

The Subsistence Harvest of Sub-Adult Northern Fur Seals on St. Paul Island, Alaska in 2011

November 2011

by
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INTRODUCTION

On St. Paul Island, Alaska the subsistence harvest for northern fur seal meat began in 1984 when the commercial harvest for pelts ceased. Only immature males are taken for food during the subsistence harvest. The harvest has occurred annually since 1984 and fur seal continues to be an important customary traditional food for Unangan (Aleuts) of St. Paul Island.

The harvest is a well-planned and orderly activity, implemented similarly to the commercial harvest for pelts only on a smaller scale in order to meet the community's needs. Young male northern fur seals 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 and Letcher 1986; Spraker 1987-2005.

Unangam sealers today must balance the present subsistence sub-adult male fur seal harvest on the Pribilofs with the interest to reintroduce traditional management and regulation of harvests. This balance must accommodate and transition with the current needs of the Aleut Community of St. Paul Island within the context of the current and transitioning population dynamics of northern fur seals and the dramatic environmental changes occurring in the Bering Sea. The National Marine Fisheries Service (NMFS) and Aleut Community of St. Paul Island Tribal Government have entered into a co-management agreement to safeguard the existence of the northern fur seal. The compilation and reporting of fur seal subsistence harvest information is an important element of this balance. This report describes the subsistence harvest of sub-adult northern fur seals on St. Paul Island, Alaska in 2011.

METHODS

The Program Manager and Tanam Amgiġnaan (Island Sentinels) of the Ecosystem Conservation Office (ECO) monitored and performed the humane observer functions for the 2011 subsistence fur seal harvest for the Aleut Community of St. Paul Island in accordance with their respective co-management agreements and contracts with NMFS. ECO monitored, recorded, and evaluated multiple factors for this harvest:

1. Environmental conditions,
2. Gathering of animals,
3. Harvesting period and hyperthermia,
4. The number of fur seals harvested,
5. Health status,
6. Oil contamination,
7. Incidence of by-products and waste during the harvest process,
8. Number of females killed or struck,
9. Number of fur seals entangled in marine debris and the number of seals disentangled,
10. Other mortality,
11. Any anomalies related to the harvest,
12. Research conducted during the harvest and visitors requesting to view the harvest.

RESULTS

Environmental Conditions

The environmental conditions of the harvest that were monitored include air temperature, wind speed and direction, and weather conditions. Air temperature was taken when the drive began and ranged from 41° F to 46.9° F, with an overall average temperature of 44.3° F. A breeze was present at all harvests. The wind speed varied from 4-7 mph to 13-18 mph with an overall average of 8-12 mph. Weather conditions were mostly ideal for fur seals, with only one partly sunny day (Table 1). The environmental conditions were similar to previous years (Zavadil 2011).

Table 1.--Date, location, and summary of environmental conditions during the northern fur seal subsistence harvest on St. Paul Island, Alaska in 2011.

Date	Location	Air Temp. (F°)	Wind Speed (mph)/ Direction	Weather Conditions
30 June	Polovina	42.4	13-18/ NW	Fog/mist
08 July	Big Zapadni	41.0	8-12/ SSW	Drizzle
15 July	Lukanin	44.3	4-7/ NW	Overcast
22 July	Polovina	44.5	4-7/ SE	Rain
29 July	Morjovi	46.5	4-7/ SSW	Overcast
03 August	Lukanin	46.9	8-12/ WSW	Fog/mist
04 August	Polovina	43.2	8-12/ WNW	Partly sunny
05August	Gorbatch	45.5	8-12/ SE	Overcast

Gathering of Animals

Five to ten harvesters would go to a specific haul-out area and quickly form a line along the shore thus preventing the fur seals access to the ocean. The seals were then gathered into one or two pods and driven to the killing field. Gathering of the animals started between 08:30 and 09:15 this season. The animals were usually rested during and immediately after the drive. The degree of wetness to the grass and terrain was monitored and estimated, as this is believed to be an important cooling factor for the animals. The grass was wet twice and damp six times (Table 2).

