

The 1986 Subsistence Harvest of Northern Fur Seals, *Callorhinus ursinus*, on St. Paul Island, Alaska

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Introduction

There has been no commercial harvesting of northern fur seals, *Callorhinus ursinus*, on the Pribilof Islands, Alaska, since the Interim Convention on Conservation of North Pacific Fur Seals expired in 1984. During 1985 and 1986, northern fur seals were harvested on St. Paul and St. George Islands to meet only the dietary (subsistence) needs of Aleut residents. A summary of the 1985 subsistence harvest on St. Paul Island is found in Zimmerman and Letcher (1986). This paper summarizes the 1986 harvest on St. Paul Island and contrasts the two years.

Methods

In 1985 data were collected on 1) the number of seals killed each day, 2) the weight of seal meat taken daily for human consumption, and 3) the daily percent use being made of seals. We collected the same data in 1986 except for the weight of meat being taken for human consumption. In 1985 the daily weight of seal meat being taken for human consumption was estimated by weighing a 25 percent sample of the meat immediately after butchering on the harvest field. Because the weighing of meat was viewed by St. Paul residents as an intrusive activity, seal meat was not weighed in 1986. Instead, the amount of meat being taken each day for human consumption was estimated by weighing approximately a 10 percent sample (range 6-16 percent; total number of samples = 117) of carcasses

before and after butchering. The ratio of these values (individual carcass weights after butchering divided by individual carcass weights before butchering) was subtracted from 100 to determine the daily mean percent use which was being made of animals (i.e. number 3 above). These mean daily estimates of percent use were reduced by 5 percent to account for blood loss during the butchering process (Zimmerman and Letcher, 1986). This mean daily percent use value was then multiplied by the mean daily beginning weight of unbutchered animals, and then by the number of animals killed, to estimate the weight of meat taken each day for human consumption. An attempt was made to collect similar data during the subsistence harvest on St. George Island. Such a small number of seals were taken, however (124), and the butchering process proceeded so rapidly, that it was impossible for the single observer to obtain a representative number of unbiased samples.

Results and Discussion

To provide labor for driving, stunning, and removing pelts from seals, several of the governmental entities on St. Paul Island (Tanadgusix Corporation, City of St. Paul, Tribal Government of St. Paul) volunteered small numbers of their paid staff to participate in the harvest each day. To avoid requests for overtime, harvest hours were scheduled to coincide with the end of each working day (2:00-4:30 p.m. each afternoon, Monday through Friday) rather than beginning at 5:00 a.m. which had been the traditional harvest time. The number of contributed individuals involved each day in the 1986 harvest seldom exceeded 12, substan-

tially less than the approximately 30 persons employed in the 1985 harvest. Part of this decrease in labor occurred because no seal pelts were processed for potential commercial use in 1986, as they had been in 1985. Therefore, a processing plant crew was not used in the harvest.

In 1985 the average daily harvest was approximately 225 seals (Table 1). Meat not removed from the harvest field by individuals for immediate personal use in 1985 was taken to a processing building where it was either salted or frozen and then stored for future community use. Because there was very little demand for this community-stored meat during the months which followed, there was no community storage of meat during the 1986 harvest. Instead, the 1986 harvest was carried out on a daily demand basis. Each day's take in 1986 (Table 2; mean = 65 seals per day) was based on the number of orders placed with the Conservation Officer for the Tribal Government of St. Paul. The total number of seals taken in 1986 on St. Paul Island was only 38 percent (1,299; Table 2) of the number taken in 1985 (3,384; Table 1).

Animals taken in 1986 were significantly smaller (one-way ANOVA; $p < 0.01$) than those taken in 1985. The overall mean of carcass weights following lancing of the heart was 23.4 kg (51.7 pounds) in 1986; in 1985 the mean was 28.5 kg (62.8 pounds). This reduction in mean animal weight coincided with an apparent reduction in the mean age of animals harvested. There was a greater percentage of 2-year-old animals taken in 1986 (38 percent) than in 1985 (7 percent). Most of the animals taken during the 1985 harvest (78 percent) were 3-year-old animals. In 1986 3-year-old ani-

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Table 1.—Northern fur seal 1985 subsistence harvest data, St. Paul Island, Alaska (from Zimmerman and Letcher, 1986).

