

**Marine Mammal Commission**  
4340 East-West Highway, Room 905  
Bethesda, MD 20814

13 July 2009

Mr. P. Michael Payne, Chief  
Permits, Conservation, and Education Division  
Office of Protected Resources  
National Marine Fisheries Service  
1315 East-West Highway  
Silver Spring, MD 20910-3225

Re: Review of Permit Application Nos. 14326 (782-1889) (National Marine Mammal Laboratory); 14325 (358-1888) (The Alaska Department of Fish and Game); 14335 (881-1890) (Alaska SeaLife Center); 14334 (881-1745) (Alaska SeaLife Center); 14324 (881-1890-02) (Alaska SeaLife Center); 14336 (1034-1887) (Dr. Markus Horning); 14337 (715-1785) (The North Pacific Universities Marine Mammal Research Consortium); 14327 (782-1708-05) (National Marine Fisheries Service); 14329 (715-1785) (The North Pacific Universities Marine Mammal Research Consortium); 14328 (new) (Alaska SeaLife Center); 14330 (1118-1881) (Aleut Community of St. Paul Island); and 14331 (1119-1882) (Aleut Community of St. George Island)

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the above-referenced permit applications with regard to the goals, policies, and requirements of the Marine Mammal Protection Act. The applicants are seeking authorization to continue or initiate research on the ecology and biology of threatened and endangered Steller sea lions and depleted northern fur seals to investigate the cause or causes of their declines. The Commission provided comments on the Service's Draft Programmatic Environmental Impact Statement (DPEIS) concerning the proposed actions by letter of 2 April 2007 (enclosed and incorporated by reference).

### **GENERAL RECOMMENDATIONS**

As we have stated in the past (letters of 2 August 2002, 10 June 2005, and 2 April 2007), the Commission supports additional research to determine the cause or causes of the decline of Steller sea lions and the factors that may be slowing or preventing the species' recovery. The multiple research programs currently authorized and for which authorizations are being requested have the potential to provide substantial information needed for informed and effective management of the populations and their ecosystems.

The Commission also recognizes that confounding permits with additional requirements imposes an increasing burden on researchers who are proposing to undertake complex studies under difficult environmental conditions, all with limited resources and logistic support. Despite such reservations, additional requirements seem to be necessary because, in the Commission's view, the collection of studies described in these permit applications lacks sufficient consistency with the Steller Sea Lion Recovery Plan. Perhaps most obviously, the overall research has not been integrated

into an adaptive, experimental research and management strategy to investigate the indirect effects of fishing on Steller sea lions. As the Commission pointed out in its 2 April 2007 letter to the Service, the DPEIS indicates that research on Steller sea lions and northern fur seals will have no effect on fisheries in the Bering Sea and Gulf of Alaska. The Commission does not understand how the Service can implement an adaptive, experimental approach to research if it is unwilling to impose at least some changes on the fisheries to assess their effects. Thus, the Commission is compelled to recommend the addition of an independent implementation team to this already complicated situation to ensure that the recommendations of the recovery plan are acknowledged and addressed. Although it is unfortunate that resources need to be diverted from research activities to support implementation teams for Steller sea lion and northern fur seal research, the Commission believes that such are teams are necessary.

The Marine Mammal Commission recommends that the National Marine Fisheries Service—

- promptly undertake discussions with the Marine Mammal Commission on how best to (1) develop implementation plans for the Steller sea lion recovery plan and the northern fur seal conservation plan and (2) establish a research oversight team to oversee and coordinate the activities of all permit-holders conducting research on these populations;
- require implementation plans and applicable permits to incorporate science-based methods for assessing the effects of research activities whenever there is a reasonable basis for concern about potential impacts. The research oversight team should be helpful in assisting the Service develop guidelines for conducting these assessments and evaluating the significance of the results;
- require each permit-holder to include in its annual reports a description of the research conducted, the number of animals taken, the methods used for assessing potential effects of the research on the subject animals, the results of capture, tagging, branding, and monitoring activities, any deaths that occurred, and—if deaths occurred—the measures proposed to avoid or reduce the occurrence of such injuries and deaths in the future. Timely submission of such information should be made a requirement of any new permits that are issued, and authorization to continue research activities in subsequent years should be made contingent on the submission of timely and complete reports. The Permits Office should then ensure that the estimated serious injury and mortality rates of the combined studies do not exceed limits determined to be acceptable in the Service's final environmental impact statement;
- develop improved methods for tracking and resolving uncertainties concerning the potential adverse effects of the research (e.g., by establishing and maintaining a database on the various procedures—capture, anesthesia, instrument attachment, surgery, etc.—done on individually recognizable Steller sea lions and northern fur seals and evaluating the information in that database to resolve such uncertainties);
- prior to issuing the permits, require that all research that involves an invasive procedure or that may harm or materially alter the behavior of the animals being studied has been reviewed and approved by an Institutional Animal Care and Use Committee (IACUC) and