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 2011.

Date	Location	Terrain Type; Wetness of Grass
30 June	Polovina	Up hill sandy/dirt, flat grass; Grass wet
08 July	Big Zapadni	Flat sandy, flat grass, up hill grass, flat grass; Grass damp
15 July	Lukanin	Up hill sandy/dirt, flat grass; Grass damp
22 July	Polovina	Up hill sandy/dirt, flat grass; Grass wet
29 July	Morjovi	Flat sandy, flat grass; Grass damp
03 August	Lukanin	Up hill sandy/dirt, flat grass; Grass damp
04 August	Polovina	Up hill sandy/dirt, flat grass; Grass damp
05August	Gorbatch	Uphill sandy/dirt, down hill grass, flat grass; Grass damp

Harvesting Period and Hyperthermia

The harvesting activity was characterized by holding the animals in a large pod approximately 10 to 20 yards from the stunning area. While a few youth held the seals, three to four men would cut out a small pod of seals and drive them to the stunners. The pod size usually was 8 to 15 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 overall the accuracy was about the same this year as in previous years.

Deep body core temperatures of approximately 30-70% of the animals were taken throughout each harvest. The temperatures were separated by pod into beginning, middle, and end of harvest. The average body temperatures are presented in Table 3. Temperatures ranged in individual animals from 96.2° F to 104.3° F with an overall average temperature of 100.2° F. No cases of mortality due to hyperthermia were observed this season.

Table 3.--Date, location, summary of the deep body core temperatures, and number of seals dying from hyperthermia during the northern fur seal subsistence harvest on St. Paul Island, Alaska in 2011.

Date	Location	Average deep body core temperature (°F)			Number of hyperthermic animals
		Beginning of harvest	Middle of harvest	End of harvest	
30 June	Polovina	99.9	99.4	100.3	0
08 July	Big Zapadni	98.9	99.4	100.8	0
15 July	Lukanin	100.8	100.0	100.9	0
22 July	Polovina	98.2	98.0	98.4	0
29 July	Morjovi	101.0	99.8	101.4	0
03 August	Lukanin	-	99.4	99.0	0
04 August	Polovina	101.6	100.7	100.6	0
05 August	Gorbatch	101.6	101.2	102.6	0

Fur seals can die due to hyperthermia (overheating) during the round up and drive of the seals to the killing field or during the harvest. 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 haul-out from a feeding trip may not be "fully rested" and, if they are subjected to a harvest/drive, may become exhausted quicker than a totally rested animal.

To avoid mortality from hyperthermia seals should be driven slowly, given a chance to rest after the drive, and the holding pods should be kept loose. The duration of a resting period should be determined based on the behavioral signs of the seals held in the pods. Once the seals do not exhibit early signs of hyperthermia (including flipper fanning, open mouth breathing, and lying down) then subsequent harvest activities can commence. If an animal lags behind during the gathering period they should be allowed to drop out of the pod.

Fur Seals Harvested

Northern fur seals were gathered and harvested eight times this year. A total of 322 sub-adult male fur seals and one female fur seal were killed in the harvest this year (Table 4).

Table 4.--Date, location, and number of northern fur seals killed during the subsistence harvest on St. Paul Island, Alaska in 2011.

Date	Location	Number Males Killed	Number Females Killed
30 June	Polovina	22	0
08 July	Big Zapadni	38	0
15 July	Lukanin	37	0
22 July	Polovina	58	0
29 July	Morjovi	47	0
03 August	Lukanin	26	0
04 August	Polovina	32	1
05 August	Gorbatch	62	0
Total		322	1

Health Status

The health status of the animals was evaluated by examining viscera and carcasses throughout the harvest.

Oil Contamination

This year (same as last year) animals were not found with oil on their pelts.

