Application for a Permit for Scientific Purposes or to enhance the survival or recovery of a stock under the Endangered Species Act, the Marine Mammal Protection Act and the Fur Seal Act

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Submitted by

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I. Title of Application

"Application for a Permit for Scientific Purposes or to enhance the survival or recovery of a stock under the Endangered Species Act, the Marine Mammal Protection Act and the Fur Seal Act."

II. Date

Submitted 30 November, 2006. Revisions submitted 17 January, 2007.

III. Applicant and Personnel

A. Applicant/Permit Holder, Principal Investigator, Co-investigator(s), and other Personnel Directly Involved in Taking

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B. Qualifications and Experience

See Appendix A for curriculum vitas from Responsible Party, Principal Investigator, and Co-Investigators.

IV. Proposal

A. Summary

The activities described herein are in fulfillment of our northern fur seal and Steller sea lion co-management responsibilities as per the July 2001 agreement between the National Marine Fisheries Service and the Aleut Community of St. George Island. Our Biosample Program will collect, salvage, and/or accept (from subsistence users) samples from dead marine mammals on the Pribilof Islands. Samples will be used for locally based research projects (e.g. sectioning marine mammal teeth to determine age and growth data) and

distributed on a limited request-for-use basis to external researchers. Our Entanglement Program will survey for, observe, and capture entangled fur seals to remove entangling debris. Our Island Sentinel Program monitors rookeries and marine mammal haul out sites directly via observation and remotely via automated time-lapse cameras to gather census information and to document natural changes, disturbances, and other anomalies. All activities under this permit involve only Level B Takes of fur seals (estimated to be 450/year for the Biosample Program, 5,250/year for the Entanglement Program, and 3400/year for the Island Sentinel Program). Captures of fur seals (i.e. Level A Takes) for the purpose of disentangling will be covered under our Marine Mammal Stranding Agreement with the NMFS, currently being written. Entanglement activities are included in this application to cover incidental disturbance caused by disentanglement. This application covers the period from May 1, 2007 to April 30, 2011 for activities occurring on St. George Island, Alaska.

B. Introduction

1. Status of the Species

(a) *Species Description*: Marine mammals of all species managed by NMFS will be collected, salvaged and/or received, but only entangled northern fur seals (*Callorhinus ursinus*) will be actively taken during disentanglement procedures, when possible. Samples collected, salvaged and/or accepted are highly opportunistic, and we are unable to predict the exact number, species and nature of the samples to be salvaged or collected from subsistence users or stranded animals. Additionally, recovery and/or salvage of a sample are highly dependent upon the state of decomposition.

(b) *Non-Target Species*: N/A.

(c) *Life History and Population Status*: The three species of marine mammal affected include the Western stock of Steller Sea Lion (*Eumetopias jubatus*) currently listed as Endangered (ESA) and Depleted (MMPA), northern fur seals (*Callorhinus ursinus*) currently listed as depleted (MMPA), and harbor seals (*Phoca vitulina*) currently protected under the MMPA but not listed as depleted. Only entangled northern fur seals (*Callorhinus ursinus*) will be actively taken during disentanglement procedures.

2. Background/Literature Review

The Ecosystem Conservation Office

The Ecosystem Conservation Office was formed in 2004 by the Aleut Community of St. George Island Traditional Council to: 1) Maintain cultural interaction with the Bering Sea environment including utilization of its resources; 2) Protect and conserve all life systems - plants, wildlife, and humans that coexist and are interdependent within the island's ecosystem; 3) Guide and direct human activities so as not to negatively impact the environment, natural and/or

subsistence resources, and other customary traditional practices; 4) Be respectful of and utilize both indigenous and western approaches to environmental knowledge, wisdom, and science. In July 2001, the Aleut Community of St. George Island entered into a co-management agreement with the National Marine Fisheries Service for the management of northern fur seals and Steller sea lions. The activities described herein are in fulfillment of our co-management responsibilities. These include our Biosample Program, our Entanglement Program, and our Island Sentinel Program.

Additionally, the Ecosystem Conservation Office plans to become a member of the Alaska Marine Mammal Stranding Network and apply for a marine mammal stranding agreement with NMFS in short order. When complete, we expect the stranding agreement will authorize Mr. Malavansky and other delegated representatives of ECO to take species of marine mammals under MMPA for the purpose of dead animal investigation and response, including the collection and transfer of animal parts. Under this agreement the ECO may also take species of marine mammals covered under the MMPA for the purpose of live stranding first response, beach triage, beach release, temporary holding for assessment and triage, translocation and/or transportation to an authorized rehabilitation center, but does not authorize any projects involving "intrusive research".

The stranding agreement will authorize ECO to capture and disentangle entangled fur seals but will not authorize any non target Level B takes in the process of conducting the capture and disentanglement activities.

Biological Sample Collection

Narrative

The Aleut Community of St. George Island Traditional Council has regularly assisted NMML staff and other independent researchers in the collection and distribution of biological samples from numerous marine mammal species, including but not limited to northern fur seals, harbor seals, and Steller sea lions. It is our desire to continue to collect and distribute biosamples from marine mammal species for research. Biological samples are used by researchers in a wide array of projects ranging from population genetics (from tissue samples) to foraging ecology (from scat samples). There will be, without doubt, future investigations relying on biological samples for which techniques currently do not exist. A project currently underway that collaborates with the St. Paul Island ECO is a specific example:

- Dr. Alan Springer, (Marine Science, University of Alaska, Fairbanks): foraging behavior of Steller sea lions in the Bering Sea to determine trophic relationships between predators and prey in the Pribilof region.

In sum, our community maintains a strong cultural and subsistence food dependence on northern fur seals, Steller sea lions, and harbor seals and is concerned with the declines. The absence or decline of these species on St.

George Island represents significant negative changes to our way of life. It is thus imperative that we contribute to an understanding of the different species. Collecting and distributing biological samples is a potentially valuable contribution.