- withhold approval of any permit application for which written confirmation of IACUC review and approval has not been provided;
- require the applicants to confirm that a veterinarian will be present to carry out or supervise all activities involving the use of chemical and gas anesthesia. In addition, a curriculum vitae of the veterinarian or veterinarians who would be involved should be provided if not already on file with the Permits Office; and
  - subject to submission of the additional information called for in this letter, and the satisfactory resolution of the other issues noted in these recommendations and in the discussion of the individual permits, issue the requested permits, subject to appropriate terms and conditions.

## **RATIONALE**

***Implementation team and plan:*** According to the minutes of the Service's 23 January 2009 Steller sea lion research coordination workshop, the Service recommended that, as possible, researchers should link their proposed research activities to Steller sea lion recovery plan priorities or, absent such a direct link, describe why their proposed research design and specific methodologies will result in acquisition of information needed to guide management and facilitate recovery. Despite this recommendation, not all of the applications provide the expected links to the recovery plan or otherwise provide a compelling case that the proposed research is necessary to further the conservation of the species.

In its final programmatic environmental impact statement (FPEIS), the Service notes that the coordination of research has not been formalized but that coordination occurs on a day-to-day or seasonal basis and that large-scale efforts such as monitoring or survey work also have been coordinated in considerable detail. The Service recognizes, however, that what is lacking is a research implementation plan that focuses beyond the immediate activities and needs. The Service states that it considers development of an objective plan to be of sufficient importance that the Marine Mammal Commission and its Committee of Scientific Advisors should oversee its development and recommend implementation of the plan to the Secretary of Commerce. The Service states that “[a]t this time demonstration of an effective effort to implement a long term research plan for Steller sea lions and northern fur seals may be the single most important thing that NMFS can do to instill a sense of confidence and trust in the research and management efforts on behalf of the species of concern.” The Service notes that, to achieve this goal, it intends to convene an independent research implementation team with Commission oversight to assess the effectiveness of the research program. The Commission supports the Service's plan to adopt a formal research coordination strategy and establish an implementation or oversight team, and it welcomes the invitation to meet with the Service to discuss how best to facilitate its development. The Marine Mammal Commission therefore recommends that the Service promptly undertake discussions with the Commission regarding how best to (1) develop implementation plans for the Steller sea lion recovery plan and northern fur seal conservation plan and (2) establish a research oversight team to oversee and coordinate the activities of all permit-holders conducting research on these populations.

***Monitoring and reporting of adverse research effects:*** None of the research applications provide explicit monitoring protocols or sufficient information to evaluate the potential adverse effects of the proposed research. The Commission believes that dedicated studies or, alternatively, post-activity monitoring are particularly important to assess the short-term and long-term effects of invasive procedures such as hot-branding and surgical implants—activities that pose risks associated with capture, handling, and the infliction of burn wounds or surgical incisions that can become infected. These studies or monitoring programs also should be designed to determine the utility of such procedures; evaluate whether they result in unanticipated pain, suffering, or death; and minimize the potential for unanticipated and undetected effects that may skew research results, such as could occur with estimates of survival derived from mark-recapture studies. It is apparent from reviewing the applications that a level of uncertainty continues to exist regarding the long-term effects of branding and other invasive procedures. As the Commission stated in its letters of 2 August 2002, 10 June 2005, and 2 April 2007, researchers using potentially harmful techniques on captured animals have an obligation from both a humane and a scientific perspective to understand the effects of their activities so that such information can be factored into cost-benefit analyses regarding the use of various research methods and, indeed, are accounted for in related scientific results. Therefore, the Marine Mammal Commission recommends that the Service require implementation plans and applicable permits to incorporate science-based methods for assessing the effects of research activities whenever there is a reasonable basis for concern about potential impacts. The research oversight team should be helpful in developing guidelines for designing the necessary studies, conducting the assessments, and evaluating the significance of the results.

