

Wildlife Pathology International

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Mr. David R. Cormany
NOAA, National Marine Fisheries Service
Alaska Regional Office
P.O. Box 21668
Juneau, AK 99802-1668

Dear Mr. Cormany,

Please find enclosed the Humane Observer Report for the 1996 Northern fur seal harvest on St. Paul Island, Alaska.

The 1996 Northern fur seal harvest went well this year. The harvest started on 26 June and ended on 8 August. A total of 1591 (1588 subadult males and 3 young adult females) seals were killed. This year's harvest went fairly well and animals were handled and killed in a humane fashion.

The only major problem that occurred this year was at Zapadni on 1 July when approximately 10 seals were said to have died due to hyperthermia. I do not know any of the details on this incident and was given the number 10 by Darlene Melovidov. Some of the activities that could have gone wrong was that the animals were driven to fast on a relative warm day without much wind. The drive on Zapadni is one of the more difficult drives from the haulout areas to the killing field, Northeast Point, being the longest.

The harvest was stopped three times this year, twice due to the weather being too hot (1 July - Zapadni and 26 July - Kitovia) and once to heavy rain (28 July-Zapadni).

Four animals were found with oil contamination on the fur of the abdomen this year. These animals were found on Polovina (one animal - 28 July) and Lukanin (two animals - 2 August and one animal - 6 August). The oiled skins were identical to what has been observed for the last two years and is suggestive of contamination with bilge oil. In 1994, 23 animals were found with oil and in 1995 three animals were found. There was concern that this oil may have come from the F/V CITRUS and if so IRA wanted to include that finding in their lawsuit against the ship. The samples from the skins are with all the other tissue samples and are being stored in Seattle.

Sincerely,



Terry R. Spraker, D.V.M., Ph.D., D.A.C.V.P.
Pathologist

HUMANE OBSERVER REPORT
Northern Fur Seal Subsistence Harvest
St. Paul Island, Alaska
July-August, 1996
Terry R. Spraker

INTRODUCTION

Northern fur seals (*Callorhinus ursinus*) have been harvested for their pelts for the last 200 years on the Pribilof Islands. During this time period, the native Pribilovians could freely take the meat of the harvested animals for food. On St. Paul Island, the commercial harvest for pelts ceased in 1984; therefore a subsistence harvest began with only immature males taken for food. This subsistence harvest has continued for the last thirteen years (1984-1996).

The harvest is a well planned and orderly procedure. Young male Northern fur seals usually 2 to 5 years of age are gathered by driving them from their haul out areas to a specific killing field where they are held in a large pod. Five to ten seals are then cut from this large pod and driven to a group of three to four men who stun the animals by hitting them on the skull or upper neck with a solid wooden club. The animals are dragged a short distance away from the killing area where the chest and heart are cut open. The animals are then skinned and butchered for human consumption. For a more detailed description of the procedures of the harvest, see Humane Observer Report: Stoskopf 1984; Letcher, 1985; Dorsey, 1986; Zimmerman et. al., 1986. This report will be limited to my observations of the humane activities of the fur seal harvest for July and August 1996.

Multiple factors were evaluated during this harvest. These factors included: environmental conditions, methods of gathering and herding animals, and the harvesting of animals. These three areas will be discussed separately.

Northern fur seals (*Callorhinus ursinus*) were harvested from 26 June through 8 August 1996 from seven haul out areas (Gorbach, Kitovi, Lukanin, Polovina, Zapadni, Zapadni Sands and Little Zapadni). A total of 1591 animals (1588 subadult males and 3 adult females) were killed this year (Table 1). All three of the females were black whiskered and therefore were probably 4 to 5 years of age. These females had not given birth to a pup this season nor showed any evidence of abortion or absorption of a fetus. The uterus was small and the ovaries were showing follicular activity in all three animals. This was probably these females first breeding

season and they had hauled out with the bachelor males. These young females were not recognized as such and were killed in the harvest.