By-products and Waste

Some fur seal pelts, throats, teeth, and whiskers were taken for the creation of arts and crafts on St. Paul Island during the 2011 subsistence fur seal harvest. No waste occurred on the harvest field under 50 CFR §216 Subpart F.

Female Seals Killed or Struck

One female fur seal was struck and killed at Polovina on 04 August 2011.

Entanglement

One entangled male fur seal was observed at Lukanin on 03 August 2011. The fur seal was disentangled and released.

Other Mortality

No other fur seal mortality occurred during this year's subsistence fur seal harvest.

Anomalies

A fur seal with flipper tag no. G0119 was harvested from Gorbatch on 05 August 2011. No

other anomalies occurred during this year's subsistence fur seal harvest.

Research

Several research projects were conducted in conjunction with the subsistence harvests on St. Paul Island. NMFS collected snouts and extracted upper canine teeth for NMML. NMML processes the canine teeth for estimating the age composition of the harvest.

A Memorandum of Agreement (MOA) was entered into with Dr. Bobette Dickerson with NMML to collect fur seal samples for prevalence of potentially reproductively harmful diseases during this year's harvest (see MOA2011-01). Dr. Dickerson used a combination of serology and polymerase chain reaction (PCR) to test for chlamydia, leptospirosis, calicivirus, brucella, morbillivirus, herpes, and toxoplasmosis in sub adult males taken during the harvest.

Per the MOA, Dr. Dickerson will provide an annual report to the Aleut Community of St. Paul Island Tribal Government of the results of the analysis of the tissues. The annual report will describe the study, analysis of samples, the results of analysis, progress of study, and any forecasted activities. 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.

In 2010 Dr. Dickerson collected nasal swabs and lung, lymph node, liver, and testicular tissue from 200 subadult males and serum samples from 220 subadult males during the harvest. To date the DNA has been extracted from all of the tissue samples. Dr. Dickerson is working with a number of veterinarians to determine the best methods for using PCR to look for diseases in the tissue samples. This winter Dr. Dickerson will be traveling to UC Davis to use their lab facilities and protocols to test for Brucella, Chlamydia, and herpes. The nasal swabs have been tested for morbilli virus and a total of 23% were either positive or suspected positive based on PCR results. Further testing will be done comparing the results of serology to the PCR results. A subsample of the serum will also be tested for Calici virus, lepto virus, and Toxoplasmosis this fall/winter. Any questions regarding these results can be addressed to Dr. Dickerson (Bobette.Dickerson@noaa.gov).

A Memorandum of Agreement was entered into with Dr. Terry R. Spraker with Colorado State University to collect fur seal samples for three different projects (see MOA2011-02):

- 1). The first project entails the collection of 40 subadult male heads from the gut pile

following the harvest. Dr. Spraker and Dr. Wendi Roe are investigating markers for degrees of hypoxia to the brain related to drowning of Southern Sea lions off the New Zealand coast. One of the major difficulties in this project is obtaining normal tissues to study hypoxia and the effect of post mortem changes on the brain. These tissues collected from the gut pile will serve as control tissues.

2) The second project involves Dr. Spraker and Dr. Gene Lyons. This project entails the collection of 20 to 30 grams of blubber from the discarded pelts from the gut pile. These blubber samples will be examined for the presence of third stage hookworm larvae which is currently unknown in subadult males.

3) The third project involves Dr. Spraker, Dr. Lyons, and Dr. Tetiana Kuzmine and entails the collection of stomach attached to small intestine from 100 subadult male seals. The purpose is to compare the number of nematode parasites in the stomach to the number of tapeworms in the ileum/caecum. There is a hypothesis that as the worm burden decreases in the stomach the burden of tapeworms increase in the ileum/caecum.

Per the MOA, Dr. Spraker will provide an annual report to the Aleut Community of St. Paul Island Tribal Government of the results of the analysis of the tissues. Any questions regarding these projects can be addressed to Dr. Spraker (Terry.Spraker@colostate.edu).