Date	Area	No. of animals taken	Mean carcass plus pelt wt. (kg)	Total wt. of meat taken (kg)	Wt. of meat per animal taken (kg)	Percent use of entire animal after lancing heart
7/17	Northeast Point	200		2,594	13.0	
7/18	Polovina	200	28.4	2,490	12.4	43.8
7/19	Little Zapadni	197		2,482	12.6	
7/22	Zapadni	203	29.4	2,614	12.9	43.8
7/23	Reef	500	28.8	6,389	12.8	44.3
7/24	Northeast Point	202	28.7	2,400	11.9	41.5
7/25	Kitovi	200	27.3	2,588	12.9	47.4
7/26	Tolostol	200	28.5	2,499	12.5	43.8
7/29	Zapadni	200	29.9	2,245	11.3	37.9
7/30	Reef	200	27.8	2,598	13.0	46.8
7/31	Northeast Point	202	28.5	2,518	12.5	43.7
8/01	Polovina	225	28.2	2,950	13.1	46.5
8/02	Tolstol	216	29.5	2,802	12.9	44.0
8/05	Zapadni, L. Zap.	238	28.0	2,623	11.0	39.3
8/06	Zolotol	201	27.3	2,589	12.9	47.1
Totals		3,384	28.5	42,381	12.5	43.8%

Table 2.—Northern fur seal 1986 subsistence harvest data, St. Paul Island, Alaska

Date	Area	No. of animals taken	Initial carcass wt. (kg)	Total wt. of meat taken (kg)	Wt. of meat per animal taken (kg)	Percent use of entire animal after lancing heart
7/14	Reef	50	23.7	595	11.9	50.2
7/15	Zapadni	19	27.3	304	16.0	58.7
7/16	Little Zapadni	51	25.6	663	13.0	50.7
7/17	Polovina	51	25.8	675	13.2	51.3
7/18	Northeast Point	64	23.5	788	12.3	52.3
7/21	Reef	49	26.0	666	13.6	52.2
7/22	Lukanin	96	27.0	1,226	12.8	47.4
7/23	Little Zapadni	31	25.2	388	12.5	49.6
7/24	Polovina	54	23.1	641	11.9	51.3
7/25	Northeast Point	102	23.6	1,317	12.9	59.7
7/28	Reef	60	20.0	420	7.0	35.0
7/29	Lukanin	59	23.1	598	10.1	43.9
7/30	Little Zapadni	27	22.7	377	14.0	61.4
7/31	Polovina	33	21.8	241	7.3	33.5
8/01	Northeast Point	56	22.0	499	8.9	40.5
8/05	Reef	83	21.6	725	8.7	40.5
8/06	Zapadni	82	20.3	686	8.4	41.1
8/07	Little Polovina	80	23.7	898	11.2	47.4
8/08	Northeast Point	181	23.8	1,711	9.5	39.6
9/27	Little Zapadni	71	22.0	994	14.0	63.6
Totals		1,299	23.4 ¹	14,412	11.1	47.2 ²

¹Mean computed using all values (n=127) rather than by averaging daily means.

²Mean computed using all values (n=117) rather than by averaging daily means.

mals accounted for only 54 percent of harvested animals (Fowler¹). We believe this reduction in size and age of harvested animals reflects an Aleut preference for younger animals for food. Greater selectivity in the size of animals to be killed was possible in 1986 because smaller

numbers of animals were harvested from each pod.

The mean weight of meat taken per seal in 1986 was 11.1 kg (24.4 pounds), somewhat less than the 12.5 kg (27.5 pounds) per seal taken in 1985. This difference results from the decreased size of animals taken. Percent use of animals was not significantly higher (one-way ANOVA; $p = 0.07$) in 1986 (47.2 percent) than it was in 1985 (43.8 percent). However, there did appear to be an in-

crease in the use of hind quarters in 1986. In 1985, the butchering was done by a harvest crew under the direction of a foreman. Consequently, butchering was quite uniform each day; shoulders, flippers, chests, hearts, livers, backbones and ribs were taken from each seal for human consumption. Very few hind quarters were taken in 1985, and no pelts, blubber, skulls or internal organs other than hearts and livers were consumed (Zimmerman and Letcher, 1986, described the butchering process). In 1986 butchering was done by individuals taking the meat for their own use. Although the quantity and types of meat butchered from carcasses by individuals in 1986 were less consistent than the quantity and types of meat which were butchered for community use in 1985, many individuals in 1986 were observed removing only the skull, pelt, blubber and internal organs and then taking the rest of the carcass intact along with the heart and liver.