According to the minutes of the Service's 27 January 2009 Steller sea lion coordination workshop, the Permits Office expressed concern that, because the potential biological removal (PBR) level had declined for the western population of Steller sea lions, the estimated serious injury and mortality rates of the combined requested studies could potentially exceed limits suggested as "acceptable" in the FPEIS. The Permits Office reminded researchers that it "remains important to justify the numbers of takes and frequency of activities in an application." The Commission notes that the FPEIS states that "[s]erious injuries and deaths observed during research activities are recorded in the annual reports filed with NMFS F/PR1 and are the basis of some estimates.... However, we do not have quantitative information on the effects of research activities that may occur after researchers have left the area. We have therefore relied on estimates of the proportions and rates of animals experiencing injury through different mechanisms, based on the professional opinion of highly experienced researchers at NMML." Further, the FPEIS states that "[t]he methodology for estimating unobserved mortality used in Chapter 4 of this PEIS will be applied to the requested take contained in each permit application. NMFS F/PR1 staff will calculate the requested and potential incidental mortality, and adjust the permitted take as appropriate, taking into account the total take already authorized in existing permits, to ensure that levels estimated in the PEIS are not exceeded." Thus, the Service's estimates of serious injury and mortality have been developed absent reliable quantitative data. This issue also was raised in the 14 October 2008 Report of the Independent Review Panel on the National Marine Fisheries Service's Implementation of the Permit Program for Research. The report stated that the Service's method of risk assessment "relies on assumptions about how animals will react to various research activities and estimates of the

numbers of animals that would die or be injured as a result. There is little quantitative information on the effects of most research activities. The assumptions and estimates were based on anecdotal observations and the professional opinions of researchers at NMML.”

For those reasons, it is not apparent to the Commission that post-activity monitoring is being sufficiently and consistently conducted by permit-holders. Moreover, it is unclear whether all permit applicants are including potential post-activity mortalities in their calculations of potential unintended mortalities or reporting post-activity mortalities in their annual reports of research activities. The Marine Mammal Commission therefore recommends that, to develop a more robust mortality risk assessment method, the Service ensure that each permit-holder includes in its annual reports a complete description of the research conducted during the previous year, including, the number of animals taken; the methods used to assess the potential effects of the research on the animals; the results of post-capture tagging, branding, and monitoring activities; any deaths that occurred; and, if deaths occurred, the measures proposed to avoid or reduce the occurrence of such injuries and deaths in the future. Timely submission of such information should help the Service coordinate these studies and evaluate the impacts of the research before the next field season. Therefore, authorizations to continue research activities in subsequent years should be made contingent on the submission of timely and complete reports.

The information provided in annual reports, if maintained in a database, could be particularly valuable for tracking and analyzing research efforts and assessing possible research-related impacts and cumulative impacts on the subject populations. The Marine Mammal Commission therefore recommends that the Service consider establishing and maintaining a database on the various procedures (e.g., capture, anesthesia, instrument attachment, surgery) done on individually recognizable Steller sea lions and northern fur seals and periodically evaluate the information in that database to resolve help uncertainties concerning potential adverse effects of the research. Such information should help the Permits Office ensure that the estimated serious injury and mortality rates of the combined studies do not exceed limits determined to be acceptable in the Service’s FPEIS.

***IACUC approval:*** The Service’s minutes of its 27 January 2009 Steller sea lion research coordination workshop stated that neither the Oregon Department of Fish and Wildlife nor the Washington Department of Fish and Wildlife currently has an IACUC in place to comply with the requirements of the Animal Welfare Act and the Animal and Plant Health Inspection Service’s implementing regulations. The minutes implied that the Service was planning to establish an IACUC at the Alaska Fisheries Science Center in 2009 and that the three agencies had agreed to combine their Washington, Oregon, and California research activities into one permit application to be submitted by the National Marine Mammal Laboratory. However, the Commission understands that neither the Alaska Fisheries Science Center nor the National Marine Mammal Laboratory has yet to establish an IACUC. The Commission strongly supports the efforts of most applicants to comply with the requirements of the Animal Welfare Act. Not only is this a requirement under federal law, but it provides an important safeguard concerning the humane treatment of animals involved in research. We also believe that IACUC review will facilitate permit review as a considerable portion of the research described in the subject permit applications involves invasive procedures or

procedures that may harm or materially alter the behavior of the animals being studied. For these reasons, the Marine Mammal Commission recommends that the Service require that all researchers proposing to conduct research potentially having such impacts secure review and approval by an IACUC and that it withhold approval of any permit application for which written confirmation of IACUC review and approval has not been provided.