DISCUSSION AND CONSIDERATIONS

In summary, eight harvests were conducted from 30 June through 05 August 2011 taking 322 sub-adult males and one female fur seal. No cases of mortality due to hyperthermia were found and no inhumane acts were observed this season. The continued success of harvesting preferred animals (small males) and preventing mortality due to hyperthermia during harvest activities requires following these important points:

1. Drive the animals slowly to the killing field.
2. Do not unnecessarily harass the seals during the drive.
3. If an animal lags behind during the drive, leave it alone, because this animal is already exhausted because it has probably just returned from a feeding trip. These are the animals that will develop hyperthermia first and most likely die.
4. Rest the animals 10 to 15 minutes prior to the harvest.
5. Drive small pods to the stunners. 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. This will reduce the number of 5-year old seals killed.
7. If environmental temperatures are 50° F to 55° F, give the seals frequent rests during the drive and keep the holding pods loose. If environmental temperature is 55° F or above, do not have a harvest. If the temperature is 50° F with no wind a harvest should not take place.
8. Try to "weed out" (release) older animals and females during the drive.
9. When the animals in the holding pod show early signs of hyperthermia (e.g. flipper fanning, open mouth breathing, and lying down) the seal should be rested or the harvest should be stopped and the animals released slowly.
10. Discuss driving plans with drivers before drive starts. If drive plans change during the drive because not enough animals are gathered or too many big bulls or females are in the group, the animals should be released in a safe area not near cliffs.

These points will continue to be monitored by the ECO Program Manager and Tanam Amgiġnaan (Island Sentinels) as part of their humane observer functions.

The Aleut Community of St. Paul Island Tribal Government will send the annual harvest report to people via email and make it available to the community.

ACKNOWLEDGEMENTS

The Aleut Community of St. Paul Island-Tribal Government-Ecosystem Conservation Office wishes to thank the Aleut Community of St. Paul Island, and the Tribal Government for its support. A very special thank you to Greg Fratis, Sr. as harvest foreman, the Tanadgusix Corporation, and the St. Paul Island sealers for their assistance, cooperation, patience, and support. This report has been adapted to follow the Humane Observer Report, Spraker 1987-2009.

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Northern Fur Seal Harvest Monitoring Log, St. Paul Island, Alaska

Harvest Conditions

Harvest ID Number	Harvest Date	Harvest Location	Harvest Start/End	Time (min)	Temp. (C)	Wind Direction	Wind Speed	Weather Conditions	Grass Condition	Observer Initials
SNPNFSHV11-1	30-Jun-11	Polovina	9:26-10:32	111	42.4	NW	13-18mph	fog/mist	Wet	PIM
SNPNFSHV11-2	08-Jul-11	Big Zapadni Sands	9:31-11:01	130	41	SSW	8-12mph	drizzle	Damp	PIM
SNPNFSHV11-3	15-Jul-11	Lukanin	8:58-10:41		44.3	NW	4-7mph	overcast	Damp	PIM
SNPNFSHV11-4	22-Jul-11	Polovina	9:07-11:20	180	44.5	SE	4-7mph	rain	Wet	PIM
SNPNFSHV11-5	29-Jul-11	Morjovi	9:21-11:01	176	46.5	SSW	4-7mph	overcast	Damp	PIM
SNPNFSHV11-6	03-Aug-11	Lukanin	9:07-10:17	116	46.9	WSW	8-12mph	fog/mist	Damp	PIM
SNPNFSHV11-7	04-Aug-11	Polovina	9:05-10:34	118	43.2	WNW	8-12mph	partly sunny	Damp	PIM
SNPNFSHV11-8	05-Aug-11	Reef	9:13-11:04	155	45.5	SE	8-12mph	overcast	Damp	PIM

