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Please find enclosed the Humane Observer Report for the 1988 Northern fur seal harvest. Overall the harvest went well.

The gastric ulcer paper is coming along fine. I think it will be an important contribution to the literature. So far I have found little information on this subject in fur seals.

Thank you for allowing Darlene and me to work with you during the harvest. We not only learned a lot but had a great time. Tell your family hello. I hope we can work with you again next summer.

Sincerely,



Terry R. Spraker, DVM, PhD
Pathologist

Enclosure

TRS:mjl

H.O.
Report

HUMANE OBSERVER REPORT
Northern Fur Seal Subsistence Harvest
St. Paul Island, Alaska
July - August, 1988
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; thus a subsistence harvest began with only immature males taken for food. This subsistence harvest has continued for the last five years (1984 - 1988). The harvest is a remarkably well planned and orderly procedure. The young male seals are gathered, driven from their haulout area and held in a large pod. Five to 15 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 in the upper neck with a solid wooden club. The animals are dragged a short distance away from the killing area, and a person cuts the chest and heart open. The animal is skinned and then 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 1986. This report will be limited to my observations of the humane activities of the harvest procedure for the time period of July and August 1988.

Multiple factors were evaluated during this harvest. These factors include: environmental conditions, methods of gathering and herding of animals and the harvesting of animals. These three

areas will be discussed separately.

Fur seals (Callorhinus ursinus) were harvested from 18 July through 8 August 1988 from six haulout areas (Gorbatch, Lukanin, Polovina, Zapadni, Northeast Point, Ketovia). A total of 1145 subadult males were taken. No females were harvested (Table 1).

Environment condition

The environmental conditions of the harvest were monitored. These included the average air temperature, degree of precipitation, wind and cloud cover. The air temperature was taken when the drive began and when the harvest ended and then averaged. The temperature ranged from 47°F to 64°F with an overall average of 50.3°F. Rain occurred once during the harvest, it was misty three times, and no precipitation was observed seven times. A moderate breeze was present three days and no wind was present eight days. Cloud cover was heavy most of the time (six days); light and high four days, sunny only once (Table 2). Overall the weather conditions were a little warmer as compared to last year.

Gathering of animals

The gathering of the animals was started in the morning (from 9:30 - 10:30 a.m.). Ten to 15 men would go to a specific haulout area and quickly form a line to prevent the seals access to the ocean. Then they herded the seals into several pods and drove them to the killing field. The estimated distance of the drive ranged from 100 to 400 yards and took approximately eight to 15 minutes. The animals were driven an average of approximately 16

to 17 yards/minute. The animals were sometimes rested during this drive. The drives were a little slower this year as compared to last year (19 yards/minute for 1987).

An estimated difficulty of the drive was used on a scale from +, ++, +++, with + being the easiest, to +++ 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. The degree of wetness to the grass/terrain was monitored and estimated. This was believed to be important, but the degree of importance was difficult to ascertain (Table 3).

No cases of hyperthermia were observed during the drives. One animal was found down during the drive on Gorbatch, 18 July 88. This animal was found down at the bottom of a small drop-off point about two and a-half feet high. This subadult male did show signs of opisthotonos and tremors for a few minutes. He was allowed to rest for ten to 15 minutes and, after recovering, went back down to the water. It was speculated that this animal sustained a mild degree of head trauma during the drive and the pile-up of animals as they had to jump this two and a-half foot cliff.

My only suggestion in this area is to drive the animals slower, especially uphill. During the 1984 and 1985 harvest, drives were recorded and they were much slower than the drive times observed for the last two years. The reason for this was undetermined. One problem noticed was that the young boys who helped during the drive would occasionally harass the seals more than necessary. This has been a problem for the last two years.

Harvesting period

The harvesting period was characterized by holding the animals in a large pod approximately 30 to 40 yards from the stunning area. Two to three young boys usually held the seals, and one to two men would cut out a small pod and drive them to three or four men that did the stunning. The overall pod size averaged eight animals, and approximately three animals were killed per pod. Animals were killed by hitting them on the skull at the level of the ears or over the 1st/2nd cervical vertebra. The majority of times, the animals were hit just once. These animals would immediately drop. The animal was then 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 last year.