***Veterinary support and supervision:*** In many cases, the Commission is unable to determine from the application whether an experienced marine mammal veterinarian will be present to carry out or supervise activities involving the use of chemical and gas anesthesia. The Commission believes that having an experienced marine mammal veterinarian present to carry out or supervise activities involving the use of inhaled anesthesia should be standard practice. Under ideal conditions, biologists may have sufficient experience to administer anesthesia. However, field conditions often are not always ideal, problems can arise, and veterinary knowledge and skill may be essential to avoid mortalities. The Commission recognizes that the requirement for a veterinarian is an added complication and expense. Further, the Commission believes that it should be feasible to develop a means for training or certifying biologists to work independently with such tools (e.g., anesthesia). However, until such means have been developed, the Marine Mammal Commission therefore recommends that the Service require the applicants to confirm that a veterinarian will be present for this purpose. In all cases (i.e., with regard to all permit applications discussed later in this letter), a curriculum vitae of the veterinarian or veterinarians who would be involved should be provided if not already on file with the Permits Office.

## **SPECIFIC COMMENTS ON INDIVIDUAL PERMIT APPLICATIONS**

### **Steller Sea Lion Research**

#### **14326 (continuation of Permit No. 782-1889), National Marine Mammal Laboratory**

The applicant is requesting authorization to take by Level A and B harassment Steller sea lions from the eastern and western populations in the course of conducting aerial and ground surveys, scat collection, capture, sampling, branding, tagging, physiological testing, recapture activities, and observation and monitoring activities over a five-year period. The applicant would capture animals of both sexes and all ages for sampling, branding, and tagging. Pups weighing less than 20 kg or those with their umbilicus still attached would not be branded. The applicant also is requesting authorization to accidentally kill up to seven animals (five individuals from the western population and two non-pups from the eastern population) annually during the proposed research. Northern fur seals, harbor seals, and California sea lions would be harassed incidental to conducting the research on Steller sea lions. The applicant would conduct the research throughout Alaska during all months of the year. The applicant also would conduct additional research activities in Washington, Oregon, and California. The applicant has not prepared a formal research proposal. The purpose of the proposed research is to collect information on the life history, foraging behavior, habitat use, physiology, population status and trends, survival and reproductive rates, and condition of Steller sea lions in the North Pacific Ocean. The proposed research essentially is a continuation of that authorized and conducted under permit No. 782-1889, which will expire in August 2009.

In response to the Commission's concerns regarding certain aspects of the previous application (see letter of 2 May 2007, enclosed), the current application states that the researchers are proposing to use anesthesia when branding pups, juveniles, and adults; reduce the associated risk of mortality both from Telazol and from drowning by refraining from darting adult female sea lions that are close to the ocean shoreline or pools of standing water; dart animals from a short distance, thereby lowering the impact velocity and reducing the startle effect of darting; use body length/body mass regression to predict body mass, which should greatly reduce the potential for over-dosing or under-dosing an animal; and continue to use Telazol to sedate adult females, based on the results of studies with human infants (Hale 1999, Lee and Rubin 1993) and polar bears (Semple et al. 2000). The applicant states that these studies indicated that (1) the plasma concentration in human infants was typically less than 10 percent of the concentration in their mothers, which is well below the level that could produce anesthetic symptoms or other complications, and (2) the tissue residues of Telazol in polar bears were down to trace levels within 24 hours post-immobilization and, even at 12 hours, the highest concentrations were still well below the level that could produce an anesthetic effect. The Commission supports the applicant's adoption of a policy of using anesthesia for branding Steller sea lions and its steps to reduce the potential for serious injury or death associated with darting adult female sea lions.

