The Subsistence Harvest of Subadult Northern Fur Seals on St. Paul Island, Alaska in 2014

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by
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INTRODUCTION

The subsistence harvest of northern fur seals on the Pribilof Islands (St. Paul and St. George), Alaska is ruled by regulations (50 CFR 216.71-.74) established under the Fur Seal Act (FSA) and Marine Mammal Protection Act (MMPA). The regulations impose a number of restrictions on the harvest of fur seals and were developed to transition from a commercial harvest to a subsistence harvest. On St. Paul Island the subsistence harvest for fur seal meat began in 1985 when the commercial harvest for seal pelts ceased (50 FR 27914, July 8, 1985). Regulations allow subadult male fur seals (2-4 years old) to be taken for food during the subsistence harvest season. The harvest has occurred annually since 1985 and fur seal meat continues to be an important traditional food for Unangan (Aleuts) of St. Paul Island. However, the regulations governing the subsistence taking of northern fur seals on the Pribilof Islands under the FSA do not accommodate Unangan customary practices of hunting fur seals and our community's changing subsistence needs. Unangan are striving to reintroduce traditional hunting and management methods through modifications of the current harvest regulations. Regulation changes will need to balance the community's subsistence needs and the National Marine Fisheries Service's (NMFS) responsibility for protecting marine mammals and the Alaska Native exception for subsistence. To safeguard the existence of the northern fur seal, the Aleut Community of St. Paul Island (a federally recognized tribe) and NMFS entered into a co-management agreement in June 2000, and have since been working together to establish a process of shared local responsibilities regarding the management and research of fur seals. Harvest regulations require NMFS to publish a summary of the harvests every three years and a discussion on the number of seals expected to be harvested annually over the next three years to satisfy the subsistence requirements of St. Paul Island. Since 2001 the Aleut Community of St. Paul Island has compiled and prepared harvest summary reports (Lestenkof et al., 2013; Lestenkof et al., 2012; Lestenkof et al., 2011; Zavadil et al., 2011; Zavadil, 2010; Zavadil, 2008; Lestenkof and Zavadil, 2007; Lestenkof and Zavadil, 2006; Lestenkof et al., 2006; Malavansky et al., 2004; Zavadil and Lestenkof, 2003; Lestenkof and Zavadil, 2002; and Lestenkof and Zavadil, 2001) for NMFS, an important element of the co-management agreement. In this report the Aleut Community of St. Paul Island describes the subsistence harvest of subadult northern fur seals on St. Paul Island, Alaska in 2014.

METHODS

The subsistence harvest method involves organized herding of subadult male northern fur seals. Male fur seals are gathered by driving them from their haulout areas to a specific killing field where they are held in a large group. Five to ten seals are then separated from this large group and driven to a group of three to four men who stun the seals by hitting them on the skull or upper neck with a solid wooden club. The seals are dragged a short distance away from the killing area where the chest and heart are cut open, completing the process of humane killing. The seals 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 and Letcher, 1986; and Spraker, 1987-2010.

In recent years harvests have been scheduled to occur on a weekly basis during the 23 June to 08 August season, and daily near the end of the season. The Ecosystem Conservation Office (ECO) of the Aleut Community of St. Paul Island Tribal Government takes requests for seals on the day of the scheduled harvest (before the roundup of subadult males from the haulout) and works with the harvest foreman and volunteer sealers to fulfill the community's subsistence needs. ECO monitored and performed the humane observer functions in partnership with Dr. Terry Spraker for the 2014 subsistence fur seal harvest for the Aleut Community of St. Paul Island in accordance with the co-management agreement with NMFS. The Co-Director for ECO and Tanam Amgignaan (Island Sentinels) assessed, monitored and recorded the following factors during the 2014 harvest season: 1) number and sex of fur seals harvested, 2) methods of gathering and herding of fur seals, 3) environmental conditions, 4) deep body core temperatures of fur seals and cases of hyperthermia, 5) occurrence of male fur seals greater than 124.5 cm in length, 6) occurrence of flipper-tagged fur seals, 7) number of fur seals entangled in marine debris and the number of seals disentangled, 8) health status of fur seals and oil contamination of pelts, 9) incidence of by-products and waste during the harvest process, 10) research conducted during the harvest and visitors requesting to observe the harvest.

RESULTS

Number of Fur Seals Harvested

The subsistence harvest of northern fur seals occurred during seven harvests beginning on 02 July 2014 and ending on 08 August 2014. A total of 262 subadult male fur seals were harvested on St. Paul Island from four different haulout areas. Four female fur seals were accidentally struck and killed this season. No other mortality occurred during this year's harvest season (Table 1).