Marine Mammal Tooth Collection

Narrative

The Aleut Community of St. George Island has participated in the collection of teeth for research purposes during the local fur seal subsistence harvest since the cessation of the commercial fur seal harvest. As a part of our current fur seal subsistence harvest monitoring program, the Aleut Community of St. George Island Traditional Council via their Kayumixtax ECO department collects a sample of teeth from harvested male fur seals to be aged at the NMML. However, some seals from the same group of subsistence seals are sampled for additional studies (e.g. ongoing NMML pathology studies, biosamples collected for NMML and other researchers) without tooth samples for corresponding age information. The objective of this project is to provide an accurate age determination for all seals taken during the subsistence harvest. The ECO will also collect teeth in order to determine the ages of any beach cast animals that are not sampled by the NMML during their biennial population studies. This will provide full information on seals sampled for ongoing pathology studies as well as any additional biosample requests and other types of research conducted on our subsistence harvest. To accomplish this goal, the ECO participated in the World Wildlife Fund's (WWF) Coastal Communities for Science (CCS) program funded by the National Science Foundation during 2005. Through this program ECO staff received the training and equipment necessary to determine ages from marine mammal teeth, including but not limited to northern fur seals and Steller sea lion.

Entanglement

Narrative

In 2001 the Aleut Community of St. George Island through St. George Traditional Council entered into an agreement with NMFS under the MMPA, Section 119, for co-management of northern fur seals and Steller sea lions (attached). This agreement specifically authorizes the Aleut Community of St. George Island via the St. George Traditional Council "To reduce the level of entanglement and effect the release of fur seals and sea lions from marine debris…" by performing the following activities: "a) Collection of information regarding date, location, sex, age class, debris type, capture attempts, disentanglements…", and "b) Calculation of entanglement rates…".

Accordingly, the ACSTG-TC-Kayumixtax Ecosystem Conservation Office (ECO) has increased their capacity to conduct research and monitoring studies in recent years. Development of the entanglement research program in collaboration with the St. Paul Island ECO has been exemplary of this expanding role.

Continuation of this program is necessary to further address the issue of fur seal entanglement and progress toward preventing future entanglement by addressing the source of marine debris.

Although the St. George Island ECO is not currently an active participant in the Alaska Marine Mammal Stranding Network, plans are underway to do so. The St. George Island ECO is permitted to survey for, observe, and disentangling fur seals under Scientific Research Permit 481-1623 since June 2004 issued to Mr. Michael Williams, previously with LGL Limited Environmental Research Associates. Mr. Williams is currently Pribilof Islands Fur Seal Coordinator with the National Marine Fisheries Service, Alaska Region. Once our stranding agreement with the NMFS is complete, our entanglement efforts will be focused on live stranding response to entangled northern fur seals from June though November on the Pribilof Islands. Based on entanglement data from St. Paul Island (1998-2005; of 795 potential fur seal entanglements 337 captures were attempted and 282 fur seals were successfully disentangled) we estimate that 50 capture attempts per year will be made on St. George Island for disentanglement.

The primary goal of this project is to address the persistent problem of northern fur seal entanglement in derelict fishing gear and other marine debris. The activities proposed under this permit are designed to: a) mitigate effects of entanglement in marine debris on the Pribilof Islands through the capture and release of entangled northern fur seals; b) track the rate of entanglement as a long-term measure of the success of any efforts intended to reduce fur seal mortality due to entanglement, and c) identify the source of entangling debris to better target management efforts to prevent future fur seal entanglement.

To accomplish this goal we propose to carry out the following specific objectives:

- Respond to, capture, and remove debris from entangled fur seals observed on the Pribilof Islands, Alaska.
- Estimate and compare juvenile male, adult female, and pup fur seal entanglement rates and debris composition between St. George and St. Paul Islands, both within the breeding season and among years using a non-disruptive observational survey method. Entanglement surveys on St. George Island since June 2005 have been conducted under Scientific Research Permit 481-1623 (see above).
- Develop methodology for tracking repeat sightings of stranded fur seals using a photographic database to verify repeated sightings of individual entangled seals and better facilitate their eventual capture.
- Identify entangling marine debris removed from fur seals for use in for debris reduction programs.

Tanam Amgignaa (Island Sentinel) Program

Narrative

The objectives of the Tanam Amgignaa (TA) or Island Sentinel Program are to advance stewardship and active responsibility of and for the Pribilof Islands ecosystem. The program provides a centralized community forum to promote environmental education, outreach and cultural awareness through community-based monitoring. From its inception, the TA program has incorporated year-round observations of marine mammals on the Pribilof Islands, with special focus on northern fur seals and Steller sea lions as cornerstone of the co-management agreements with the NMFS. St. Paul Island's TA program was used as a model for development of a TA program on St. George Island allowing for collaborative opportunities to share and compare programs and data between the two communities.

The spatial data structure of the TA Program breaks the island into a series of "regions" in which Sentinels record observations within specific fields of view from defined and repeatable vantage points. Observations are recorded in a standardized format allowing for efficient summarization and reporting. A detailed code system has been designed for (objects, species, their location, direction, distance, condition, behavior, etc.). Codes are drawn from widely used standardized systems such as the NMFS Platforms of Opportunity (POP) database for marine mammals and the North American Bird Codes. The code structure of the database allows for a range of count data, behavioral observations, interaction between species, and recording of trend data based on the observer's memory of conditions or numbers present in the past.

Current program components integrated into the TA Program that are related to marine mammals include:

- Northern Fur Seal Rookery Monitoring
- Northern Fur Seal Entanglement Monitoring
- Steller Sea Lion and Harbor Seal Haulout Monitoring
- Marine Mammal Stranding Response
- Subsistence Harvest Monitoring
- General Fish and Wildlife Monitoring
- Remote Time-Lapse Photographic Monitoring

3. Hypothesis/Objectives and Justification

Biosample Program

The objective of the Biosample Program is to collect, salvage, and/or accept (from subsistence users) and to distribute biosamples from dead stranded, subsistence hunted and beach cast marine mammals for both research and educational purposes. An example of the sort of research projects that will be undertaken by ECO with the biosamples is marine mammal tooth collection and aging (described below). In addition, external requests for tissue samples from accredited researchers occur regularly (e.g. for genetic or toxicology investigations; see Section B.2. Biological Sample Collection above for examples of specific research projects). We believe there is great positive value in getting as

much information as possible from the samples. Therefore, as long as the research is valid and in no manner commercial, we want to be able to facilitate these activities by collecting and distributing these biosamples. New requests will be cleared by the NMFS permit office prior to our undertaking any new collection and/or distribution activities.