In regard to the animals that received double-hits and hits-escaped, it seemed as if a good percentage of them occurred when two animals were hit at one time. This could be reduced by taking a little more time to isolate the animal before stunning it. It also seemed that more double-hits/hits-escaped occurred when pod sizes were larger. Thus, taking more time to isolate animals prior to stunning and having fewer animals in the pod would be helpful. One comment about this by most humane observers in the past is the inexperience of the stunner. They said the inexperienced caused a big problem with stunning. I am sure that experience does play a role, but what I observed was that the inexperienced stunner took fewer animals than the experienced ones. As the

inexperienced stunners spent more time on the killing line, he began to kill more animals. Experience does play a factor, but taking more time to isolate animals and having smaller pod sizes would decrease the number of double-hits and hits-escaped for both experienced and inexperienced stunners.

Another problem I observed during this period was that sometimes the large pod holders would seem to get bored and sometimes harass the seals more than necessary to hold them or they would not pay attention to them and have to keep herding them back into the main pod. One suggestion here is to make sure the pod holders stay attentive and watch the seals a little closer. This has also been a problem for the last two years.

Deep body core temperatures of the animals were taken throughout the harvest from the first animal killed to the last. About 10 to 20% of the animals were checked. The temperatures were then divided into the first-half and second-half of the harvest for each day. The average body temperatures are presented in Table 4. Average temperatures ranged from 100.9 to 105.1 F. On two days when the environmental temperature was above 50° F (Zapadni, 23 July; Northeast Point, 30 July), some of the harvested animals had a temp of 105° F, and above. During the harvest on Zapadni, 23 July, the environment temperature was 62° F. One animal was found in the large holding pod in a coma, and its temperature was greater than 107° F. This animal was killed. The herd was allowed to rest and, since only ten more animals were needed, they were allowed to kill these and then the harvest was stopped for that day.

Suggestions I have in this area are that the animals should

be rested 10 to 15 minutes before the harvest begins, and during the harvest the large seal pod should be held "loosely" and not crowded too close together. If the environmental temperature is 60° F, the harvest should be canceled.

Health status

The health status of the animals was evaluated by examining viscera and carcasses throughout the harvest. Stomachs (447) were opened and checked for parasites and ulcers. These gastric parasites were Contracaecum sp. and Anisakis sp. These have been reported previously in fur seals. The parasite load of the stomachs was light in 442, moderate in one and heavy in three. A light load was considered to be from one to 25 parasites, 26 to 100 was moderate and over 100 was considered heavy. An ulcer was defined as a grossly visible crater in the gastric mucous at least 2mm in diameter. Using the definition of an ulcer, 194 animals (43.9%) had gastric ulcers. The significance of this finding was not determined. Nearly all animals had tapeworms in the caecum. These too seemed to cause little harm. One myxosarcoma was found in one subadult male on Zapadni, 6 August, and one animal had a hemorrhagic adrenal gland (Zapadni, 6 August). Two animals had abscesses in the subcutaneous tissue; probably secondary to bite wounds. In general, these harvested animals seem to be in good body condition and healthy.

In summary the harvest went well and was done in an orderly and humane fashion. Suggestions for future harvest include:

- 1) Drive the animals slower to the killing field.

- 2) Do not unnecessarily harass the seals during the drive.
- 3) Rest the animals 10 to 15 minutes prior to the harvest.
- 4) Do the harvest in the morning; thus avoiding warmer afternoon environmental temperatures.
- 5) Drive smaller pods to the stunner. Five to seven animals are good, but not 10 to 15 animals at a time.
- 6) Take a little more time to isolate the selected animals to be killed.
- 7) If environmental temperatures are 55° to 60° F, give the seals frequent rests during the drive and keep the holding pods loose. If environmental temperatures are 60° F or above, do not have a harvest.

REFERENCES

1. Dorsey, A.S. 1986. Humane Observer Report Pribilof Island Fur Seal Harvest.
2. Letcher, J.D. 1985. Humane Observer Report Pribilof Fur Seal Harvest.
3. Spraker, T.R., 1987. Humane Observer Report Pribilof Fur Seal Harvest.
4. Stoskopf, M.K., 1984. Humane Observer Report Pribilof Fur Seal Harvest.
5. Zimmerman, S.T., and J.D. Letcher. 1986. The 1985 subsistence harvest of northern fur seals, Callorhinus ursinus, in St. Paul Island, Alaska. Marine.