ENVIRONMENTAL CONDITION

The environmental conditions of the harvest from 26 June through 8 August were monitored including the average air temperature, degree of precipitation, wind and cloud cover. The air temperature was taken when the drive began and ranged from 44°F to 54°F, with an overall average of 49°F. Rain occurred once during the harvest and it was misty 14 times. A mild to moderate breeze was present every day and wind speed varied from 4 to 20 knots with an overall average of 12 knots. Cloud cover was complete most of the time (20 days), light and high on three days and partly sunny three days (Table 2). The environmental conditions were similar to previous years.

GATHERING OF ANIMALS

The gathering of the animals was done by approximately ten to fifteen men that would go to a specific haul out area and quickly form a line along the shore thus preventing the seals access to the ocean. Then the seals were gathered into several pods and driven to the killing field. This year the animals were gathered between 10:58 am to 1:23 pm. The estimated distance of the drive ranged from 100 to 300 yards. Animals were driven at a estimated speed from 7 to 38 yards/minute with an average speed of 23 yards/minute. The speed of the drives this year were slightly faster this year as compared to last year which was approximately 19 yards/minute. The animals were usually rested during the drive (Table 3). If the animals were driven slower, problems with hyperthermia would be lessened. In my opinion animals should not be forced the run over 15 to 20 yards/minute. This year 18 of 26 drives were faster than 20 yards/minute.

An estimated difficulty of the drive was graded on a scale of 1+ to 3+, with 1+ being the easiest, and 3+ being the most difficult. These same paths have been used for driving seals to the

killing field for several hundred years and were all fairly easy drives (Table 3).

The degree of wetness to the grass/terrain was monitored and estimated as this is believed to be an important cooling factor for the animals. The grass was wet 22 days and dry four days (Table 3).

HARVESTING PERIOD

The harvesting activity was characterized by maintaining the animals in a large pod approximately 20 to 30 yards from the stunning area. While a few young boys kept the seals herded up in the large pod, two to three men would cut out a small pod and drive them to the stunners. This smaller pod was usually 5 to 8 animals. Animals were killed by hitting them on the skull at the level of the eyes, ears or over the 1st/2nd cervical vertebra. The majority of the animals were hit just once. These animals would immediately drop and were then often hit again on the skull. However, sometimes the first hit missed its mark and one or two more hits were required. The number of double- and triple - hits were not counted this year, but my overall impression was that the accuracy was about the same this year as in previous years.

Deep body core temperatures of approximately 10% of the animals were taken throughout each harvest. The temperatures were then divided into three equal time slots during the harvest for each day. The average body temperatures are presented in Table 4. Temperatures ranged in individual animals from 99.0°F to 160.4+°F. Twelve animals died due to hyperthermia this year. Of these animals one was taken and used for food. Ten of these 12 cases occurred on 1 July 1996 at Zapadni. I did not arrive on the island until 4 July, therefore I was not at this harvest. I do not know what went wrong at this harvest. Some of the men at the harvest questioned that 10 animals died, however, Darlene Melovidov, NMFS harvest monitor, reported 10 animals died due to hyperthermia. One possible explanation was that the animals were driven to fast on a relative warm day with little wind and no mist. Also the drive to the killing field on Zapadni is one of the longer and more difficult drives compared to the other killing fields.

Hyperthermia is due to overheating associated with the activity of the animals. Predisposing factors include warm environmental temperatures, lack of cloud cover and/or mist, dry grass, lack of wind, animals being driven too fast (especially uphill), long drives, animals being held too tight in the large holding pods and having too much activity or moving around in the large holding pods. Another predisposing factor is the amount of rest an animal has had before the drive. For example, an animal that has just arrived on the haulout from a feeding trip may not be "fully rested" and, if they are subjected to a harvest/drive, become exhausted quicker than a totally rested animal. This may explain why on occasion that an animal will die of heat exhaustion when the remaining pod does not seem to be in trouble.