Marine Mammal Tooth Collection

The objective of this project is to provide an accurate age determination for all seals taken during the St. George subsistence harvest. Currently, accurate ages are determined for 50% of the seals that are taken for subsistence on St. George Island. These samples are currently collected for the NMML by ECO under the NMML permit for the collection of marine mammal parts for scientific research (Permit # 782 1694). However it is often necessary to collect biosamples (see above) from seals that are not part of the NMML sub-sample and as a result, these seals do not have corresponding age data. This project will provide full information on seals sampled for ongoing pathology studies conducted by the NMML, in addition to any biosample requests and other research. Teeth will be collected during the subsistence harvest in conjunction with the sub-sample of teeth collected for the NMML under contract with the NMFS Alaska Regional Office. The ECO will collect the teeth from subsistence harvested fur seals not currently sampled by NMML in order to implement full sampling of teeth from the St. George harvest. Under this permit, the ECO will also collect teeth and determine ages for any beach cast animals that are not sampled by the NMML during their biennial population studies. As a part of this process we will also develop the technical capacity to monitor the age distribution of other marine mammal species (e.g. Steller sea lions and harbor seals) taken as subsistence or collected as beach cast specimens in the Pribilof Islands area.

Entanglement Program

The primary goal of this project is to address the persistent problem of northern fur seal entanglement in derelict fishing gear and other marine debris. The activities proposed under this permit are designed to: a) mitigate effects of entanglement in marine debris on the Pribilof Islands through the capture and release of entangled northern fur seals; b) track the rate of entanglement as a long-term measure of the success of any efforts intended to reduce fur seal mortality due to entanglement, and c) identify the source of entangling debris to better target management efforts to prevent future fur seal entanglement.

Island Sentinel Program

The objectives of our Tanam Amgignaa (TA) or Island Sentinel Program are to advance stewardship and active responsibility of and for the St. George Island ecosystem. The program provides a centralized community forum to promote environmental education, outreach and cultural awareness through community-based monitoring. From its inception, the TA program has incorporated year-round observations of marine mammals on St. George Island, with special focus on northern fur seals and Steller sea lions as cornerstone of the co-management agreement with the NMFS. Until this point in time, the TA program has consisted

entirely of direct observations by ECO observers and reports of interest from local community members. We are now planning to add remote observation via time-lapse weather-housed cameras in order to remotely conduct census counts and observations of harbor seal and Steller sea lion behavior. The photographs obtained will also be evaluated to determine whether additional information on northern fur seals (e.g. female and pup numbers, entanglement rates, and life history information) can be obtained using this methodology. If the initial program is expanded, permit modifications for additional projects will be requested.

C. Methods

1. Duration of the Project and Locations of Taking

The proposed activities are expected to be ongoing; this permit application covers the next five-year period (May 1, 2007- April 30, 2011). Research will take place throughout the year on St. George Island of the Pribilof Islands group in the Bering Sea, Alaska. The Pribilof Islands are located in the central Bering Sea, approximately 185 mi (300 km) north of the Aleutian Chain, at approximately 57°′ North Latitude/170° West Longitude. The Pribilof archipelago includes the two larger, inhabited islands of St. George and St. Paul plus two small islands; Otter Island and Walrus Island. Otter Island is located roughly 9 mi (14 km) south of St. Paul, Walrus Island about 7 mi (11 km) east of St. Paul. Sea Lion Rock is a small rocky outcropping located less than a quarter mile offshore of the southern tip of St. Paul.

Types of Activities, Methods, and Numbers of Animals or Specimens to be Taken or Imported/Exported

Biological Sample Collection Program

Research Program

The Ecosystem Conservation Office (ECO) plans to collect, salvage, and/or accept (from subsistence users) and to distribute hard and soft parts from subsistence hunted and beach cast northern fur seals, harbor seal, and Steller sea lion. Authorization is requested for the collection and export of scientific material including hard tissue (skulls and skeletons), teeth, soft tissues and/or whole carcasses from these species for both research and educational purposes. The export of tissues would occur on a quarterly or as needed basis depending on the timeframes of individual collaborating researchers.

Our Biological Sample Program is based largely on the experience of the St. Paul Island ECO who have been involved in the collection of marine mammal parts for scientific research from subsistence hunted northern fur seals, harbor seal, and

Steller sea lion for over 7 years. Beginning in 1999 the St. Paul Island ECO began to collect, under Scientific Research Permit 704-1444 issued to the University of Alaska, stomachs, colons, skulls, tibia/fibias and other parts from subsistence hunted Steller sea lion in collaboration with Dr. Alan Springer for the purpose of developing a long-term dataset of sea lion diets. The hard parts went to the University of Alaska Marine Mammal Museum for archival purposes and requests for future opportunistic research. The St. Paul Island ECO established agreements for collection of various sea lion samples including but not limited to muscle tissue, blubber, liver, stomachs, and skulls with some of the following researchers and organizations: Alaska Department of Fish and Game's Steller Sea Lion Program; Alaska Sea Life Center's contaminants monitoring project; University of Alaska Marine Mammal Museum's archiving project; John Wise, University of South Maine; and Mystic Aquarium. Presently, St. Paul Island ECO will continue its collaborative research efforts with Dr. Alan Springer, the National Marine Mammal Laboratory, and the Alaska SeaLife Center.

It is not possible to list the specific programs that will request biosamples prior to the request occurring. Each of the above listed institutions has multiple research programs many of whom may request biosamples. Therefore, ECO would like to request under this permit the authority to collect hard and soft parts from subsistence hunted fur seal, harbor seal and sea lion for future researchers and research projects on a case-by-case basis, in consultation with the NMFS permit office.

