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(The Status of Reserves and Distribution of Pacific Walruses)

by

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ABSTRACT

In 1960, the number of walruses was appraised, using aerial photographs. Approximately 50,000 animals were observed. The majority of them spend summer and autumn in the Wrangel and Herald Islands areas. Aerial observations established the coastal resting grounds that are preferred by males and by mixed groups of females with young. It was found that the shores of Chukchi Peninsula and Alaska are usually inhabited by males in summer and autumn. The eastern part of the East Siberian Sea and the western part of the Chukchi Sea are usually inhabited by females with immature walruses of both sexes.

Translator

THE STATUS OF RESERVES AND DISTRIBUTION OF PACIFIC WALRUSES

The walrus is a typical northern animal inhabiting the Arctic belt. Until the end of the 19th century, the numbers of walruses was large. In subsequent years, as a result of intense commercial utilization of the mammals, huge herds were exterminated. At the present time, the European portion of the Soviet Arctic has less than 10,000 walruses. Somewhat greater numbers of the mammals are observed in the Chukchi sector. However, here a certain decrease is observed also. By the middle of the 19th century, the number of walruses reached 200,000 (Fay, 1957); at the present time the quantity is only about 50,000. A rapid ubiquitous extermination of the mammals is the result of irresponsible hunting.

The field observations of walruses have not been systematic. Usually they were carried out from the shore or commercial vessels. Such observations usually cover a limited area. They make it possible to establish the dates when the mammals appear in a given area and to obtain rough estimates of their numbers. It is understandable that such observations could not yield valuable data for the evaluation of the exact numbers of walruses.

Of great interest to the study of the numerical distribution of walruses are the observations conducted from aircraft and aerial photographs covering the concentrations of walruses.

This paper is based on observations conducted by the author from 25 September to 20 October 1960, from an aircraft in the Pacific region. The observations are supported by aerial photographs.

Data and Methods

The counting of Pacific walruses was based on the following characteristics of its biology: a) formation of resting grounds on ice, b) mass resting grounds on the coast in the autumn.

In connection with biological premises, the fundamentals of a method for direct counting of walruses was established: a) determination of resting grounds on ice and on the coast during counting; b) aerial photography; c) evaluation of the area occupied by walruses; d) determination of the mean area occupied by one walrus.

The entire study area was divided into four parts, where the walruses lived in summer and autumn: 1) the eastern part of the East Siberian Sea and proliv Longa (coastal belt from the estuary of Kolyma to mys Shmidta, including Wrangel and Herald Islands); 2) the pack ice edge /1084
(northern portion of Chukchi and East Siberian Seas); 3) Chukchi Sea (coastal bent from mys Shmidta to mys Dezhneva); 4) coastal water of the Bering Strait and Anadyrskiy zaliv (from the Gulf of St. Lawrence to zaliv Kresta, inclusively).

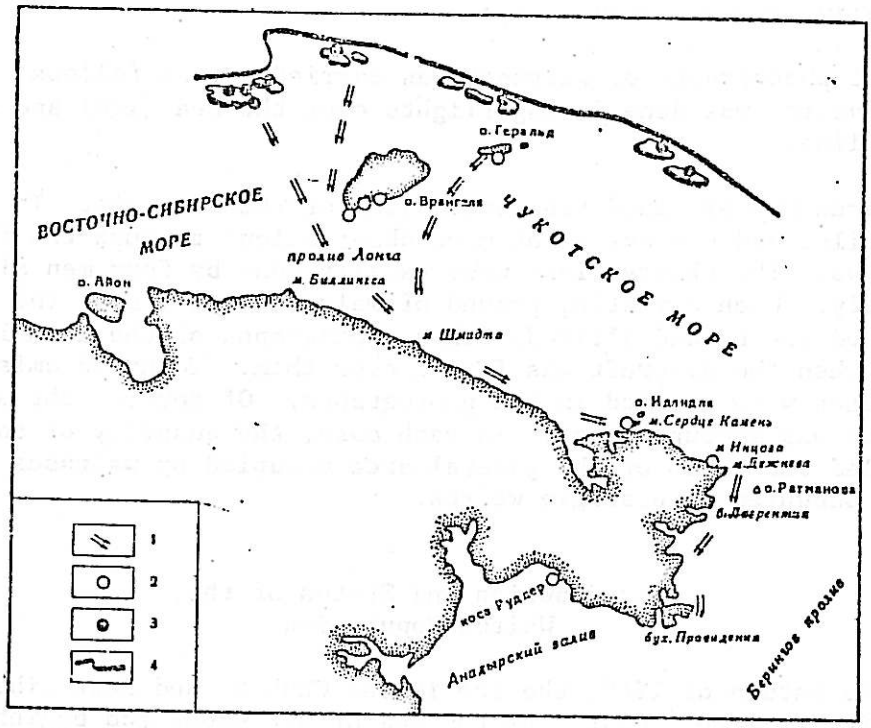
Aerial photography of walruses was carried out as follows: Careful observation was done during flights over the sea (ice) and along the coastline.