To avoid seals dying from hyperthermia, animals should be driven slowly probably less than 20 yards/minute, rested at least 10-15 minutes after the drive and the holding pods should be kept loose. During this year, the rest period of 13 of the 26 harvest were under 10 minutes. These rest periods varied from 4 to 9 minutes with an average of 6 minutes. Therefore longer rest periods should be given to the animals after the drive. If an animal lags behind during the gathering period they should be allowed to drop out of the drive. If the environment temperature is 50°F, great care has to be taken during the drive and the harvest. If the temperature is $\geq 55^\circ\text{F}$, no cloud cover, wind or mist, the harvest should not be done on that day. This year the number of animals that experienced hyperthermia was markedly increased from last year. When the animals are showing early signs of hyperthermia the harvest should be rested and if the animals do not cool down they should be released so that they can go to the water and cool off. This stopping of the harvest due to over heating occurred twice this year and was initiated by the Aleuts.

HEALTH STATUS

The health status of the animals was evaluated by examining viscera and carcasses throughout the harvest. Stomachs were opened and checked for parasites and ulcers. Gastric parasites were Contracaecum sp. and Anisakis sp., both of which have been reported previously

in fur seals. The overall parasitic burden was comparable this years as in previous years. In general, the harvested animals appeared to be in good body condition and healthy. One subadult male killed on 7 August at Zapadni Sands had a orange or salmon pink discoloration to the blubber. Over the last 10 years, I have seen 4 to 5 of these animals. All of theme appeared to be normal on gross examination. These animals have been examined extenslively histologically and lesions have not been found. I think this orange discoloration of the blubber may be an alteration in carotine (vitamn A) metabolism and storage. This orange discoloration of the blubbler does not seem to alter the health status of the animal in any form..

OIL CONTAMINATION OF ANIMALS

This year four subadult male fur seals were found contaminated with an oily substance matted in the fur covering the abdomen. These subadult males were from Polovina (one animal - 28 July) and from Lukanin (two animals - 2 August and one animal - 6 August}. These animals had small grey to black balls of an oily substance mixed with dirt matted into the fur of the abdomen. The number of animals found with oil on their fur this year was similar to last year (three animals from Gorbatch - 1995), but much less than in 1994 when 23 animals were found to have been comtaminated with oil. The oily material is believed to be ship bilge..

SUMMARY

In summary the harvest went well and was done in an orderly and humane fashion.

Points to be remembered and done during the harvest include:

1. Drive the animals slower to the killing field no faster than 15 to 20 yards/minute.
2. Do not unnecessarily harass the seals during the drive.
3. Rest the animals 10 to 15 minutes prior to the harvest.
4. Harvest in the morning; thus avoiding warmer afternoon environmental temperatures.
5. Drive small pods to the stunners. Five to seven animals are good, but not 10 to 15 animals at a time. This makes it easied for the stunners to be more selective in which

animals they kill thereby avoiding killing females and unwanted larger males. With small pods the stunners can be more accurate in their clubbing.

6. If environmental temperatures are 50°F to 55°F, give the seals frequent rests during the drive, rest periods of 10 to 15 minutes following the drive and keep the holding pods loose. If environmental temperature is 55°F or above, do not have a harvest.
7. Try to "weed out" (release) older bulls during the drive.

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Table 1: Summary of date, location and number of fur seals killed and animals dying of hyperthermia during each harvest on St. Paul Island, Alaska 1996.

Dates	Location	No. Seals Killed		Running Total	Hyper-thermia
		Male	Female		
26 June	Gorbatch	34	0	34	0
27 June	Polovina	67	0	101.00	1
1 July	Zapadni	22	0	123.00	10
9 July	Gorbatch	80	0	203	0
10 July	Lukanin	69	0	272	0
16 July	Polovina	99	0	371.00	0
17 July	Lukanin	73	0	444.00	0
18 July	Zapadni	63	0	507.00	0
19 July	Gorbatch	80	0	587.00	0
20 July	Kitovi	53	0	640.00	0
22 July	Polovina	67	0	707.00	0
23 July	Lukanin	64	0	771.00	0
24 July	Zapadni Sands	51	0	822.00	1
25 July	Gorbatch	99	0	921.00	0
26 July	Kitovi	27	0	948.00	0
27 July	Zapadni	18	0	966.00	0
28 July	Polovina	65	0	1,031.00	0
31 July	Gorbatch	76	0	1,107.00	0
1 Aug	Zapadni Sands	44	0	1,151.00	0
2 Aug	Lukanin	55	1	1,207.00	0
3 Aug	Zapadni	51	0	1,258.00	0
5 Aug	Polovina	76	0	1,334.00	0
6 Aug	Lukanin	68	0	1,402.00	0
7 Aug	Zapadni Sands	59	1	1,462.00	0
7 Aug	Little Zapadni	28	0	1,490.00	0