Table 1a. Proposed biosampling activities: May 1, 2007- April 30, 2011

Species	Part/Sample Description	Sample Size/Volume	Number of Samples/Animal
1. Teeth Aging Project - Ecosystem Conservation Office			
Northern Fur Seal	Lower Canine Teeth	Entire	2
Northern Fur Seal	Upper Canine Teeth	Entire	2
Harbor Seal	Upper Canine Teeth	Entire	2
Steller Sea Lion	Upper Canine Teeth	Entire	2
Steller Sea Lion	Upper Second Premolars	Entire	2
2. Educational Outreach Project - Ecosystem Conservation Office			
Northern Fur Seal	Skulls	Entire	1
Northern Fur Seal	Skeleton	Entire	1
Harbor Seal	Skulls	Entire	1
Harbor Seal	Skeleton	Entire	1
Steller Sea Lion	Skulls	Entire	1
Steller Sea Lion	Skeleton	Entire	1
3. Diet Study – Dr. Alan Springer			
Steller Sea Lion	Blubber	3 cm square	1
Steller Sea Lion	Stomach	Entire	1
Steller Sea Lion	Colon	Entire	1

4. Teeth Aging – National Marine Mammal Laboratory			
Northern Fur Seal	Upper Canine Teeth	Entire	2

Table 1b. Unidentified biosampling activities: May 1, 2007- April 30, 2011

Species	Part/Sample Description	Sample Size/Volume	Number of Samples/Animal
Northern Fur Seal	Pectoralis Muscle	3 cm square	1
	Bicep Muscle	3 cm square	
	Longissimus dorsi Muscle	3 cm square	
	Stomach	Entire	1
	Colon	Entire	1
	Blubber (dorsal side)	3 cm square	2
	Blubber (anterior side)	3 cm square	2
	Liver	3 cm square	2
	Kidney	3 cm square	2
	Bronchus	3 cm square	2
	Spleen	3 cm square	2
	Dermis	3 cm square	2
	Testes/Ovaries	Entire	2
	Heart	3 cm square	2
	Brain	3 cm square	2
	Pelvic lymph node	Entire	1
	Pulmonary lymph node	Entire	1
	Uterus	Entire	1
	Tonsil	3 cm square	2
	Feces	Entire	
	Blood	50 ml	2
	Vibrissae	Entire	3
	Rear Flippers	Entire	2
	Pectoralis Muscle	3 cm square	1
	Bicep Muscle	3 cm square	
	Longissimus dorsi Muscle	3 cm square	
	Stomach	Entire	1
	Colon	Entire	1
	Blubber (dorsal side)	3 cm square	2
	Blubber (anterior side)	3 cm square	2
	Liver	3 cm square	2
	Kidney	3 cm square	2
	Bronchus	3 cm square	2
	Spleen	3 cm square	2
	Dermis	3 cm square	2
	Testes/Ovaries	Entire	2

	Heart	3 cm square	2
	Brain	3 cm square	2
	Pelvic lymph node	Entire	1
	Pulmonary lymph node	Entire	1
	Uterus	Entire	1
	Tonsil	3 cm square	2
	Feces	Entire	
	Blood	50 ml	2
	Vibrissae	Entire	3
	Rear Flippers	Entire	2
Harbor Seal	Pectoralis Muscle	3 cm square	1
	Bicep Muscle	3 cm square	
	Longissimus dorsi Muscle	3 cm square	
	Stomach	Entire	1
	Colon	Entire	1
	Blubber (dorsal side)	3 cm square	2
	Blubber (anterior side)	3 cm square	2
	Liver	3 cm square	2
	Kidney	3 cm square	2
	Bronchus	3 cm square	2
	Spleen	3 cm square	2
	Dermis	3 cm square	2
	Testes/Ovaries	Entire	2
	Heart	3 cm square	2
	Brain	3 cm square	2
	Pelvic lymph node	Entire	1
	Pulmonary lymph node	Entire	1
	Uterus	Entire	1
	Tonsil	3 cm square	2
	Feces	Entire	
	Blood	50 ml	2
	Vibrissae	Entire	3
	Rear Flippers	Entire	2

Sampling Protocol

All parts and specimens will be collected in the field as fresh as possible, usually within 24 hours of a hunting event. Samples will be placed in one of the following containers:

- A plastic/glass/Teflon canister, jar or vial with a positive closures.
- Plastic whirl-pak, zip-loc, or heavy duty trash bag.

Labeling

Each sample is assigned an accession number once received at ECO and entered in the ECO Tanam Amgignaa (Island Sentinel) Database. Accession numbers facilitate the biosample processing by first recording date of entry and associated documentation surrounding the biosample, such as: date of collection, species or common name, general harvest location, sex, listing of the samples in the biosample, and collector provided remarks.

Storage

All samples except teeth, whisker, cleaned skulls, skeletons, and bones will be stored in containers or bags in standard freezer conditions at 25ºF or below, unless specified and agreed upon by the ECO and collaborating researcher.

Transportation
All samples except teeth, whiskers cleaned skulls, skeletons, and bones will be packed and shipped in leak proof containers, such as ice chests or Rubbermaid containers. Frozen samples will be shipped frozen in leak proof containers with ice packs or dry ice, unless specified and agreed upon by the ECO and collaborating researcher. All samples will be shipped with a copy of the biological samples collection forms and a copy of both parties' current scientific research permits. The ECO will notify the receiver of shipment at least 24 hours in advance to make sure parties available to receive shipment. On one side of the outer package will include the following information:

- Addressee
- Addressor
- This package conforms to 49 CFR 173.4

Take

There should not be any significant take associated with sample collection under normal circumstances. Northern fur seal biological samples will be collected primarily during the subsistence harvest, which will involve no additional disturbance in addition to that already permitted for subsistence activities. Collection of marine mammal parts other than subsistence hunted/harvest or stranded animals may involve additional Level B incidental harassment disturbance takes under some circumstances, however this will be of a limited nature (e.g. disturbance to fur seals to sample a Steller sea lion carcass taken for subsistence). Take estimates are specified in Table 2 below.

Personnel

The principal investigator is Andrew Malavansky, Co-Director, Aleut Community of St. George Island-Ecosystem Conservation Office (ECO). Co-investigators are Karin Holser, Stewardship program, Bruce Robson, Co-Director, Community and Ecology Resources; and Stephen J. Insley, PhD, Assistant Researcher, Institute of Marine Science, University of California Santa Cruz (see supporting documents for resumes and contact information).

Timeframe

June-August - Fur seal subsistence harvest biosample collection

Year-round - Other subsistence hunted/harvested, and stranded animals year-round biosample collection

Marine Mammal Tooth Collection

Research Program

As stated above, the objective of the ECO marine mammal tooth collection project is to provide full information on fur seals and other species that are sampled for ongoing pathology studies conducted by the NMML, as well as any biosample requests or other research. The primary species for which tooth samples will be collected will be northern fur seals.