The area was examined from both sides of the aircraft. In addition, the pilot and his assistant made observations through the front windows. The observations were usually done by four men simultaneously. When a resting ground of walruses was found, the aircraft assumed the needed altitude; then photographs of the animals were made when the aircraft was flying over them. To avoid omissions, walruses were counted in the photographs. Of course, the appropriate walrus was accounted for. In each case, the quantity of animals equaled the ratio of the general area occupied by walruses to the area occupied by a single walrus.

Distribution and Status of the Walrus Population

In the autumn of 1960, the ice in the Chukchi and East Siberian Seas was far from the coast. By the end of September and beginning of October, the main mass of walruses was concentrated on resting grounds along the coastal belt (up to 90%). Such a distribution of mammals enabled us to use aerial photography more extensively. Walruses were concentrated in seven areas (see Fig.) on the edge of drift ice in the eastern part of the East Siberian and Chukchi Seas, on Wrangel and Herald Islands and on the coast of the Chukchi Sea, namely: at mys Serdtse-Kamen', mys Inchoun (Intsova) and kosa Rudder. During the autumn migration, large numbers of walruses (7-8 thousands) were temporarily resting on ostrov Idlidlya off the populated center Neshkan. In addition, we constantly saw /1085
swimming walruses in proliv Longa, near Wrangel Island. In all probability, these were foraging walruses which evidently had temporarily left the coastal resting grounds of this island.

Within the Soviet portion of the Arctic, the population of Pacific walrus was evaluated to reach 85% of the total population. We did not take into consideration the walruses that were observed in proliv Longa. This was impossible, because the mammals were in small groups from 3 to 5, seldom 10 to 15, and were scattered over a large



DISTRIBUTION OF WALRUSES IN THE AUTUMN OF 1960

1--migration routes in autumn; 2--coastal resting grounds of walruses; 3--resting grounds on ice; 4--pack ice edge.

portion of the strait. In addition, it is possible that we missed some of the walruses resting on the edge of drift ice. However, the probability of a great error has to be discounted because young ice, consisting of snow slush, ice crystals and nilas (newly formed ice) was found everywhere along the edge of drift ice. Such conditions, naturally, impeded the movement of walruses, forcing them to migrate to the coast. This is confirmed by the fact that we observed walruses on drift ice only at the beginning of the investigation, from 29 September to 2 October when young ice was almost nonexistent. In subsequent days, from 2 to 20 October, walruses were not observed on drift ice.

The total number of walruses that inhabit the Soviet portion of the Arctic was appraised to be 46,000. The Pacific subspecies of walrus inhabits open (international) and territorial waters of the U.S.A. and USSR. Therefore, in order to characterize the total population of the mammal, it is necessary to know the number of walruses inhabiting the territorial waters of the U.S.A.

On the basis of data discussed at a conference on animal protection of North America (Fay, 1957), it is seen that the number of walruses off the northern coast of Alaska is small during the summer. Only males are constantly seen on ostrov Morzhovyy, the number being about 1,000. Fay points out that north of this, walruses are not observed. Thus, for example, the American-Canadian Oceanographic Expedition working during 1952 to 1954 east of Point Barrow did not see a single walrus. Characterizing the population numbers of Pacific walruses, Fay writes that the American observers estimated that the number of walruses migrating in the autumn of 1953 in Alaskan waters was about 15,000. By extrapolating the samples by areas which can be occupied by walruses, they concluded that the population numbers exceed 38,000.

In August and September 1958, P. G. Nikulin (unpublished data) carried out preliminary areovisual observations in the East Siberian and Chukchi Seas, estimating that about 20,000 walruses were in this area. On the basis of his long studies of walrus populations, P. G. Nikulin estimated that the total number could be 40,000.