Table 1. Dates, location of and number of subadult Callorhinus ursinus harvested for subsistence in St. Paul Island, Alaska, 1988.

Dates	Location	Total # Seals Killed	
		Males	Females
18 July	Gorbatch	88	0
20 July	Polovina	115	0
23 July	Zapadni	78	0
25 July	Lukanin	54	0
27 July	Gorbatch	59	0
30 July	Northeast Point	58	0
1 August	Zapadni	62	0
2 August	Polovina	62	0
4 August	Ketovia	81	0
5 August	Northeast Point	129	0
6 August	Zapadni	105	0
8 August	Gorbatch	<u>254</u>	<u>0</u>
Total:		1,145	0

Table 2. Summary of environmental conditions during the 1988 subsistence harvest, St. Paul Island, Alaska.

Date	Location	Air temp. (° F)	Precipitation	Wind	Cloud Cover
18 July	Gorbatch	50 ^c	Misty	Moderate	Heavy
20 July	Polovina	48 ^o	None	None	High
23 July	Zapadni	64 ^o	None	None	Sunny
25 July	Lukanin	44 ^c	None	Moderate	Heavy
27 July	Gorbatch	47 ^c	None	None	Heavy
30 July	Northeast Point	52 ^c	None	None	High/Thin
1 Aug	Zapadni	50 ^c	None	None	High/ Overcast
2 Aug	Polovina	49 ^c	Misty	None	Low/Heavy
4 Aug	Ketovia	49 ^o	Light	Moderate	Low/Heavy
5 Aug	Northeast Point	52 ^c	None	None	High
6 Aug	Zapadni	48 ^c	Misty	None	Low/Heavy
8 Aug	Gorbatch	NT	NT	NT	NT

NT=Not Taken

Table 3. Summary of data for the humane gathering of subadult Northern fur seals during the 1988 harvest on St. Paul Island, Alaska.

Date	Location	Avg. time of drive (mins)	Estimated Distance (yards)	Estimated Time (yds/mins)	Terrain Type	Terrain Moisture
18 July	Gorbatch	6	100	17	++	Moist
20 July	Polovina	8	150	19	+	Moist
23 July	Zapadni	13	150	12	++	Dry
25 July	Lukanin	15	200	13	+++	Moist
27 July	Gorbatch	7	150	21	++	Moist
30 July	Northeast Point	12	175	15	++	Dry
1 Aug	Zapadni	11	150	14	++	Wet
2 Aug	Polovina	10	220	22	+	Wet
4 Aug	Ketovia	10	100	10	++	Wet
5 Aug	Northeast Point	15	400	27	+	Dry
6 Aug	Zapadni	15	150	10	++	Wet
8 Aug	Gorbatch	NT	NT	NT	NT	NT

NT=Not Taken

Table 4. Summary of the time interval between the end of the drive and starting of harvest, body temperatures, length of times of harvest and rate of kill.

Date	Location	End of Drive to Start of Harvest (min)	Average Deep Body Core Temperature		Length of Time of Harvest (min)	Average Animals Killed (min)
			1st half	2nd half		
18 July	Gorbatch	6	102.6	102.8	119	.74
20 July	Polovina	6	100.7	102.2	76	1.5
23 July	Zapadni	9	103.1	105.1	73	1.1
25 July	Lukanin	7	101.6	102.3	109	.50
27 July	Gorbatch	5	100.9	101.2	80	.74
30 July	Northeast Point	11	104.1	103.3	62	.94
1 Aug	Zapadni	40*	101.1	103.1	64	.97
2 Aug	Polovina	3	102.3	102.9	81	.77
4 Aug	Ketovia	1	102.0	100.4	109	.74
5 Aug	Northeast Point	5	102.1	101.6	145	.89
6 Aug	Zapadni	5	102.0	101.9	85	1.2
8 Aug	Gorbatch	NT	NT	NT	NT	NT

NT=Not Taken