Under the current agreement and sampling protocol established by NMML for collection of teeth from juvenile male fur seals taken on the subsistence harvest, ECO collects both upper canine teeth (n=2) from approximately 50% of the harvested seals (i.e. one of every five seals). The NMML does not currently retain the lower canine teeth from fur seals sampled at the subsistence harvests. ECO is requesting a permit to collect both upper canine teeth (n=2) from any harvested juvenile male fur seals that are not sampled for the NMML in order to determine the age of these seals in addition to the 50% of the harvested seals sampled for NMML. We also want to collect both lower canine teeth (n=2) from seals sampled under the NMML protocol to insure the retention of an in-house sample from each seal harvested for local subsistence. If additional requests are made for subsistence harvest teeth by other researchers, these requests will be handled through the biosampling program.

To determine the age of harvested seals, ECO Research Assistant(s) will first count the annual growth layers on each tooth macroscopically to determine the age of the seal. When funding is available, ECO will prepare and section an appropriate sample of teeth to confirm macroscopic counts of annual growth lines. Age determinations from the lower canine teeth retained by ECO will be compared to the NMML age readings of the upper canine teeth from the same seals to insure consistency in methodology between the two organizations. The tooth samples will be retained by the ECO and will be used to develop local capacity to prepare thin sections of teeth to read nursing lines in the first annual growth layer when funding is available.

Additionally, ECO Research Assistant(s) will collect and age teeth collected from other subsistence harvested/hunted and beach cast marine mammal species on St. George Island, including harbor seal and Steller sea lion. The additional species sampled may include Pacific walrus (*Odobenus rosmarus divergens*) which occasionally occur on St. George Island, or beach cast cetacean species such as harbor porpoise (*Phocoena phocoena*), Dalls Porpoise (*Phocoenoides dalli*) or Killer Whales (*Orcinus Orca*). These teeth will be archived locally and the data entered in to the ECO Tanam Amgignaa (Island Sentinel) Database. Data will be shared with other researchers that may have received samples from the same animal and NMML. The age data from the teeth collected from subsistence harvested species will also be incorporated in to the annual subsistence harvest reports.

Take

There is no take associated with sectioning of marine mammal teeth.

Personnel

The principal investigator is Andrew Malavansky, Co-Director, Aleut Community of St. George Island-Ecosystem Conservation Office (ECO). Co-investigators are Max Malavansky Jr, Co-Director Kayumixtax Eco-Office, Karin Holser, Stewardship program, Bruce Robson, Co-Director, Community and Ecology Resources; and Stephen J. Insley, PhD, Assistant Researcher, Institute of Marine Science, University of California Santa Cruz (see supporting documents for resumes and contact information).

Timeframe

Year-round

Entanglement Program

Research Program

Locate, respond to, capture, and remove debris from entangled fur seals.

In order to assess the rate of seal entanglement (see below), disentanglement crew members will search for entangled seals during observational surveys at specified trend sites. In addition, non-survey areas will be regularly scanned for entangled seals and entanglement surveys will also be a regular part of subsistence harvest activities.

Entangled fur seals will be captured with noose poles or capture nets and as necessary secured on a restraint board to prevent injuries to the fur seal or to researchers as described in Gentry and Holt (1982). Captures begin by slowly crawling towards the subject while making maximal use of the local topography (e.g. boulders, etc.) to allow close approach without being detected. Such an approach minimizes disturbance to any surrounding seals while getting within capture range of the potential subjects. For temporary restraint, we will employ a standard neck-squeeze type restraining board (see Antonelis, 1992) combined with a neoprene “H” or “E” harness that serves to hold the seal’s fore-flippers in tight against their body. While securely restrained, the seal is disentangled (e.g. the net, packing band, etc., is cut with side-cutting pliers and carefully removed). Disentanglements typically take between five and twenty minutes to complete. Seals are released by first removing the neoprene harness and then lifting the headboard. All crew have moved 5-10 m away from the seal at this point and remain low and still while the seal moves away.

By conducting captures in the manner described above, disturbance to adjacent seals will be minimized. In situations where capture attempts will cause unacceptable disturbance to haul out areas, sightings will be recorded (and seals photographed) and the location of entangled seals will be monitored to the greatest extent possible to increase the likelihood of future capture opportunities. An estimate of the number of seals disturbed during any capture attempt will be recorded.

The age class of captured and disentangled fur seals will be estimated using standard evaluation protocols based on size, vibrissae color and pelage characteristics (Scheffer 1962, Vladimirov and Nikulin 1993). The type and weight of debris, mesh size or circumference of entangling loop, and the extent of the wound created by the debris will also be recorded (see appendix for data form). Debris will be catalogued and retained for use in identifying the source of the debris.

Estimate and compare juvenile male, adult female, and pup fur seal entanglement rates and debris composition.

We will use observational surveys to monitor juvenile male, adult female, and pup fur seal entanglement. During observational surveys, researchers use binoculars to count entangled and non-entangled fur seals at sampling sites on rookeries and haul outs. Specific sites are selected for repetitive sampling of juvenile and adult males, adult females and pups. Sites are selected to insure that the viewing location is reliable and to avoid disturbance to adjacent seals during most wind conditions.

Seals are counted within the defined sampling areas on haul outs and rookeries. Only seals with their heads, shoulders and necks visible are counted. Male seals on haul outs are classified as “harvestable” (approximately 2-4 yrs old) and “not harvestable” (approximately 5 yrs and older) to facilitate comparison with historical entanglement data. All entangled seals in a particular age or sex category observed are included in the count and any seals that are captured and disentangled are clearly marked by shearing away a visible line of guard hair on the neck and shoulders of each side to expose the light colored under-fur. This is done to insure that the entangled portion of the population is sampled “with replacement” (Fowler 1987). Each survey site is surveyed 1-2 times per week, subject to visibility and wind conditions, with a crew of one or two people viewing from a minimum distance of 30 m to the nearest seal.