Thus, the results of our studies concerning the present numbers of Pacific walruses, which were carried out with the aid of aerial photographs of walruses found in their resting places, on coast and ice, indicate that the total number of Pacific walruses is about 50,000. The data of the aforementioned publications come close to this number. Decrease in the number of walruses depends almost entirely on their being hunted by man. Therefore, a practical means of conserving the valuable commercial animal is a sound

policy of hunting, commensurate with the population numbers of walruses. For a more rapid restoration of the decimated population of walruses, a temporary cessation of their hunting is in order. But, considering the fact that walrus meat is an important food item for the eskimos of Chukchi Peninsula and Alaska, walrus hunting can be limited to a certain ceiling. In our opinion, the total annual catch in Alaskan and Chukchi waters should not exceed half of the yearly increase in population numbers.

According to P. G. Nikulin (1940) and Yu. S. Freyman (1940), the adult female walrus bears one young every 2 to 3 years. A. V. Mansfield (1959) states that the mean reproduction rate for the walruses of the Canadian Arctic is 0.36 per female per year. According to calculations by Mansfield, the population increase is 8% per year. Thus, the annual increment for the number calculated by us could be about 4,000. Consequently, accounting for the subsequent growth of the population, not more than 2,000 walruses should be hunted each year. But if one considers the effect of predators and sickness, this number must be decreased. /1086

Data given on the numbers of the Pacific walrus disclose that the population is gradually decreasing. Indeed, the boundary of walrus distribution has gradually moved northward. By the end of the 19th century, the southern boundary of the walrus habitat ran as follows: from ostrov Karaginskiy off the soviet coast (Nikulin, 1940), to the Pribylo Islands off the coast of America (Allen, 1880). In the 1930's, the southern boundary of the walrus was limited by mys Navarin, in the Soviet Union and by Walrus Island (ostrov Morzhovyy) off the coast of North America (Fay, 1957). At the present time, kosa Rudder and zaliv Kresta (Anadyrskiy zaliv) mark the southern boundary for the walrus in summer and autumn. It is evident that walruses no longer concentrate off the Alaskan coast. The results of our observations demonstrate that relatively large walrus concentrations in summer and autumn are observed only in the vicinity of Wrangel Island. The diminishing of the walrus habitat is a typical sign of their population decrease.

Some Biological Observations of Walruses

When the number of walruses is counted, it is important to find not only their numbers but also age and sex groups. Therefore, it is of great interest to determine the resting places of walruses with the aid of aerial observations.

It is known that in summer and autumn the male walruses choose their own resting grounds, while females and young settle elsewhere (Nikulin, 1940; Freyman, 1940; Tsalkin, 1937).

When conducting an aerial survey of walruses in 1960, we noticed that the coastal resting grounds occupied by walruses differ by their color. Some areas have a light color, from gray to light, straw-yellow, while others have a more diverse color, from gray to light-brown. There is no doubt that the color pattern of the coastal resting grounds chosen is not a random occurrence. It seems that a light color is typical of male resting grounds; a darker but not uniform color is preferred by females with young.

The color of the walrus varies with age. Young walruses have a brown color; older ones a grayish-yellow color. The color variation in walruses has been mentioned by a number of investigators. Thus, P. G. Nikulin (1940) notes that the newly-born walruses are brown. During the second year they become rustier and brighter. Old walruses have a straw-yellow color. The same color variation is observed in the Atlantic walrus. Thus, V. I. Tsalkin (1937) points out that the color of walruses inhabiting the Franz Josef Land area varies from yellow-brown (in the younger) to straw-yellow (in the older walruses).

Thus, the selection of separate resting grounds in summer and autumn by mature males and females with young enabled the author to aerially distinguish the color of mature males and females with young, and to identify the type of resting grounds. It should be noted that such a peculiarity was not observed on resting grounds established on ice. True, the number of walruses that used ice for the purpose was small during the investigation period. Almost all of the "ice camps" were small, containing 30 to 50, seldom 200 to 300 individuals. As to the color, all of the walruses of "ice camps" resembled mixed coastal groups consisting of females with young of both sexes. /1087

When counting the walruses using the aerovisual method, 32% of the mammals were identified as mature males. They occupied kosa Rudder, mys Inchoun (Intsova), mys Serdtse-Kamen', ostrov Gerald (Herald Island). On other resting grounds (Cape Blossom, kosa and bukhta Somnitel'naya, kosa Davidova, ostrov Idlidlya) we observed females with sexually immature individuals of both sexes (68%).