Dates	Location	No. Seals Killed		Running Total	Hyper-thermia
8 Aug	Gorbach	100	1	1,591.00	0
	TOTAL	1588	3	1,591.00	12

Table 2: Summary of environmental conditions during the 1996 fur seal harvest on St. Paul Island, Alaska.

Date	Location	Air Temp Fahrenheit	Precipitation	Wind Knots and (Direction)	Cloud Cover
26 June	Gorbatch	NT	misty	NT	complete
27 June	Polovina	45	none	4 (S)	complete
1 July	Zapadni	50	none	10 (S)	complete
9 July	Gorbatch	44	misty	20 (NE)	complete
10 July	Lukanin	48	misty	20 (NE)	complete
16 July	Polovina	48	misty	13 (S)	complete
17 July	Lukanin	49	none	12 (S)	complete
18 July	Zapadni	48	misty	15 (N)	complete
19 July	Gorbatch	50	misty	10 (WNW)	complete
20 July	Kitovia	50	misty	10 (S)	complete
22 July	Polovina	NT	misty	NT	complete
23 July	Lukanin	50	misty	8 (SW)	complete
24 July	Zapadni Sands	50	none	19 (NT)	partly sunny
25 July	Gorbatch	49	misty	13 (S)	complete
26 July	Kitovia	52	none	6 (S)	partly sunny
27 July	Zapadni	50	rain	17 (E)	complete
28 July	Polovina	49	none	9 (NT)	complete
31 July	Gorbatch	51	misty	15 (SW)	complete
1 Aug	Zapadni Sands	54	none	20 (SW)	complete, high
2 Aug	Lukanin	51	none	9 (SW)	complete, high
3 Aug	Zapadni	50	none	8 (SW)	complete, high
5 Aug	Polovina	48	none	12 (S)	complete
6 Aug	Lukanin	48	none	10 (ENE)	partly sunny
7 Aug	Zapadni Sands	48	misty	11 (SW)	complete
7 Aug	Little Zapadni	48	misty	11 (SW)	complete
8 Aug	Gorbatch	50	misty	15 (W)	complete

Table 3: Summary of activity during the drive of the fur seals to the harvest area during the subsistence harvest, St. Paul Island, Alaska 1996.

Date	Location	Duration of Drive (Minutes)	Estimated Distance of Drive Yards	Estimated Speed of Drive Yards/Min	Terrain Type	Terrain Moisture
26 June	Gorbatch	18.00	150.00	8.00	+	wet
27 June	Polovina	7.00	175.00	25.00	+	wet
1 July	Zapadni	24.00	300.00	13.00	++	dry/wet
9 July	Gorbatch	5.00	150.00	30.00	+	wet
10 July	Lukanin	7	250	38	+	wet
16 July	Polovina	10	175	18	+	wet
17 July	Lukanin	8	185	33	+	wet
18 July	Zapadni	15	350	23	++	dry/wet
19 July	Gorbatch	4	100	25	+	wet
20 July	Kitovia	14	100	7	+	wet
22 July	Polovina	11	200	18	+	wet
23 July	Lukanin	8	250	31	+	wet
24 July	Zapadni Sands	9	185	21	+	wet
25 July	Gorbatch	7	200	29	+	wet
26 July	Kitovia	11	150	14	+	wet
27 July	Zapadni	14	250	18	++	dry/wet
28 July	Polovina	6	150	25	+	wet
31 July	Gorbatch	8	200	25	+	wet
1 Aug	Zapadni Sands	6	200	33	+	dry
2 Aug	Lukanin	8	175	22	+	wet
3 Aug	Zapadni	11	215	22	+	dry
5 Aug	Polovina	7	200	29	+	dry
6 Aug	Lukanin	7	250	38	+	dry
7 Aug	Zapadni Sands	7	150	21	+	wet
7 Aug	Little Zapadni	9	100	11	+	wet
8 Aug	Gorbatch	7	150	21	+	wet