Take

1) There should not be any significant takes of northern fur seals associated with observational entanglement surveys of rookeries and haul outs. Surveys observation points are all located at the periphery of rookeries and haul outs, a minimum of 30 m from the nearest seal, and are chosen to be accessible without disturbing any seals. A limited number of sub-adult and adult male fur seals on haul outs may be taken by disturbance due to changes in wind conditions resulting in seals, via olfactory cues, detecting the presence of researchers conducting surveys.
2) Entanglement surveys conducted during the subsistence harvest will involve no additional disturbance in addition to that already permitted for subsistence activities.
3) Disentanglement captures are not included in this permit application because they will be included under our Marine Mammal Stranding Agreement with

the NMFS. However, incidental disturbance caused by disentanglement activities will not covered in our Stranding agreement and are therefore part of this application. The estimated number of adult and juvenile male captures is estimated to be approximately 50% of that on St. Paul Island. On St. Paul Island the maximum number of capture attempts recorded between 1998 and 2005 was 97 in 2002. Thus, we expect the maximum number of juvenile male capture attempts to be approximately 50/year. ECO does not currently attempt to capture adult female northern fur seals pups on the rookeries. However an ECO capture team was trained in adult female capture techniques during the 2004 and 2005 seasons by Dr. Stephen Insley under the authorization of NMFS Permit No. 1045-1713-00. Female and pup captures are included in this permit application in anticipation that we will add this component to our entanglement research in coming years. ECO will initiate any program to attempt female/pup rookery captures in close consultation with NMFS co-management partners and the Pribilof Islands Fur Seal Coordinator for NOAA Fisheries.

4) The harassment numbers listed in Table 2 (below) are maximum estimates. The numbers were estimated by the PI in consultation with the co-PI's Mr. Bruce Robson and Dr. Stephen Insley, who have collectively conducted these procedures over the past three decades. Dr. Insley participated in entanglement roundups during the late-1980s and early 1990s. Mr. Robson has been involved in entanglement surveys and captures since 1990, first with the National Marine Mammal Laboratory and since 2002 under the authority of NMFS Permit No. 1066-1750-00, held by Michael T. Williams. The harassment numbers are also consistent with Permit No. 1066-1750-00.

   The intentional harassment level of 2,500 adult/juvenile male fur seals refers to occasions when more than one entangled fur seal is in the same area. When these incidents occur, a round up of a majority of fur seals on a haul out is the safest and most effective procedure. A round up involves surrounding a group of seals (e.g. maximum of 200) to the extent that the target seals are contained. The process is the same as that used by Fowler (1987) where it is described in detail. While the seals are contained, they are allowed to spread out to avoid stress and excessive movement. Seals are allowed to escape through a controlled exit (i.e. bottleneck) point where the target (i.e. entangled) animals can be readily spotted and captured. When a target seal exits, the bottleneck can be quickly closed so that any remaining targets are not simultaneously loose. This process is continued until all target animals are processed.

Personnel

The principal investigator is Andrew Malavansky, Co-Director, Aleut Community of St. George Island-Ecosystem Conservation Office (ECO). Co-investigators are Max Malavansky Jr, Kayumixtax Eco-Office, Karin Holser, Stewardship program, Bruce Robson, Co-Director, Community and Ecology Resources; and

Stephen J. Insley, PhD, Assistant Researcher, Institute of Marine Science, University of California Santa Cruz (see supporting documents for resumes and contact information).

Timeframe

June-December – Observational entanglement surveys

June-August – Fur seal subsistence harvest entanglement surveys

April-December – Disentanglement captures

Tanam Amgignaa (Island Sentinel) Program

Research Program

The Tanam Amgignaa (Island Sentinel) Program (TA Program) will be used to record all routine Island Sentinel observations of marine mammals, rookery disturbance monitoring and any observed interactions with humans. Sentinels and Tribal Conservation Officers will daily or weekly visit marine mammal observation points to census or observe specific species and monitor wildlife areas. The TA Program will also integrate a network of remote time-lapse and video cameras installed at harbor seal, northern fur seal, and Steller sea lion rookeries and haulouts. The objectives of the remote camera program are to: 1) remotely conduct census counts and observations of harbor seal and Steller sea lion behavior: and 2) evaluate the ability of the technology to provide information on northern fur seal female and pup numbers, entanglement rates, and life history.

Take

There should not be any significant take associated with island sentinel observations under normal circumstances. As more northern fur seals return to the island in June and July of each year the chance of Level B harassment increases as the Island Sentinels observe fur seal activity and movement on the rookeries and haul outs and shift their monitoring locations to avoid harassment. Additionally, the downloading of photographs and data from, and regular maintenance checks on, remote photographic equipment may involve some Level B harassment of northern fur seals, but is unlikely to cause any disturbance to harbor seals and/or Steller sea lions. Cameras will be positioned a minimum of 30 m to the nearest seal and will be situated so that access can be obtained without causing any disturbance (e.g. from cliff-tops).

Sentinels will work in coordination with other researchers conducting permitted research activities on fur seal rookeries when conducting observations that may cause a disturbance to fur seals.

Personnel

The principal investigator is Andrew Malavansky, Co-Director, Aleut Community of St. George Island-Ecosystem Conservation Office (ECO). Co-investigators are Max Malavansky Jr, Co-Director Kayumixtax Eco-Office, Karin Holser,

Stewardship program, Bruce Robson, Co-Director, Community and Ecology Resources; and Stephen J. Insley, PhD, Assistant Researcher, Institute of Marine Science, University of California Santa Cruz. (see supporting documents for resumes and contact information).

Timeframe

Observations occur year-round

2. Additional Information for Removing Animals from the Wild into Captivity and Research or Enhancement on Captive or Rehabilitating Animals

No animals will be removed from the wild.

3. Lethal Take

No intentional lethal take is proposed. Mortality during capture, restraint and disentanglement, although rare is possible. If such an event occurs, and the necessary expertise is available, a full necropsy will be conducted as soon after death as possible. If the necessary expertise is not available, every effort will be made to secure freezer space to store the animal until a necropsy can be conducted. Necropsy information will be important to determine whether entangled seals died as a result of injuries related to their entanglement (e.g. deep wounds or systemic infections) or due to the stress of capture and handling. It is also possible that these two factors can interact. If more than two accidental mortalities occur in a single year that are determined to be primarily due to capture and handling (e.g. no existing wound caused by the entangling debris), capture operations will be suspended pending consultation with the NMFS permit office. It is important to understand, however, if intervention in the form of disentanglement is not taken, in most cases the entanglement will eventually become lethal.