The harvest in 1985 was terminated by Federal Regulation on 8 August (USDOC, 1985). In 1986, it was possible for each island to extend its harvest through 30 September (USDOC, 1986) providing subsistence needs had not been met and the number of female seals taken was less than 0.5 percent of the total number of animals killed. Although both islands applied for and were granted extensions, very little harvesting occurred during the 9 August-30 September period². Only 71 seals were harvested during this period on St. Paul Island. All were taken on 27 September (Table 2)³.

The estimated amount of meat taken

²Residents of St. Paul Island had planned to continue harvesting during the extension period. However, in mid-August about 100 seals were found dead from unknown causes on St. George Island. Concern for the health of harvestable seals throughout the Pribilof Islands caused St. Paul residents to wait several weeks to see if an epidemic-type situation was developing which might cause the meat to be unfit for human consumption.

³The 1986 regulations (USDOC, 1986) specified that harvesting after 8 August had to be terminated if the total number of females taken exceeded 0.5 percent of all animals harvested. Residents of St. Paul Island terminated their harvest on 27 September because 12 of the 71 animals taken on that day were female, thereby putting the total number of females taken (15) over the 0.5 percent allowable female take.

¹Charles Fowler, National Marine Mammal Laboratory, National Marine Fisheries Service, NOAA, 7600 Sand Point Way N.E., Seattle, WA 98115. Personal commun.

on St. Paul Island for human consumption in 1986 was 14,412 kg (31,706 pounds). This was about one-third of the amount taken in 1985 (42,381 kg; 93,435 pounds). In 1985, however, only 28,800 kg of that total remained available for use on St. Paul Island after losses due to spoilage (3,400 kg), shipment to St. George Island (8,200 kg) and shipment to other Aleut communities (2,000 kg) were subtracted (Zimmerman and Letcher, 1986). Of this total, about 22,500 kg were frozen and 3,900 kg were salted. The remaining 2,400 kg are believed to have been taken directly from the harvest field for personal use. A survey of the St. Paul community freezer in March 1986 indicated that about two-thirds of the 22,500 kg of frozen meat from 1985 remained unused (estimated 15,000 kg). About one-third of the 3,900 kg of salted meat from 1985 was also unused at that time (estimated 1,300 kg). Most of this meat was later thrown away because it consisted of undesirable or untraditional cuts (ribs, backbones) or because it was perceived by St. Paul residents to have been handled and preserved under unsanitary conditions.

Thus, if no spoilage or export of meat from the 1986 harvest occurs, more meat

from the 1986 harvest (14,412 kg) may be eaten than was consumed from the 1985 harvest (estimated 12,500 kg)⁴. Assuming that the permanent native population on St. Paul Island is 483 (USDOC, 1981), the 1986 harvest of 14,412 kg (31,700 pounds) would allow a theoretical average daily consumption of 0.08 kg (about 3 ounces) of seal meat (with bone) per person per day. This is less than the previous estimates of seal meat consumption in the Pribilof Islands which indicated a per capita consumption of about 1 pound per day (see review in Zimmerman and Letcher, 1986). Surveys conducted by the Tribal Government during the harvest extension period, however, indicated that only 359 more seals would have been required to meet the demands of St. Paul residents (Kozloff⁵). Harvesting this additional number of seals would

⁴This 12,500 kg total is based on an estimated consumption of 7,500 kg of meat which was frozen by the community, an estimated consumption of 2,600 kg of meat which was salted by the community, and an estimated consumption of 2,400 kg of meat which was taken for personal use before the meat was stored by the community.

⁵Patrick Kozloff, Tribal Government of St. Paul, St. Paul Island, AK 99660. Personal commun.

only have resulted in an additional 4,000 kg of meat, or about 0.02 kg (less than 1 ounce) more meat per person per day.

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