Harvest Counts

Harvest ID Number	Seals Harvested	SAMs Released	Adult Males Released	Adult Males Stunned	Adult Males Killed	Females Stunned	Females Killed	Heat Strokes	High Seal Temp. (C)	High Air Temp. (C)	Oiled SAMs
SNPNFSHV11-1	22	106	0	0	0	0	0	0			0
SNPNFSHV11-2	38	151	0	0	0	0	0	0			0
SNPNFSHV11-3	37	103	0	0	0	0	0	0			0
SNPNFSHV11-4	58	63	0	0	0	0	0	0			0
SNPNFSHV11-5	47	140	0	0	0	0	0	0			0
SNPNFSHV11-6	26	127	0	0	0	0	0	0			0
SNPNFSHV11-7	32	160	0	0	0	0	1	0			0
SNPNFSHV11-8	62	148	0	0	0	0	0	0			0
Total	322	998	0	0	0	0	1	0	(Avg.)	(Avg.)	0

Northern Fur Seal Harvest Monitoring Log, St. Paul Island, Alaska

Entanglement Counts

Harvest ID Number	SAMs Entangled	SAMs Disentangled	SAMs Scarred	Adult Males Entangled	Adult Males Disentangled	Adult Males Scarred	SAMs Sampled	Adult Males Sampled	SAM Rate of Entanglement	Adult Rate of Entanglement
SNPNFSHV11-1	0	0	0	0	0	0	128	0		
SNPNFSHV11-2	0	0	0	0	0	0	189	0		
SNPNFSHV11-3	0	0	0	0	0	0	140	0		
SNPNFSHV11-4	0	0	0	0	0	0	121	0		
SNPNFSHV11-5	0	0	0	0	0	0	187	0		
SNPNFSHV11-6	1	1	1	0	1	0	154	0		
SNPNFSHV11-7	0	0	0	0	0	0	192	0		
SNPNFSHV11-8	0	0	0	0	0	0	210	0		
Total	1	1	1	0	1	0	1321	0	0.076	#Num!

AGREEMENT TYPE: Memorandum of Agreement

AGREEMENT #: 2011-01

PROJECT: Project No. 1 – Fur Seal Sample Collection for Prevalence of Potentially Reproductively Harmful Diseases

PARTNER 1: Aleut Community of St. Paul Island (ACSNP), Tribal Government

ADDRESS: 2050 Venia Minor Road
St. Paul Island, Alaska 99660

PROJECT CONTACT: Phillip A. Zavadil TEL: 907-546-3230 FAX: 907-546-3254 EMAIL: pazavadil@tgspi.com

PARTNER 2: Bobette Dickerson

ADDRESS: NMFS/NMML 7600 Sand Point Way NE Seattle WA 98115

TEL: 206 526 4688 FAX: 206 526 6615 EMAIL: Bobette.Dickerson@noaa.gov




PROJECT DESCRIPTION:

☒ **STANDARD CONDITIONS (See Attachment)**

☒ **PROJECT SCOPE AND AUTHORIZATION (See Attachment)**

PERIOD OF PERFORMANCE: 01 June 2011 to 31 May 2012

EXECUTION: Execution of this document by duly an authorized representative of the Aleut Community of St. Paul Island, Tribal Government (Partner 1) and Bobette Dickerson (Partner 2), including Aleut Community of St. Paul Island, Tribal Government's Standard Conditions (reverse side) and any attachments, Additional Provisions as indicated, and addenda, represents the entire Agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral in regard to this specific project.