Table 2. Proposed activities: May 2007 – April 2011.							
Species	**Life Stage**	**Sex**	**Expected Take or Import/Export**	**Number of Takes per Individual**	**Take Action**	**Location**	**Dates/Time Period**
1.A. Biosampling Activities: Level B Harassment Only							
Northern fur seal (*Callorhinus ursinus*)	Adults	Females	100	1	Incidental harassment to peripheral seals caused by tissue retrieval from dead stranded, subsistence hunted and beach cast marine mammals.	Pribilof Islands, Bering Sea, Alaska.	Year-round, June 2007-June 2012.
	Adults	Males	50	1			
	Juveniles	Males	200	1			
	Pups	Both	100	1			
Steller sea lion (*Eumetopias jubatus*)	Adults	Females	0	0			
	Adults	Males	0	0			
	Juveniles	Males	0	0			
	Pups	Both	0	0			
Harbor seal (*Phoca vitulina*)	Adults	Females	0	0			
	Adults	Males	0	0			
	Juveniles	Males	0	0			
	Pups	Both	0	0			
1.B. Biosampling Activities: Estimate of Sample Export							
Northern fur seal (*Callorhinus ursinus*)	Adults	Females	10	N/A	Export of biological samples from dead stranded, subsistence hunted and beach cast marine mammals.	Pribilof Islands, Bering Sea, Alaska.	Year-round, June 2007-June 2012.
	Adults	Males	10	N/A			
	Juveniles	Males	50	N/A			
	Pups	Both	50	N/A			
Steller sea lion (*Eumetopias jubatus*)	Adults	Females	5	N/A			
	Adults	Males	10	N/A			
	Juveniles	Males	15	N/A			
	Pups	Both	5	N/A			
Harbor seal (*Phoca vitulina*)	Adults	Females	5	N/A			
	Adults	Males	5	N/A			
	Juveniles	Males	5	N/A			
	Pups	Both	5	N/A			

Table 2. Continued. Proposed activities: May 2007 – April 2011.							
Species	**Life Stage**	**Sex**	**Expected Take or Import/Export**	**Number of Takes per Individual**	**Take Action**	**Location**	**Dates/Time Period**
2. Disentanglement: Level B Harassment Only							
Northern fur seal (*Callorhinus ursinus*)	Juveniles	Males	2500	1	Intentional harassment caused by group "round-up" technique used to capture/disentangle >1 seal in same group.	Pribilof Islands, Bering Sea, Alaska.	June-November, 2007-2012.
	Adults	Females	250	1	Incidental harassment to peripheral seals caused by nearby disentanglement activities.		
	Adults	Males	100	1			
	Juveniles	Males	2000	1			
	Pups	Both	400	1			
3. Island Sentinel Activities: Level B Harassment Only							
Northern fur seal (*Callorhinus ursinus*)	Adults	Females	1000	1	Incidental harassment to peripheral seals caused by Sentinel observational activities including remote camera activities (i.e. deployment, data downloads and maintenance).	Pribilof Islands, Bering Sea, Alaska.	Year-round, June 2007-June 2012.
	Adults	Males	400	1			
	Juveniles	Males	1000	1			
	Pups	Both	1000	1			
Steller sea lion (*Eumetopias jubatus*)	Adults	Females	0	0			
	Adults	Males	0	0			
	Juveniles	Males	0	0			
	Pups	Both	0	0			
Harbor seal (*Phoca vitulina*)	Adults	Females	0	0			
	Adults	Males	0	0			
	Juveniles	Males	0	0			
	Pups	Both	0	0			

D. Research Effects and Mitigation

1.a. Direct Effects: All activities covered in the current permit application do not include directed takes (disentanglement captures will be covered under our Stranding Agreement) and are expected to have little-to-no effects on the animals. There is a very low likelihood that any of the observational techniques proposed in this permit could cause seals to stampede in a manner that could cause injury or death to fur seals. ECO personnel are trained to stop moving and lower their profile in the event of a disturbance in order to minimize any disturbance related movement on the rookery. The effects of disentanglement are related to the stress associated with capture. Entangled fur seals will be captured with noose poles or capture nets and as necessary secured on a restraint board to prevent injuries to the fur seal or to researchers as described in Gentry and Holt (1982). Captures will be carried out with experienced personnel, which will help to minimize handling and restraint time. Restraint time is normally less than 15 minutes. Every possible precaution will be taken during these procedures to ensure that no harm comes to the seal. No drugs or other substances with lasting effects will be administered. Once released, the seal will be monitored during reintegration with the other seals. Our protocol is to remain with the seal until it begins to walk towards other seals or towards the water. Reintegration into the group is not critical for the seal's well being (seals are solitary for the majority of their lives) and so is not an essential part of the post capture protocol. If the seal does not immediately move towards other seals or towards the water one of the capture team will remain with it for up to one hour. In the unlikely event that the seal has still not moved, it will be monitored as frequently as is possible afterwards (frequency is location dependant). No direct intervention is deemed necessary or will be attempted. As noted above (C.3) in most cases entangled animals that are not disentangled will die (Fowler, 1987).

1.b. Incidental Effects: As noted above, except for disentanglement captures (to be covered under our Stranding Agreement), there will not be directed takes and therefore both direct and indirect effects are expected to be minimal if any. The disentanglement captures will be conducted in a manner that reduces disturbance to adjacent seals and minimizes disturbance to rookery and haul out areas. Incidental harassment of individual seals close to those being targeted for capture will be of short duration (i.e. < 1 hour). The slow crawling approach technique minimizes the number of seals that are harassed in this way. Those seals directly in the approach path are able to move away in a slow relaxed manner. In addition, once captured, the target seal is moved away from the initial area, allowing any incidentally harassed seals to quickly resume normal activities. In addition, in situations where capture attempts will cause unacceptable disturbance to haul out areas, sightings will be recorded (and seals photographed) and the location of entangled seals will be monitored to the greatest extent possible to increase the likelihood of future capture opportunities. To avoid disturbance to rookery areas, attempts to capture entangled northern fur seal pups will be made primarily when pups are hauled out in areas on the edges of the breeding rookeries.

2. Measures to Minimize Effects: Some disturbance to nearby seals will occur during the disentanglement captures. However, by using a slow crawling approach (as noted above), this disturbance can be kept to a minimum. In particular, seals are given ample time to slowly move away from a researcher and thus it is possible to avoid panic "running". The same technique also makes it possible to approach the subject closely prior to capture, thus minimizing the number of nearby seals disturbed. Finally, restraint of the captured seals will occur out of line-of-sight of the group so that activities may quickly return to normal.

