UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

October 22, 1991

Dr. Terry Spraker
College of Veterinary Medicine
Diagnostic Laboratory
Colorado State University
300 Drake Street
Fort Collins, Colorado 80523

Dear Terry:

Thanks for sending the Humane Observer Report for the 1991 harvest. It looks very well done and I appreciate the effort you put into it. I certainly hope you can continue with us next year.

Look forward to seeing you in Anchorage during the first week of November.

Sincerely,

Steven T. Zimmerman, Ph.D., Chief
Protected Resources Management Division

September 23, 1991

Dr. Steve Zimmerman
NOAA, National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802-1668

Dear Dr. Zimmerman:

Please find enclosed the Humane Observer Report for the 1991 Northern fur seal harvest on St. Paul Island, Alaska. Overall the harvest went well.

Thank-you for allowing me to work with Brad Hanson during the harvest. Tell your family hello. Hope to work with you and Brad again next summer.

Sincerely,

Terry R. Spraker, DVM, Ph.D., DACVP
Pathologist

Encl.
TRS/cle

HUMANE OBSERVER REPORT
Northern Fur Seal Subsistence Harvest
St. Paul Island, Alaska
July-August, 1991

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 Privilovians 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 eight years (1984-1991). The harvest is a remarkably well planned and orderly procedure. The young male seals are gathered by driving them from their haul out area 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 animal is 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 1991.

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.

Fur seals (Callorhinus ursinus) were harvested from 1 July through 7 August 1991 from six haul out areas (Gorbatch, Reef [Castle Rock], Lukanin, Polovina, Zapadni and Northeast Point). A total of 1645 animals were killed this year including one female from Gorbatch on 7 August, 1991. The remaining 1644 were subadult males ranging in age from 2 to 4 years (Table 1).

ENVIRONMENTAL CONDITION

The environmental conditions of the harvest 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 47°F to 63°F, with an overall average of 50°F. Rain occurred only once during the harvest and it was misty 13 times. A mild to moderate breeze was present 17 days and no wind was present 4 days. Cloud cover was heavy most of the time (15 days), light to high 4 days and sunny 2 days (Table 2). Overall the temperatures were a little warmer as compared to previous years.

GATHERING OF ANIMALS

The gathering of the animals was started in the morning from 10:30 to 11:00 am. Ten to fifteen men would go to a specific haul out area and quickly form a line along the shore line to prevent the seals access to the ocean. They then herded the seals into several pods and drove them to the killing field. The estimated distance of the drive ranged from 150 to 400 yards and the animals were driven an average of 21 yards/minute. The animals were sometimes rested during this drive. The drives were about the same speed this year as compared to previous years.

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. 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 (Table 3).

HARVESTING PERIOD

The harvesting period was characterized by holding the animals in a large pod approximately 30 to 40 yards from the stunning area.

While a few young boys held the seals, one to two men would cut out a small pod and drive them to the stunners (usually 3 to 4 men). The overall pod size averaged eight animals. 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 and were 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 the animals were taken throughout the harvest from the first animal killed to the last. About ten percent of the animals were checked. 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 from 99.8°F to 106.6+°F. Sixteen animals died in the holding pods or were killed because they had a deep body core temperature of 106.6°+F causing them to be hyperthermic.

Hyperthermia has been a problem for the last six years. About 0.5% to 1% of the animals harvested died or were killed because of hyperthermia. Hyperthermia is due to overheating associated with the activity of the animals. Predisposing factors include warm environmental temperatures, lack of cloud cover, no mist, dry grass, animals being driven too fast (especially uphill), long drives, being held too tight in large pods, and having too much activity or moving around too much in the large holding pods. I believe another predisposing factor to be the amount of rest an animal has had before the drive. For example, an animal that has just arrived on the rookery 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. The bottom line is that hyperthermia is a continuing problem. To avoid this problem

animals need to be driven slowly, rested at least 10-15 minutes after the drive and the holding pods should be kept loose. If the environment temperature is 55°F, great care has to be taken during the harvest and if the temperature is ≥60°F, no cloud cover, wind or mist, the harvest should not be done that day.