PARTNER 1:	<u>ACSNP, Tribal Government</u>	PARTNER 2:	<u>Bobette Dickerson</u>
BY:	<u>Amos T. Philemonoff, Sr.</u>	BY:	
SIGNATURE:		SIGNATURE:	
TITLE:	<u>President</u>	TITLE:	<u>Fisheries Biologist</u>
DATE:	<u>6/26/11</u>	DATE:	<u>7/7/11</u>

STANDARD CONDITIONS

1. **EXECUTION.** This Agreement becomes effective upon signatures by authorized representatives of each party and upon receipt by both parties of a signed original or facsimile transmittal.
2. **INITIATION.** The Consultant is authorized to proceed with services upon receipt of an executed Agreement or written Notice to Proceed.
3. **COMPLETION/TERMINATION.** This Agreement shall remain in force until completion or until terminated. This contract may be terminated by either party upon 10 days written notice. Any notice under this agreement shall be in writing and delivered in person or by public or private courier service (including the U.S. Postal Service Express Mail) or certified mail with return receipt requested or by facsimile. All notices shall be addressed to the party at the above addresses or at such other addresses that the parties may, from time-to-time, direct in writing. Any notice shall be deemed to have been given on the earlier of: (a) actual delivery or refusal to accept delivery; (b) the date of mailing by certified mail; or (c) the day facsimile delivery is verified. Actual notice, however, and from whomever received it, shall always be effective.
4. **COMPLIANCE WITH LAWS.** The Partner 2 shall comply with all applicable Federal, State, local, and tribal laws and ordinances in carrying out the Scope under this Agreement.
5. **DISPUTES.** Unless the parties agree otherwise, any mediation shall be conducted through the St. Paul Island Tribal Court.
6. **SEVERABILITY.** If any court determines that any provision of this Agreement is invalid or unenforceable, any invalidity or unenforceability will affect only that provision and will not make any other provision of this Agreement invalid or unenforceable and shall be modified, amended or limited only to the extent necessary to render it valid and enforceable.
7. **SUCCESSORS AND ASSIGNEES.** This Agreement binds and benefits the heirs, successors and assignees of the parties.
8. **ENTIRE AGREEMENT.** This instrument constitutes the entire agreement between the parties; and it shall not be amended, altered or changed except by a written agreement signed by the parties hereto. It replaces and supersedes any and all oral agreements between the parties, as well as any prior writings for this project.
9. **REPORTING OF STUDY RESULTS:** Partner 2 will provide an annual report to Partner 1 of the results of the analysis of the tissues. At a minimum the annual report will include the results of any analysis, and a preliminary interpretation of the results. If no results are available at the end of the period, a timeline for the analysis, results and reporting must be provided to the Partner 1. Each annual report shall describe the study, analysis of samples, the results of analysis, progress of study, and any forecasted activities. Any reports or peer-reviewed journal articles that are published as a result of the samples will also be provided and acknowledged.
10. **INTERFERENCE WITH HARVEST:** Partner 2 agrees not to interfere with the subsistence harvest process including but not limited to: round up, pod cutting, stunning, exsanguination, pelt removal, cutting and bagging of meat. Partner 2, in the process of collecting samples, 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.
11. **OTHER TERMS AND CONDITIONS.** No other terms or conditions.

PROJECT SCOPE AND AUTHORIZATION

Partner 2 is characterizing the prevalence of potentially reproductively harmful diseases in the northern fur seal population on St. Paul Island. Partner 2 is using a combination of serology and polymerase chain reaction (PCR) to test for Chlamydia, Leptospirosis, calicivirus, brucella, morbillivirus, herpes and toxoplasmosis in the population. To date Partner 2 has been able to take samples from adult females in the fall. Only testing females (and only from one time of the year) would result in a biased estimate of the rates of these diseases in the population so to get a more rounded sample set she wants to take samples from the sub adult males (SAM) taken during the harvest to test for these diseases.