Table 1.--Date, location, and number of northern fur seals killed during the subsistence harvest on St. Paul Island, Alaska in 2014.

Date	Location	Number Males Killed	Number Females Killed
02 July	Polovina	26	0
18 July	Zapadni Sands	53	0
01 August	Polovina	48	0
04 August	Lukanin	21	0
06 August	Zapadni Sands	23	3
07 August	Morjovi	26	0
08 August	Polovina	65	1
Total		262	4

Gathering and Herding of Fur Seals

Five to ten volunteer sealers would go to a specific haulout area and quickly form a line along the shore to prevent fur seals access to the ocean. The seals were then gathered into one or two groups and herded to the killing field. Gathering of fur seals started between 08:37 and 09:54 at each harvest this season. The fur seals were usually rested during and immediately after herding. Drive durations ranged from 7 to 21 minutes with an average duration of 11 minutes (Appendix 1). The terrain type and degree of wetness of the grass was estimated and recorded, since wet grass is believed to be an important cooling factor for fur seals. The grass was wet for five of the harvest days and damp for two of the harvest days (Table 2). The rest durations (after herding) ranged from 1 to 15 minutes with an average duration of 8 minutes (Appendix 1).

Table 2.--Date, location, terrain type and wetness of grass during the drive of northern fur seals to the killing field during the subsistence harvest on St. Paul Island, Alaska in 2014.

Date	Location	Terrain Type; Wetness of Grass
02 July	Polovina	Up hill sandy/dirt, flat grass; Wet
18 July	Zapadni Sands	Flat sandy, flat grass, up hill grass, flat grass; Wet
01 August	Polovina	Up hill sandy/dirt, flat grass; Damp
04 August	Lukanin	Up hill sandy/dirt, flat grass; Wet
06 August	Zapadni Sands	Flat sandy, flat grass, up hill grass, flat grass; Wet
07 August	Morjovi	100 yards flat terrain with tussocks, 50 yards flat grass; Damp
08 August	Polovina	Up hill sandy/dirt, flat grass; Wet

Environmental Conditions

The following environmental conditions were monitored during each harvest: air temperature, wind speed and direction, and weather conditions. Air temperature was taken before the herding of fur seals began and ranged from 45.9° F to 53.0° F, with an overall average temperature of 50.2° F. A breeze was present at all harvests. The wind speed varied from 1-3 mph to 8-12 mph with an overall average wind speed of 5-9 mph. Weather conditions were mostly ideal for fur seals with the exception of three higher temperature days on the 4th, 6th, and 8th of August. Fortunately we had stronger winds with fog, mist and drizzle for those days, which kept the fur seal body temperatures down (Table 3; Appendix 1).

Table 3.--Date, location, and summary of environmental conditions during the northern fur seal subsistence harvest on St. Paul Island, Alaska in 2014.

Date	Location	Air Temp. (F°)	Wind Speed/ Direction	Weather Conditions
02 July	Polovina	45.9	1-3 mph/ NE	Fog/mist
18 July	Zapadni Sands	49.2	4-7 mph/ SW	Fog/mist/drizzle
01 August	Polovina	51.0	4-7 mph/ NE	Clear
04 August	Lukanin	53.0	8-12 mph/ NE	Fog/mist
06 August	Zapadni Sands	53.0	8-12 mph/ S	Fog/mist/drizzle
07 August	Morjovi	46.0	4-7 mph/ S	Fog/mist/drizzle
08 August	Polovina	53.0	8-12 mph/ NE	Fog/mist

Deep Body Core Temperature and Hyperthermia

Deep body core temperatures were measured for approximately 15-54 percent of harvested fur seals during each harvest. Individual fur seals temperatures ranged from 97.0° F to 104.7° F with an overall average temperature of 101.8° F (Appendix 2). No cases of mortality due to hyperthermia were observed this season (Table 4; Appendix 1).

Fur seals can die due to hyperthermia (overheating) during herding of the seals to the killing field or anytime throughout the harvest period. The harvest method involves holding the animals in a large group approximately 10 to 20 yards from the stunning area. Factors that likely predispose fur seals to overheating include uncontrollable environmental conditions such as warm air temperatures, lack of cloud cover and/or mist, dry grass, and lack of wind. Other factors that may predispose fur seals to overheating include harvest methods such as the harvest crew herding fur seals too quickly (especially uphill), long drives from hauling grounds to killing fields, the harvest crew holding fur seals too tight in the large holding group, and the harvest crew moving seals in the large holding group too frequently. Another predisposing factor is the amount of rest a fur seal has had before being herded. For example, a fur seal that has just arrived on shore from a feeding trip may not be "fully rested" and, if subjected to a herding event, may become exhausted more quickly than a seal that has rested adequately prior to the roundup.