Table 4: Summary of deep body core temperatures and number of animals dying from hyperthermia during the 1996 Northern fur seal subsistence harvest on St Paul Island.

Date	Location	End of Drive To Start of Harvest (Minutes of rest)	Average Deep Body Core Temperature			Number of Deaths due to Hyperthermia
			First 1/3	Middle 1/3	Last 1/3	
26 June	Gorbatch	8	NT	NT	NT	0
27 June	Polovina	4	NT	NT	NT	1
1 July	Zapadni	17	NT	NT	NT	10
9 July	Gorbatch	13	100.40	100.80	102.70	0
10 July	Lukanin	15	100.10	101.60	102.40	0
16 July	Polovina	15	101.4	101.4	102.3	0
17 July	Lukanin	19	102	100.9	103.5	0
18 July	Zapadni	11	101.8	101.3	102.2	0
19 July	Gorbatch	14	100.3	102.9	103.5	0
20 July	Kitovia	8	102.9	102.8	104.8	0
22 July	Polovina	10	100.8	101.5	103.4	0
23 July	Lukanin	15	101.7	101.9	103.3	0
24 July	Zapadni Sands	9	103	103.2	103.9	1
25 July	Gorbatch	4	101.3	102.2	101.3	0
26 July	Kitovia	17	101.3	NT	103.6	0
27 July	Zapadni	10	100.8	103.8	NT	0
28 July	Polovina	7	102.3	101.9	103.2	0
31 July	Gorbatch	4	100.9	NR	101.6	0
1 Aug	Zapadni Sands	10	102.6	103.9	103	0
2 Aug	Lukanin	7	102.9	104	103.1	0
3 Aug	Zapadni	4	103.1	NR	102.2	0
5 Aug	Polovina	7	101.8	104	103.7	0
6 Aug	Lukanin	10	103.6	102.7	102.4	0
7 Aug	Zapadni Sands	4	102.7	103.4	104.7	0
7 Aug	Little Zapadni	5	NR	102.4	102.3	0
8 Aug	Gorbatch	6	101.9	103.3	102.1	0

NR = No Temperature Recorded

Table 5: Summary of the rate of kill of Northern Fur seals during the 1996 subsistence harvest on St. Paul Island.

Date	Location	Number Killed	Length of Time of Harvest (Minutes)	Average No. Animals Killed per Minute
26 June	Gorbatch	34	14	2.4
27 June	Polovina	67	36	1.9
1 July	Zapadni	12	38	0.3
9 July	Gorbatch	80	103	0.8
10 July	Lukanin	69	67	1
16 July	Polovina	99	108	0.9
17 July	Lukanin	73	59	1.2
18 July	Zapadni	63	60	1
19 July	Gorbatch	80	79	1
20 July	Kitovia	53	65	0.8
22 July	Polovina	67	74	0.9
23 July	Lukanin	64	64	1
24 July	Zapadni Sands	51	32	1.5
25 July	Gorbatch	99	84	1.2
26 July	Kitovia	27	33	0.8
27 July	Zapadni	18	20	0.9
28 July	Polovina	65	48	1.4
31 July	Gorbatch	76	58	1.4
1 Aug	Zapadni Sands	44	25	1.8
2 Aug	Lukanin	55	36	1.6
3 Aug	Zapadni	51	27	1.9
5 Aug	Polovina	76	45	1.7
6 Aug	Lukanin	68	47	1.4
7 Aug	Zapadni Sands	60	30	2
7 Aug	Little Zapadni	28	8	3.5
8 Aug	Gorbatch	101	60	1.7