However, based on the information provided in the application, the Commission is still unable to determine—

- whether an experienced marine mammal veterinarian will be present to carry out or supervise all activities involving the use of anesthesia. The application states on page 24 that this activity will be done “only by personnel thoroughly trained in its application.” The Commission believes that having an experienced marine mammal veterinarian present to carry out or supervise all activities involving the use of inhaled anesthesia should be adopted as a standard practice. The applicant should confirm that a veterinarian will be present for this purpose;
- whether the applicant's research has been reviewed and approved by an IACUC and the applicant has provided written confirmation of such review and approval;
- the length of time that Steller sea lions captured on floating platforms would be held, including the maximum time that the applicant would maintain them in holding cages before research procedures are initiated, what the applicant would do to prevent animals from overheating, and why alternative capture or research protocols that require shorter holding times are impractical;
- the measures that will be used to evaluate the effects of branding and handling on the animals. It may be that conducting dedicated studies of the short-term and long-term impacts of using these procedures may be the easiest, most straightforward, and most cost-effective means for collecting this information. Alternatively, researchers could engage in both short-term and long-term monitoring of animals (particularly mother/pup pairs) after animals have been handled and released, as part of the field studies. This and other applicants should provide information on how the effects of the proposed research activities will be evaluated prior to permit issuance to allow the Service and reviewers to evaluate

- whether the proposed studies and/or monitoring would be sufficient to assess the effects of branding, handling, and other procedures on the animals; and
- what steps the applicant would take to identify pups of lactating females that are targeted for capture before attempting to immobilize the female. This and other applicants proposing to chemically sedate adult female Steller sea lions by darting should identify the pup of the animal targeted for darting and, after darting, observe the pup closely or, if necessary, place it in a portable pen until the procedures on the mother have been completed.

### **14325 (previous Permit No. 358-1888), Alaska Department of Fish and Game**

The applicant is requesting authorization over a five-year period to conduct aerial and ground surveys, scat collection, capture, sampling, branding, physiological testing, and recapture activities, and observational and monitoring activities on Steller sea lions from the western and eastern populations. The applicant would capture animals of both sexes and all ages (pups, juveniles and adults) for sampling, branding, and tagging. The applicant has requested authorization for the accidental deaths of up to 15 Steller sea lions annually (up to 5 from the western population and up to 10 from the eastern population). The research on Steller sea lions would incidentally harass harbor seals, northern fur seals, and California sea lions. The applicant would conduct the research throughout Alaska during all months of the year, with activities concentrated in the summer months. The application does not include a formal research proposal. The proposed research essentially is a continuation of that authorized and conducted under permit No. 358-1888, which will expire in August 2009.

Based on its review of the application, the Commission notes that—

- on page 15 the application states that newborns will be branded, but on page 23 it states that pups weighing less than 20 kg or with an umbilicus will not be branded. This apparent inconsistency needs to be resolved;
- a veterinarian will be present if chemical immobilization is used and gas anesthesia will be administered and monitored only by personnel thoroughly trained in its application. As noted in our comments regarding application No. 14326 from the National Marine Mammal Laboratory, the Commission believes that having an experienced marine mammal veterinarian present to carry out or supervise all activities involving the use of both chemical and inhaled anesthesia should be standard practice. The applicant should confirm that a veterinarian will be present for this purpose;
- “[r]easonable steps will be taken to identify pups of lactating females before attempting to immobilize a lactating female. In the event a female dies or is seriously injured as a result of the activities, the orphaned pup shall, when it can be identified, be humanely provided for (i.e., salvaged...or if salvage is not possible, euthanized).” The applicant should clarify what it considers to be “reasonable” steps to identify pups and under what circumstances it would consider immobilizing a lactating female before identifying her dependent pup;



- the application does not, but should, discuss the risk of mortality, both from administering the drug and from drowning if an animal enters the water before the drug takes full effect and the steps that will be taken to minimize such risk;
- the applicant should provide additional information describing the proposed studies and/or short-term and long-term monitoring of animals that would be conducted to allow the Service and reviewers to evaluate whether the proposed monitoring would be sufficient to assess the effects of branding, handling, and other procedures on the animals;
- the applicant states that its IACUC approval will be renewed prior to any capture activity because new or additional techniques are being proposed (i.e., urinary catheter) and that new approval documents will be provided to the Permits Office. The Service should require written confirmation of IACUC review and approval prior to incorporating any new procedures in the permit;
- the applicant states that its capture and handling of sea lions on land has been of fairly short duration (0.2 to 1.1 hours), whereas holding times for sea lions captured in water or on land and moved to the research vessel ranged between 3 and 13 hours—with the animal being held in the capture box much of that time. Holding times varied depending on how many sea lions were captured and the time of day at which they were captured. The time animals were under gas anesthesia ranged from 0.7 to 1.9 hours. The applicant does not, but should, explain why holding times of up to 13 hours are appropriate (e.g., will be more humane/less stressful than alternatives that require shorter holding times). The applicant also should be asked to identify steps that it could take to minimize the length of time that animals are held in the capture boxes; and
- the application states that researchers are proposing to test the use of a net gun to capture targeted individuals on less crowded haul-out sites. The applicant does not, but should, clarify whether it proposes to use this experimental capture method on animals from the western population and, if so, explain why testing should not first be conducted on animals from the eastern population.