To avoid mortality from hyperthermia seals need to be driven slowly, given a chance to rest after the drive, and the holding groups should be kept loose so that the seals do not pile up on each other. The resting period duration should be determined based on the behavioral signs of the fur seals held in the group; once the seals do not exhibit early signs of hyperthermia (including flipper fanning, open mouth breathing, and lying down), subsequent harvest activities can commence. If a fur seal lags behind during the gathering period it should be allowed to leave the group and return to the haulout area. If harvestable-sized seals escape while attempting to release a lagging seal, the harvest crew should not attempt to re-herd them; the risk of lagging seals dying is greater than the loss of a few harvestable seals.

Table 4.--Date, location, average deep body core temperatures, and number of seals dying from hyperthermia during the northern fur seal subsistence harvest on St. Paul Island, Alaska in 2014.

Date	Location	Average Temperature (°F)	Number of hyperthermic animals
02 July	Polovina	102.6	0
18 July	Zapadni Sands	101.0	0
01 August	Polovina	102.7	0
04 August	Lukanin	101.1	0
06 August	Zapadni Sands	102.0	0
07 August	Morjovi	102.0	0
08 August	Polovina	101.9	0

Male Fur Seals Greater Than 124.5 cm in Length

Regulations require that only subadult male fur seals 124.5 cm or less in length may be harvested. This length has been associated with fur seals 4-years old and younger. During each harvest the ECO Co-Director and Tanam Amgignaa I measured a proportion of fur seals to the nearest 0.5-centimeter, from the tip of the nose to the tip of the tail, as an estimate of fur seal length. No fur seals greater than 124.5 cm in length were harvested (Appendix 3).

Flipper-Tagged Fur Seals

One subadult male with a yellow flipper tag 2649E on the left flipper was captured and released at Zapadni on 06 August 2014. No other tagged fur seals were sighted during this year's harvest (Appendix 1).

Fur Seal Entanglement and Disentanglement

Two entangled subadult male fur seals were observed during the 2014 subsistence fur seal harvest. ECO personnel were able to capture and disentangle one of the fur seals (Appendix 1). A Level A form was completed and submitted to the NMFS Alaska Regional Stranding Coordinator for the fur seal that was disentangled.

Health Status and Oil Contamination

The health status of fur seals was evaluated by examining the viscera and carcasses of harvested fur seals. All harvested fur seals appeared to be healthy, and no pelts were observed with oil contamination this harvest season.

By-products and Waste

Some fur seal pelts, esophagus and whiskers were taken for the creation of arts and crafts on St. Paul Island during this year's harvest. No waste occurred on the harvest field under 50 CFR §216 Subpart F.

Research and Harvest-Viewing Permits

Several research projects were conducted in conjunction with the 2014 subsistence fur seal harvest on St. Paul Island.

ECO collected body length measurements from a total of 89 fur seals (33 percent of total harvested). The overall fur seal length statistics were as follows: the minimum length was 92.9 cm, the maximum length was 124.0 cm, and the average length was 106.7 cm (Appendix 3).

In addition to length measurements, ECO collected canine teeth from 98 harvested fur seals for the National Marine Mammal Laboratory (NMML) (Appendix 3). NMML estimates the age composition of the harvest by aging the upper (and/or lower) canine teeth. In October 2013 Jim Thomason with NMML trained the ECO Co-Director and Tanam Amgignaan on how to age fur seal teeth, and left some known-age fur seal teeth in St. Paul for ECO's reference collection. ECO processed the canine teeth for NMML in September 2014, and the Tanam Amgignaan will age the teeth independently in St. Paul first, and then ship the teeth to NMML for validation by end of December 2014. The age data provided by NMML will be linked to the body length measurements collected to get length-at-age for each of the 89 fur seals that were sampled. Length-at-age data will be appended to this report when ECO receives NMML's age estimates.

This year ECO also collected blubber and liver tissue samples from six harvested subadult males for retrospective research on contaminant levels and animal health (Appendix 1). These samples were processed on island are currently being stored in ECO's freezer until future shipment off island. Tissue samples will be shipped to the Hollings Marine Laboratory in South Carolina to be archived in the National Marine Mammal Tissue Bank. Tissue samples will be provided to the bank through the Alaska Marine Mammal Tissue Archival Project (AMMTAP). AMMTAP will report scientific information resulting from analysis of tissues back to ECO.