On the basis of the estimated number of sexually mature males, the report of Mansfield (1959) concerning the annual population increase of walruses (8%) and the assumption that the male-female ratio is 1:1, it can be concluded that the age-sex structure of the counted walruses is as follows: males 32%; females 32%; less than one-year old 8%; other sexually immature individuals of both sexes 28%. Of course, a similar ratio characterizes the entire population of Pacific walruses.

It has long been known that walruses migrate (Nikulin, 1940; Freyman, 1940; Belopol'skiy, 1939). In spring, they follow the ice, moving northward from the Bering Sea into the Chukchi Sea; in autumn they return. However, the dates and routes of migration have not been sufficiently investigated.

L. O. Belopol'skiy (1939) divides the Pacific subspecies of walrus into three groups: the Wrangel, Krestovskiy, and American groups. Our observations conducted during the aerovisual survey in 1960, and published data confirm such a distribution. However, during the last years, as was previously mentioned, the population of the Pacific walrus has considerably decreased. Their distribution has changed somewhat. Thus, for example, only two of the previously existing resting locations on the Chukchi Peninsula are constantly used: Rudder(skiy) and Inchoun(skiy). Annually, during the last three years, walruses have begun to rest on the Wrangel Island. The general distribution of walruses during the autumn of 1960 is presented in a figure.

As a result of aerovisual investigations, walruses were observed in seven areas. In a northwestern direction, they were observed at lat. 74°N. In addition, P. G. Nikulin (1940), when describing the general distribution of walruses, points out that they reach lat. 72°N.

It is also of interest to note that on the coastal resting grounds of the Chukchi Peninsula only males were observed in 1960; whereas the resting grounds in the northwestern portion of the Chukchi Sea and in the eastern portion of the East Siberian Sea were occupied mainly by females with young of both sexes. A separate resting location of males was observed by us on Herald Island.

In 1958, during the hunting activities of the Vozrozhdemiye and Uglyatkak collectives, the author became thoroughly acquainted with the hunting of walruses; namely, the hunting locations and organization of the work. All the hunters that were interviewed by the author asserted that in the spring, when there is ice in Anadyrskiy zaliv, they observed females with young and males. After the disappearance of ice, in summer and autumn, mainly males were observed. They annually occupy the Rudder resting ground. Seldom do they settle on kosa Meyechken. It is of interest to note that in the Bering Sea and in the strait, along the American coast, one can observe only groups of males in summer and autumn. Thus, Elliot, when characterizing the distribution of walruses, writes: "Inasmuch as females never migrate as far as the Pribilof Islands, it was impossible for me to observe them. Why the males remain there for almost the entire year is a question that is not clear to me. /1088

The local inhabitants asserted that they had never seen females or young among the males resting off these islands" (Nikulin, 1940).

The latest observations of walruses in summer and autumn off the coast of America (o. Morzhovyy; Fay, 1957) also show that only males have their resting grounds there. Thus, it can be assumed that in summer and autumn, only males establish resting grounds on the coast of Chukchi Peninsula and off North America. Females with young and sexually mature males usually migrate to the northwestern part of the Chukchi Sea and to the eastern part of the East Siberian Sea.

The return of walruses from this area to the Bering Sea begins when young ice starts forming. According to ice reconnaissance data by the Main Administration of the Northern Sea Route the formation of young ice begins in the northwest and continues in a southeasterly direction. In a similar manner, the walruses return. It has already been noted that in the autumn of 1960, walruses had left the edge of drift ice after the formation of young ice had begun. It was impossible for walruses to establish resting places on this ice of limited strength. It was also difficult for them to move. Therefore, walruses were forced to migrate to more southern areas where the ice is formed later. Beginning with the last ten-day period of August and during the entire month of September they gradually concentrate on coastal resting grounds of Wrangel and Herald Islands.

By the end of the first ten-day period of October, the walruses gradually cross proliv Longa, traveling in several groups in a southeasterly direction, until they reach the Chukchi coast. At a distance of about 60-70km from the coast, they move toward mys Serdtse-Kamen' and mys Inchouna.

We established this movement by observations from aircraft during the autumn migration, i.e., from north to south. Walruses do not come close to the northwestern coast of the Chukchi Peninsula. The reason for this is that the gulfs and lagoons begin to freeze.

The migration of walruses from Wrangel and Herald Island to mys Serdtse-Kamen' and mys Inchouna lasts until October. After a brief rest until the formation of ice, walruses cross the Bering Strait and enter the Anadyrskiy zaliv.

Of course, the mentioned migration routes in north-south direction are not permanently observed; they change from year to year, depending on the dates of ice formation.

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