#### **14335 (continuation of Permit No. 881- 1890), Alaska SeaLife Center**

The applicant is requesting authorization over a five-year period to capture, sample, conduct physiological testing on, brand, tag, instrument, and recapture Steller sea lions from the western population. The study is a continuation of the Transient Juvenile Steller Sea Lion Project, authorized under prior permits 881-1668 and 881-1890, to study the health, nutrition, physiology, behavior, and survival of juvenile Steller sea lions. Each year the applicant would capture up to 20 pups and 32 juvenile animals of both sexes for sampling, branding, and tagging. Captures would disturb up to 3,500 animals of both sexes and all ages annually. The applicant would transport and temporarily maintain a subset of up to 12 juvenile animals at the applicant's South Beach facility for studies of health, physiology, and nutrition (including dry holding, controlled short-term fasting, anesthesia, blood sampling, blubber biopsy, X-ray, holding in a metabolic chamber, and deuterated water sampling). These animals also would be surgically implanted with dual life history transmitters prior to their release. The applicant would carry out this research west of 144° W longitude and at the

applicant's South Beach facility and requests authorization for the accidental mortality of up to two Steller sea lions annually.

Based upon its review of the application, the Commission notes that—

- an IACUC application has been submitted, with approval pending minor clarification. The Service should require that the applicant provide documentation of IACUC approval prior to issuing the permit;
- in regard to the Transient Juvenile Steller Sea Lion Project, the Service should consult with the Animal and Plant Health Inspection Service to confirm the adequacy of the applicant's South Beach facility for maintaining animals;
- the application states that deuterium oxide would be administered to juvenile sea lions up to four times to monitor body condition during temporary captivity. The application states that “[a]nimals may be maintained under anesthesia for the duration of the equilibration period [approximately 120 to 135 minutes] or manually restrained via squeeze cage for post-D<sub>2</sub>O blood samples.” The applicant should describe (1) what criteria would be used in deciding whether to anesthetize animals for this activity, (2) over what time intervals deuterium oxide studies would be conducted, and (3) any potential consequences of repeatedly anesthetizing animals;
- the application states that during the Transient Juvenile Steller Sea Lion Project, up to 12 juvenile sea lions will undergo “careful diet monitoring and selection of diet representing different trophic levels (and for varied time periods).” The application should provide additional details describing the proposed dietary studies;
- the application states that “[p]otential complications of the surgical implantation of dual life history transmitters may involve wound infection, wound dehiscence, or intraperitoneal septicemia/bacteremia. The likelihood of such complication will be minimized by conducting procedures in a clean, aseptic and whenever possible, sterile environment, and by gas sterilizing transmitters in ethylene oxide.” Because the surgeries would be performed at the applicant's facility, the applicant should clarify under what conditions it would not be possible to conduct the surgery in a sterile environment;
- page 16 of the application states that “[i]mplantation of dual life history transmitters will be performed with a minimum of three people: a surgeon, an anesthetist and a non-sterile surgical assistant.” However, page 17 states that “[o]nly qualified veterinarians or other personnel with sufficient experience in the technique will perform the implant procedures.” Assuming that the surgeon would be a veterinarian, the applicant should address this discrepancy. The applicant also should provide justification as to why an experienced marine mammal veterinary surgeon, or a veterinarian with extensive surgical experience working under the supervision of an experienced marine mammal veterinarian, would not carry out this surgical procedure;
- the application states that, “whenever possible, animals are maintained with conspecifics in varying numbers and enclosure configurations.” The applicant should explain the conditions or situations under which such maintenance of the animals would not be possible;