A Memorandum of Agreement (MOA) was entered into with Dr. Bobette Dickerson with NMML for fur seal sample collection for prevalence of potentially reproductively harmful

diseases, contaminants, and isotope analysis.

A MOA was entered into with Dr. Terry R. Spraker with Colorado State University for two different projects: 1) determine the abundance and biodiversity of gastrointestinal parasites of the northern fur seals on St. Paul Island, and 2) study the anatomy and role of the respiratory diaphragm during breath holding diving mammals.

A MOA was entered into with Michael T. Williams from the National Marine Fisheries Service, Alaska Region to investigate the exposure of fur seals to Cesium-134 radiation from the Fukushima nuclear power plant accident and other radiation sources. Mr. Williams coordinated the project to allow Dr. Elizabeth Ruedig from Colorado State University to travel to St. Paul to collect tissues from harvested seals. This project was prompted by requests from the community members of St. Paul Island, led by Mr. Simeon Swetzof over concerns about the health of fur seals.

Per the MOAs with Dr. Dickerson, Dr. Spraker and Mr. Williams, all will provide an annual report to the Aleut Community of St. Paul Island Tribal Government of the results of the analyses of the tissues collected. The annual report will describe the study, analysis of samples, the results of analysis, progress of study, and any forecasted activities. Also included in the MOA is a statement that the researcher shall not interfere with the subsistence harvest process while collecting samples, and is subject to oversight by the Harvest Foreman and enforcement actions of the Tribal Enforcement Officers, which may include suspension of the collection of samples. Any questions regarding the above mentioned research projects and/or results should be addressed to Dr. Dickerson (Bobette.Dickerson@noaa.gov), Dr. Spraker (Terry.Spraker@colostate.edu), and Michael Williams (Michael.Williams@noaa.gov).

ECO issued a total of 24 fur seal harvest observation permits to non-tribal members this harvest season. The Aleut Community of St. Paul Island has a tribal ordinance that requires non-tribal members, except those who are legally married to a tribal member, to obtain a permit to observe the fur seal harvest.

DISCUSSION AND CONSIDERATIONS

In summary, seven harvests were conducted from 02 July 2014 through 08 August 2014 with a total of 262 subadult male fur seals harvested, and four females accidentally struck and killed. No cases of mortality due to hyperthermia were found, and no inhumane acts were observed this harvest season. The continued success of harvesting subadult males, preventing mortality due to hyperthermia during harvest activities, and 100 percent harvest reporting requires following these fundamental points:

1. Herd fur seals slowly to the killing field.
2. Do not unnecessarily harass the seals during the drive.
3. If a fur seal lags behind during the drive, leave it alone, as it is exhausted and has probably just returned from a feeding trip. Release it from the roundup as soon as practical and allow harvestable-sized seals to escape in the process.
4. Try to avoid rounding up older males and females into the drive.
5. If older fur seals and females are rounded up try to release them during the drive.
6. Let fur seals rest for 10 to 15 minutes after being herded, or until behavioral signs of fur seals indicate that the risk of overheating has been minimized prior to commencement of the harvest activities.
7. Drive small groups (five to seven seals) to the stunners at a time.
8. Take adequate time to isolate the preferred fur seals to be stunned from those not preferred. This will reduce the number of 5-year old seals accidentally struck and/or killed.
9. If air temperatures are between 50° F and 55° F, let the seals rest frequently during the drive and keep the holding group(s) loose. If the air temperature is 55° F or higher, cancel the harvest for that day. Furthermore, if the temperature is 50° F with no wind the harvest should be canceled for that day.
10. When fur seals in the holding group show early signs of hyperthermia (e.g. flipper fanning, open mouth breathing, and lying down) the seal(s) should be rested or the harvest should be stopped and the seals released and allowed to depart to the water at their own pace.
11. Plans of herding should be discussed with sealers before a drive starts. If drive plans change during the drive because not enough fur seals are gathered or too many big bulls or females are in the group, the seals should be released in a safe area (e.g. not near a cliff).
12. All harvested fur seals should be sexed during the skinning and butchering process to attain

100 percent reporting of number of subadult male fur seals harvested and number of females accidentally harvested.

These points will continue to be monitored and conducted by ECO as part of their humane observer functions. The Aleut Community of St. Paul Island Tribal Government will make this harvest report available to the Tribal Council and to the community.

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