HEALTH STATUS

The health status of the animals was evaluated by examining viscera and carcasses throughout the harvest. Stomachs (1246) 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 parasite load in the stomachs was light in 1130, moderate in 6 and heavy in 1. No parasites were found in 109 stomachs. A light load was considered to be from 1 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 1-2 mm in diameter. Using this definition of an ulcer, 460 animals (36.9%) had gastric ulcers. Stomachs contained squid beaks (39), pollock otoliths (5), crab (2), unidentified otoliths (1), unidentifiable material (5), seaweed (1), and wood (1). Two animals had abscesses in the subcutaneous tissues; probably secondary to bite wounds. One "orange" animal was killed on Gorbatch. The reason for this orange discoloration to the blubber was not determined, but was probably due to some type of metabolism defect within the animal or diet. One animal had a small tumor of the skin and one seal had been contaminated with oil. This animal had small tar balls on the hair of the chest. In general, the harvested animals seemed to be in fair body condition and healthy.

SUMMARY

In summary the harvest went well and was done in an orderly and humane fashion. Points to be remembered during the harvest

include:

1. Drive the animals slowly 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°F to 60°F, give the seals frequent rests during the drive and keep the holding pods loose. If environmental temperature is 60°F or above, do not have a harvest.
8. Stunners should not hit older seals in the mouth breaking teeth. When bulls need to be hit in the small pods they should be hit in the neck.
9. Try to "weed out" older bulls during the drive.

REFERENCES

1. Dorsey, A.S., 1986. Humane Observer Report, Pribilof Island Fur Seal Harvest. National marine Fishery, Juneau Alaska.
2. Letcher, J.D., 1985. Humane Observer Report, Pribilof Fur Seal Harvest, National Marine Fishery, Juneau, Alaska.
3. Spraker, T.R., 1987. Humane Observer Report, Pribilof Fur Seal Harvest, National Marine Fishery, Juneau, Alaska.
4. Spraker, T.R., 1988. Humane Observer Report, Pribilof Fur Seal Harvest, National Marine Fishery, Juneau, Alaska.
5. Spraker, T.R., 1989. Humane Observer Report, Pribilof Fur Seal Harvest, National Marine Fishery, Juneau, Alaska.
6. Spraker, T.R., 1990. Humane Observer Report, Pribilof Fur Seal Harvest, National Marine Fishery, Juneau, Alaska.
7. Stoskopf, M.K., 1984. Humane Observer Report, Pribilof Fur Seal Harvest.
8. Zimmerman, S.T., and J.D. Letcher, 1986. The 1985 Subsistence Harvest of Northern Fur Seals, Callorhinus ursinus, in St. Paul Island, Alaska. National Marine Fishery, Juneau, Alaska.

Table 1: Summary of date, location and number of fur seals killed during each harvest on St. Paul Island, Alaska during the year 1991.

Dates	Location	No. Seals Killed		Running Total
		Males	Females	
1 July	Gorbatch	49	0	49
2 July	Zapadni	38	0	87
8 July	Polovina	24	0	111
8 July	Gorbatch	53	0	164
9 July	Zapadni	81	0	245
10 July	Lukanin	32	0	277
15 July	Gorbatch	94	0	371
16 July	Zapadni	91	0	462
17 July	Polovina	79	0	541
18 July	Lukanin	46	0	587
20 July	Gorbatch	124	0	711
23 July	Zapadni	86	0	797
24 July	Polovina	59	0	856
25 July	Lukanin	59	0	915
26 July	Castle Rook/Reef	97	0	1012
27 July	Northeast Point	134	0	1146
31 July	Gorbatch	94	0	1240
3 Aug	Zapadni	148	0	1388
5 Aug	Polovina	79	0	1467
6 Aug	Lukanin	69	0	1536
7 Aug	Gorbatch	108	1	1645

Table 2: Summary of environmental conditions during the 1991 fur seal harvest on St. Paul Island, Alaska.

Date	Location	Air temp. °F	Precipitation	Wind	Cloud Cover
1 July	Gorbatch	48	None	Light	Sunny
2 July	Zapadni	51	Misty	Light	Heavy
8 July	Polovina	50	Misty	Calm	Heavy
8 July	Gorbatch	50	Misty	Calm	Complete
9 July	Zapadni	48	Misty	Calm	Complete
10 July	Lukanin	48	Misty	Light	Complete
15 July	Gorbatch	48	Misty	Breezy	Complete
16 July	Zapadni	49	None	Breezy	Light
17 July	Polovina	48	Misty	Breezy	Heavy
18 July	Lukanin	50	Misty	Breezy	Heavy
20 July	Gorbatch	48	Misty	Breezy	Heavy
23 July	Zapadni	45	Misty	Breezy	Heavy
24 July	Polovina	45	None	Calm	Sunny
25 July	Lukanin	48	Misty	Breezy	Light
26 July	Castle Rock/ Reef	50	None	Breezy	Heavy
27 July	Northeast Point	50	None	Breezy	Heavy
31 July	Gorbatch	51	Misty	Breezy	Heavy
3 Aug	Zapadni	48	Misty	Breezy	Heavy
5 Aug	Polovina	49	None	Breezy	Moderate/ High
6 Aug	Lukanin	51	None	Breezy	Light
7 Aug	Gorbatch	48	Rain	Breezy	Heavy

Table 3: Summary of activity during the drive of the fur seals to the harvest area during the subsistence harvest, St. Paul Island, Alaska 1991.