- the application states on page 27 that “in the event that a temporarily captive animal passes the health screen at the onset of the project, but does not meet these criteria upon the final health examination and is deemed a risk to the free-ranging population, we request authorization for extended holding time (duration determined by cause of risk and appropriate holding time required) for treatment and/or euthanasia pending the severity of the condition. In the event that two animals are deemed non-releasable within the period of one year, we will review and re-evaluate the process.” The applicant should describe what conditions might develop over the course of an apparently healthy animal’s temporary captivity that would preclude its return to the wild and the types of conditions that would be considered severe enough to require that an animal be euthanized rather than remaining in permanent captivity at the applicant’s or another facility. The applicant should be required to consult with the National Marine Fisheries Service before euthanizing animals and whenever two animals are determined to be non-releasable within a one-year period.

#### **14334 (continuation of Permit No. 881-1745), Alaska SeaLife Center**

The applicant is requesting authorization over a five-year period to (1) investigate the reproductive physiology of captive adult Steller sea lions from the eastern population and the survival, growth, and physiology of captive-bred offspring, and (2) deploy biotelemetry instruments on the captive animals to develop and validate methods for monitoring wild Steller sea lions. Research would be conducted on one adult male, up to four adult females, and up to six offspring. The applicant’s current permit No. 881-1745, issued 16 March 2006 and expiring August 2009, authorizes studies on one male and two female adult Steller sea lions currently maintained at the Center to investigate stress responses, endocrine and immune system function, and seasonal variations in normal biological parameters such as mass and body composition.

The Commission notes that the application states on page 10 that the subject animals would “participate in a variety of research...many of which are minimally invasive or voluntary in nature yet all, whether invasive or not, are combined to the maximum extent possible during monthly health assessment exams in order to minimize impact on the animals.” Based on the information in the application, however, the Commission is unable to determine whether and, if so, the extent to which these multiple studies might bias the results of the proposed breeding study. The Marine Mammal Commission recommends that the Service require the applicant to address this issue. Finally, the applicant should be required to explain more fully the relevance of the proposed breeding study to the recovery of the wild population of Steller sea lions.

#### **14324 (continuation of Permit No. 881-1890-02), Alaska SeaLife Center**

The applicant is requesting authorization over a five-year period to continue to monitor the behavior, food habits, natality, mortality, health, and physiology of Steller sea lions, with a specific emphasis on aspects related to reproductive performance and maternal care. Research would focus on studying the western population of Steller sea lions through non-invasive remote monitoring techniques (audio, video, weight, etc.), and complementary studies via blood, hair, and whisker

sampling of pups, scat and opportunistic carcass collection, pup marking (including hot-branding), mark/resighting, and remote biopsy. Hot-branding would be carried out while animals are under general anesthesia. The applicant is requesting authorization for the accidental mortality and/or euthanasia of up to three animals annually. The research is a continuation of that authorized and conducted under permit No. 881-1890-02, which expires in August 2009.

Based on its review of the application, the Commission notes that—

- the application states on page 8 that, after capture, branding, and sampling, all pups will be released into the corral in which they were initially gathered where they will be continuously monitored, and, as researchers begin leaving the island, the pups will be allowed to disperse and reunite with their mothers. Subsequent to researchers leaving the island, pups will be monitored using a remote video system during daylight hours for as long as they remain at the rookery. The Commission commends the applicant for developing and using remote monitoring systems and believes that the remote video system should provide useful data regarding the effects of research activities and associated disturbance. The applicant should, however, be asked to describe whether and, if so, how long prior to their departure, researchers will monitor pups to ensure that they reunite with their mothers. The applicant also should provide information as to the total time the pups will be corralled;
- the application and its accompanying table state that three animals per year could be accidentally killed and/or euthanized during the research. However the Service's *Federal Register* notice states that the applicant has requested authorization for one accidental death. This apparent discrepancy should be clarified; and
- the application states that "all procedures [described in the application] will only be performed under valid ASLC IACUC approvals. Copies of these approvals will be provided prior to any sampling event." The Service should require written confirmation of IACUC review and approval prior to issuing the permit.