Partner 1 authorizes Partner 2 to collect the following samples from the 2011 subsistence fur seal harvest on St. Paul Island, Alaska for the above mentioned project:

Species	Tissue Requested	Amount of Tissue/Sample	Number of Samples/Animal	Total Number of Samples	Protocol
Northern fur seal	Liver	1cm in diameter	1	30	NMML
Northern fur seal	Lung	1cm in diameter	1	30	NMML
Northern fur seal	Lymph node	1cm in diameter	1	30	NMML
Northern fur seal	Testies	1cm in diameter	1	30	NMML
Northern fur seal	Kidney	1cm in diameter	1	200	NMML
Northern fur seal	Skin tissue	1cm diameter	1	30	NMML
Northern fur seal	Feces	3 ml	1	100	NMML
Northern fur seal	Blood for serum	8 ml	1	100	NMML
Northern fur seal	Nasal swabs	swab	1	50	NMML

AGREEMENT TYPE: Memorandum of Agreement

AGREEMENT #: 2011-02

PROJECT: 1. Markers for hypoxia of the brain to study drowning; 2. Prevalence of hookworm larvae in the blubber of subadult northern fur seals; 3. Compare number of nematodes in the stomach to the number of tapeworms in the ileum and caecum.

PARTNER 1: Aleut Community of St. Paul Island (ACSNP), Tribal Government

ADDRESS: 2050 Venia Minor Road
St. Paul Island, Alaska 99660

PROJECT CONTACT: Phillip A. Zavadil **TEL:** 907-546-3230 **FAX:** 907-546-3254 **EMAIL:** pazavadil@tgsapi.com

PARTNER 2: Terry R. Spraker

ADDRESS: College of Veterinary Medicine, Colorado State university, Fort Collins Colorado 80526



TEL: 970-297-4155 **FAX:** 970-297-0320 **EMAIL:** Terry.Spraker@colostate.edu

PROJECT DESCRIPTION:

☒ **STANDARD CONDITIONS (See Attachment)** ☒ **PROJECT SCOPE AND AUTHORIZATION (See Attachment)**

PERIOD OF PERFORMANCE: 01 June 2011 to 31 May 2012

EXECUTION: Execution of this document by duly an authorized representative of the Aleut Community of St. Paul Island, Tribal Government (Partner 1) and Terry Spraker (Partner 2), including Aleut Community of St. Paul Island, Tribal Government's Standard Conditions (reverse side) and any attachments, Additional Provisions as indicated, and addenda, represents the entire Agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral in regard to this specific project.

PARTNER 1:	<u>ACSNP, Tribal Government</u>	PARTNER 2:	<u>Terry R. Spraker</u>
BY:	<u>Amos T. Philemonoff, Sr.</u>	BY:	<u></u>
SIGNATURE:	<u></u>	SIGNATURE:	<u></u>
TITLE:	<u>President</u>	TITLE:	<u>Pathologist, project leader</u>
DATE:	<u>01 August 2011</u>	DATE:	<u>01 August 2011</u>

