. The role of ice in the ecology of marine mammals of the Bering Sea. Pp 383-399 in D.W. Hood and E.J. Kelley, eds. Oceanography of the Bering Sea. Inst. Mar. Sci., Univ. Alaska, Occas. Publ. 2.
- FAY, F.H. 1982. Ecology and Biology of the Pacific Walrus, Odobenus rosmarus divergens. North American Fauna No. 74:279 pp.
- FISHER, D.A. 1983. Unpublished data. Available from Togiak National Wildlife Refuge files.
- HILLS, S. 1987. Personal communications.
- HOTCHKISS, L.A. and D.M. Campbell. 1987. Personal communications.
- JOHNSON, B.W. 1979. The Harbor Seal Population of Nanvak Bay. Unpublished. Available from Togiak National Wildlife Refuge files.
- LOWRY, L. 1985. Pacific Walrus-Boom or Bust, Alaska Fish and Game Mag. July-August 1985.
- MAZZONE, W.S. 1986. Cape Peirce Walrus and Marine Mammal Censusing Report. Unpublished. Available from Togiak National Wildlife Refuge files.
- MAZZONE, W.S. 1986. Recolonization of Walrus. A study conducted at Cape Peirce, Alaska. Unpublished. Available from Togiak National Wildlife Refuge files.
- MILLER, E.H. 1975a. Walrus ethology. I. The social role of tusks and applications of multidimensional scaling. Can. J. Zool. 53:590-613.

REFERENCES CITED (continued)

NIKULIN, P.G. 1947. Biological characteristics of the shore herds of the walrus on the Chukchi Peninsula. Izv. TINRO (Vladivostok) 25:226-228.

SALTER, R.E. 1980. Observations on social behavior of Atlantic walrus Odobenus rosmarus (Linn.). during terrestrial haulout. Canadian Journal of Zool. 58 (3):461-463.

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