Date	Location	Duration of Drive	Estimated Distance of Drive	Estimated Speed of Drive	Terrain Type	Terrain Moisture
1 July	Gorbatch	11	200	NT	++	Dry
2 July	Zapadni	21	400	NT	++	Wet
8 July	Polovina	25	200	8	+	Wet
8 July	Gorbatch	10	200	20	++	Wet
9 July	Zapadni	35	400	11	++	Wet
10 July	Lukanin	13	300	23	++	Wet
15 July	Gorbatch	10	300	30	++	Wet
16 July	Zapadni	25	400	16	++	Wet
17 July	Polovina	8	150	19	+	Wet
18 July	Lukanin	10	250	25	++	Wet
20 July	Gorbatch	10	300	30	++	Wet
23 July	Zapadni	12	400	33	++	Wet
24 July	Polovina	7	150	21	+	Wet
25 July	Lukanin	9	250	28	++	Wet
26 July	Castle Rock Reef	24	300	13	+	Moist
27 July	Northeast Point	19	400	21	+	Wet
31 July	Gorbatch	15	200	20	+	Wet
3 Aug	Zapadni	17	250	15	++	Wet
5 Aug	Polovina	14	250	18	+	Moist
6 Aug	Lukanin	16	350	22	++	Moist
7 Aug	Gorbatch	10	300	30	++	Wet

Table 4: Summary of deep body core temperature and number of animals suffering from hyperthermia during the 1991 fur seal subsistence harvest on St. Paul Island.

Date	Location	End of Drive To Start of Harvest (Min. of Rest)	Average Deep Body Core Temperature			Number of Deaths due to Hyperthermia
			First 1/3	Middle 1/3	Last 1/3	
1 July	Gorbatch	13	NR	NR	NR	7
2 July	Zapadni	10	NR	NR	NR	0
8 July	Polovina	5	102.5	102.4	100.0	0
8 July	Gorbatch	7	102.1	102.5	102.1	0
9 July	Zapadni	12	102.4	102.4	103.8	0
10 July	Lukanin	7	102.4	104.0	102.4	0
15 July	Gorbatch	4	100.4	100.2	102.2	0
16 July	Zapadni	15	102.0	101.0	102.0	0
17 July	Polovina	2	102.9	103.3	102.5	0
18 July	Lukanin	5	101.6	100.6	101.5	0
20 July	Gorbatch	10	101.8	102.1	107.0	2
23 July	Zapadni	10	100.2	99.3	101.1	0
24 July	Polovina	4	100.9	102.3	104.5	0
25 July	Lukanin	20	102.5	101.3	102.2	0
26 July	CR/R	12	102.4	102.2	102.0	2
27 July	Northeast Point	14	101.4	103.8	103.9	1
31 July	Gorbatch	5	101.2	101.5	101.5	0
3 Aug	Zapadni	17	101.7	101.9	101.4	0
5 Aug	Polovina	10	103.2	105.1	104.2	3
6 Aug	Lukanin	9	103.8	105.1	103.7	1
7 Aug	Gorbatch	19	101.4	101.7	102.2	0

NR = Not Recorded

Table 5: Summary of the rate of kill of Northern Fur seals during the 1991 subsistance harvest on St. Paul Island.

Date	No. Killed	Length of Time of Harvest	Average No. Animals Killed per Minute
1 July	49	92	.53
2 July	38	64	.59
8 July	24	40	.60
8 July	53	53	1.00
9 July	81	123	.66
10 July	32	37	.86
15 July	94	106	.89
16 July	91	108	.84
17 July	79	95	.83
18 July	46	46	1.00
20 July	124	116	1.10
23 July	86	118	7.30
24 July	59	60	1.00
25 July	59	98	.60
26 July	97	128	.76
27 July	134	150	.89
31 July	94	115	.82
3 Aug	148	113	1.30
5 Aug	79	70	1.10
6 Aug	69	93	.74
7 Aug	109	115	.95

NR = Not recorded