STANDARD CONDITIONS

1. **EXECUTION.** This Agreement becomes effective upon signatures by authorized representatives of each party and upon receipt by both parties of a signed original or facsimile transmittal.
2. **INITIATION.** The Consultant is authorized to proceed with services upon receipt of an executed Agreement or written Notice to Proceed.
3. **COMPLETION/TERMINATION.** This Agreement shall remain in force until completion or until terminated. This contract may be terminated by either party upon 10 days written notice. Any notice under this agreement shall be in writing and delivered in person or by public or private courier service (including the U.S. Postal Service Express Mail) or certified mail with return receipt requested or by facsimile. All notices shall be addressed to the party at the above addresses or at such other addresses that the parties may, from time-to-time, direct in writing. Any notice shall be deemed to have been given on the earlier of: (a) actual delivery or refusal to accept delivery; (b) the date of mailing by certified mail; or (c) the day facsimile delivery is verified. Actual notice, however, and from whomever received it, shall always be effective.
4. **COMPLIANCE WITH LAWS.** The Partner 2 shall comply with all applicable Federal, State, local, and tribal laws and ordinances in carrying out the Scope under this Agreement.
5. **DISPUTES.** Unless the parties agree otherwise, any mediation shall be conducted through the St. Paul Island Tribal Court.
6. **SEVERABILITY.** If any court determines that any provision of this Agreement is invalid or unenforceable, any invalidity or unenforceability will affect only that provision and will not make any other provision of this Agreement invalid or unenforceable and shall be modified, amended or limited only to the extent necessary to render it valid and enforceable.
7. **SUCCESSORS AND ASSIGNEES.** This Agreement binds and benefits the heirs, successors and assignees of the parties.
8. **ENTIRE AGREEMENT.** This instrument constitutes the entire agreement between the parties; and it shall not be amended, altered or changed except by a written agreement signed by the parties hereto. It replaces and supersedes any and all oral agreements between the parties, as well as any prior writings for this project.
9. **REPORTING OF STUDY RESULTS:** Partner 2 will provide an annual report to Partner 1 of the results of the analysis of the tissues. At a minimum the annual report will include the results of any analysis, and a preliminary interpretation of the results. If no results are available at the end of the period, a timeline for the analysis, results and reporting must be provided to the Partner 1. Each annual report shall describe the study, analysis of samples, the results of analysis, progress of study, and any forecasted activities. Any reports or peer-reviewed journal articles that are published as a result of the samples will also be provided and acknowledged.
10. **INTERFERENCE WITH HARVEST:** Partner 2 agrees not to interfere with the subsistence harvest process including but not limited to: round up, pod cutting, stunning, exsanguination, pelt removal, cutting and bagging of meat. Partner 2, in the process of collecting samples, 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.
11. **OTHER TERMS AND CONDITIONS.** No other terms or conditions.

PROJECT SCOPE AND AUTHORIZATION

Partner 1 authorizes Partner 2 to collect the following samples from the 2011 subsistence fur seal harvest on St. Paul Island, Alaska:

We have three projects that would involve the collection of tissues from the 2011 northern fur seal subsistence harvest.

The first project entails the collection of 40 subadult male heads from the gut pile following the harvest. Dr. Wendi Roe and I are investigating markers for degrees of hypoxia to the brain related to drowning of Southern Sea lions off the New Zealand coast. One of the major difficulties in this project is obtaining normal tissues to study hypoxia and the effect of post mortem changes on the brain. These tissues collected from the gut pile will serve as control tissues. This request is for the 2011 northern fur seal subsistence harvest on St. Paul Island Alaska.

The second project involves Dr. Gene Lyons and myself. Dr. Lyons did his PhD on St. Paul Island in the late 1960's and early 1970's and described the life cycle of the hookworm of which at that time was causing relatively high mortality. We would like to collect 20 to 30 grams of blubber from the discarded pelts from the gut pile. These blubber samples will be examined for the presence of third stage hookworm larvae. This analysis will give a round estimation of the prevalence of hookworms in subadult males. At the present time we know the prevalence of hookworms in pups is relatively low, but do not know of the prevalence of hookworms in the subadult males. Since the degree of blubber varies on each pelt we would like to collect blubber from as many pelts from the gut pile that does have blubber. This request is for the 2011 northern fur seal subsistence harvest on St. Paul Island Alaska.

The third project involves Dr. Gene Lyons, Dr. Tetiana Kuzmine and myself. Dr. Lyons did his PhD on St. Paul Island in the early 1960's and described the life cycle of the hookworm of which at that time was causing relatively high mortality. Drs. Lyons and Kuzmine are both from the University of Kentucky, Lexington, Kentucky. We would like to collect from the gut pile stomach attached to small intestine from 100 subadult male seals killed during the fur seal harvest. The purpose is to compare the number of nematode parasites in the stomach to the number of tapeworms in the ileum/caecum. There is a hypothesis that as the worm burden decreases in the stomach the burden of tapeworms increase in the ileum/caecum. All of these sets of stomach/intestine would be collected from the gut pile and cause no disturbance to the harvest. This request is for the 2011 northern fur seal subsistence harvest on St. Paul Island Alaska. I am covered under the National Marine Mammal Laboratory, Seattle, Washington to have fur seal tissues in my possession.