3. Monitoring effects of activities: The only activity expected to have an effect is disentanglement captures. Following disentanglement, the seal will be released and be monitored during reintegration with the other seals. Our protocol is to remain with the seal until it begins to walk towards other seals or towards the water. This is normally instantaneous. Reintegration into the group is not critical for the seal's well being (seals are solitary for the majority of their lives) and so is not an essential part of the post capture protocol. If the seal does not immediately move towards other seals or towards the water one of the capture team will remain with it for up to one hour. In the unlikely event that the seal has still not moved, it will be monitored as frequently as is possible afterwards (frequency is location dependant). No direct intervention is deemed necessary or will be attempted. No drugs or other substances with lasting effects will be administered so recovery from capture is expected to be immediate. Prior to all capture attempts a count will be made of the number of seals in the capture area. A second count will be made following the release of an entangled seal (or after an unsuccessful capture attempt) to ascertain the number of seals that left the area due to capture disturbance.

4. Alternatives: Other than disentanglement through direct intervention, there are no alternatives that we are aware of. Without such direct intervention, most cases of entanglements are expected to be lethal.

E. Resources Needed to Accomplish Objectives

1. Co-management agreement with NMFS: In July 2001, the Aleut Community of St. George Island entered into a co-management agreement with the National Marine Fisheries Service for the management of northern fur seals and Steller sea lions. The activities described herein are in fulfillment of our co-management responsibilities for which funding has been made available through an annual budget (see attached agreement and contract in Appendix B). These include our Biosample Program, our Entanglement Program, and our Island Sentinel Program.

2. Other funds: Additional supplementary funds are described below by project/program.

a. Teeth Sectioning: The St. George Island ECO participated in the World Wildlife Fund's (WWF) Coastal Communities for Science (CCS) program funded by the National Science Foundation in 2005. This program provided the training and equipment necessary to section marine mammal teeth, including but not

limited to northern fur seals and Steller sea lion, for the purpose of aging individual animals and reading nursing lines for determining growth.

b. Entanglement Program: The St. George Island ECO has received funding in collaboration with St. Paul ECO in past years to perform entanglement monitoring and disentanglement activities on fur seals. Continuation of this program is necessary to further address the issue of fur seal entanglement and progress toward preventing future entanglement by addressing the source of marine debris. The ECO entanglement program is currently operating under a NMFS Prescott grant for 2006.

c. Island Sentinel: The primary funding for Island Sentinel activities comes from the NMFS co-management budget. Addition funds for equipment (i.e. time-lapse photographic gear) has been provided by the Alaska Fisheries and Development Foundation (AFDF) and the World Wildlife Fund (WWF).

F. Publication of Results

Research results will be published and made available in the appropriate referred scientific journals or as technical reports at the discretion of the ECO staff. All publications will be in compliance with any funding requirements. Samples sent to and analyzed by external researchers may result in additional publication.

V. National Environmental Policy Act Considerations

1. No. The research does not involve any new, innovative, controversial and/or experimental equipment or techniques.

2. No. The activities do not involve the collection, handling, or transport of potentially infectious agents or pathogens and/or the use or transport of hazardous substances. The research techniques are established for stranded marine mammals and have been shared with Alaska Native communities through the *"Cooperative Effort between Alaska Native People and Federal Agencies on Marine Mammal and Bird Stranding Program."*

3. No. The activity will not cause loss or destruction of significant scientific, cultural or historic resources. In fact, allowing coastal Alaska Native subsistence users to send in parts or specimens to a permitted Alaska Native organization acknowledges the cultural importance and continued uses of marine mammals.

4. No. Samples will only be taken from dead stranded (beach cast) marine mammals and/or from Alaska Native subsistence users practicing customary and traditional use of marine mammals. Transportation will be in sealed containers of frozen parts or parts fully bathed in a suitable storage agent such as ethanol.

VI. Previous and Other Permits

A. Previous Permits

N/A. No previous permits have been issued to Aleut Community of St. George Island-Tribal Government-Ecosystem Conservation Office.

B. Other Permits

Andrew Malavansky is listed as Co-Investigator on Permit No. 1066-1750-00, which is held by Michael T. Williams. Andrew Malavansky is also listed as Co-Investigator under permit No. 782-1694

VII. References

Antonelis, G.A. 1992. Northern fur seal research techniques manual. U.S. Department of Commerce, Seattle. NOAA Technical Memorandum NMFS F/NWC-214. 47p.

Fowler, C. W. 1987. Marine debris and northern fur seals: a case study. Marine Pollution Bulletin 18(6B): 326-335.

Gentry, R. L., and J. R. Holt. 1982. Equipment and techniques for handling northern fur seals. NOAA Technical Memorandum NMFS-SSRF-758.

Scheffer, VB, 1962. Pelage and surface topography of the northern fur seal. US Fish and Wildlife Service, N. American Fauna No. 64.

Vladimirov, V. A., and V. S. Nikulin. 1993. Preliminary investigation of age-sex structure of northern fur seals on the Pribilof Islands, 1991. Pages 61-73 In E. H. Sinclair (ed.) Fur Seal Investigations, 1991. U.S. Department of Commerce NOAA Technical Memorandum NMFS-AFSC-24.

VIII. Certification and Signature

"I hereby certify that the foregoing information is complete, true, and correct to the best of my knowledge and belief. I understand that this information is submitted for the purpose of obtaining a permit under one or more of the following statutes and the regulations promulgated there under, as indicated in Section I of this application:

The Endangered Species Act of 1973 (16 U.S.C. 1531-1543) and regulations (50 CFR Part 222); and/or

The Marine Mammal Protection Act of 1972 (16 U.S.C. 1361-1407) and regulations (50 CFR Part 216); and/or

The Fur Seal Act of 1966 (16 U.S.C. 1151-1175).

I also understand that any false statement may subject me to the criminal penalties of 18 U.S.C. 1001, or to penalties provided under the Endangered Species Act of 1973, the Marine Mammal Protection Act of 1972, or the Fur Seal Act of 1966, whichever are applicable."

Andrew Malavansky	17 January 2007
ECO Co-Director	Date

IX. Attachments:

Appendix A - Curriculum Vitas (Malavansky, Malavansky Jr, Robson, Insley, and Holser)

Appendix B - Funding Sources as per section E.