#### **14336 (continuation of Permit No. 1034-1887), Dr. Markus Horning**

The applicant is requesting authorization over a five-year period to (1) estimate survival rates, emigration, causes of mortality, predation, and long-term forage effort in juvenile Steller sea lions of the eastern population using surgically implanted dual live history transmitters; and (2) monitor census and brand resightings, attendance patterns, and estimate body mass, condition, and health trends of Steller sea lions of the eastern population in Alaska and Oregon using remote monitoring (i.e., the Satellite-Linked Data Acquisition and Photogrammetry System, SLiDAP). For the first purpose, the applicant is requesting to capture, anesthetize, sample, tag, instrument, and brand up to up to 50 pups and 50 juveniles annually (up to a maximum of 100 over four years) in Frederick Sound in southeast Alaska. These animals would be implanted intraperitoneally with dual satellite-linked LHX tags using ship-based surgical facilities. Implanted animals would be monitored after their release using externally attached ARGOS satellite transmitters. Up to 10,500 Steller sea lions would be harassed annually during the proposed capture activities. The applicant is requesting authorization for the accidental mortality of up to 15 Steller sea lions over the five-year permit

period (not to exceed five animals in any one year). LHX also would be deployed opportunistically in up to 30 carcasses (total) of dead Steller sea lions in Alaska, Oregon, and California and in California sea lions in Oregon and California to assess uplink failure rates. California sea lions, harbor seals, and northern elephant seals would be harassed incidental to the activities conducted on Steller sea lions.

For the second purpose, the applicant is requesting authorization to harass up to 17,000 Steller sea lions from the eastern population and an unspecified number of harbor seals and California sea lions incidental to installing and/or maintaining SLiDAP systems at locations in Oregon and Alaska. Remote monitoring would be conducted for censusing, brand resighting, attendance patterns, and estimating body mass, condition, and health trends at Long Island, Alaska, and Sea Lion Caves and Cascade Head, Oregon. Also, up to 900 individual Steller sea lions of all ages and either sex in the western stock could be harassed annually incidental to the installation and or maintenance of a SLiDAP system at Long Island near Kodiak Island, Gulf of Alaska.

The applicant states that the proposed research is the continuation of both the LHX and SLiDAP projects. The LHX project is a collaborative effort between the applicant, the Alaska SeaLife Center (which is conducting LHX research on the western population), and the Alaska Department of Fish and Game. The SLiDAP project is conducted by the applicant, with census and brand resighting data being shared with all other Steller sea lion research groups.

Based on its review of the application, the Commission notes that—

- the application states that following LHX implant surgery, Steller sea lions will be held for a 10 to 48-hour recovery period, as determined by attending veterinarians, and then released. However, it appears from the application that initial groups of animals implanted with the devices were held for 6 to 8 weeks before release, while the most recent group implanted (six sea lions) were held for 2 weeks. The applicant states that no differences have been observed to date in the survival of these two groups. However, these findings provide little support for releasing animals to the wild within 10 to 48 hours after surgery, particularly since the animals will be experiencing effects from hot-branding in addition to the surgical procedure. Further, the applicant proposes to use the present level of post-operative analgesia for releases of animals within 10 to 48 hours of surgery, stating that modifying the dosage or application of analgesics may increase risks and would have to be carefully evaluated against possible negative effects on wound protection and healing (e.g., Bomzon 2006, Sharp et al. 2003, Jablonski et al. 2001, Haws et al. 1996, Rook and McCarson 2007). Before authorizing this new protocol, the Service should require the applicant to (1) provide additional information showing that the release of surgically implanted Steller sea lions within 10 to 48 hours after surgery is not likely to have adverse impacts on their short-term or long-term survival, or (2) if such information is not available, to carry out a pilot study to collect the information necessary to assess the impacts of releasing animals so soon after surgery;
- additional information should be provided regarding how and how long animals implanted with LHX will be monitored for injuries or death related to implantation procedures;

- the application states that “LHX tags will provide data that allows the classification of causes of individual animal mortality into acute/traumatic (likely predation) versus non-acute non-traumatic (see Horning and Mellish 2009, Horning and Mellish in review). Thus, we will use LHX tag data to directly detect and quantify predation.” The Commission notes that sudden (“acute/traumatic”) death can be due to factors other than predation. The applicant does not, but should, discuss the reasoning for assuming that any such deaths are likely due to predation rather than some other cause (e.g., entanglement in fishing gear, hunting, etc.);
- the applicant should ensure that the LHX project is closely coordinated with the Alaska SeaLife Center to ensure consistency of research methods, etc.

### **14337 (715-1875), North Pacific Universities Marine Mammal Research Consortium**

The applicant is requesting authorization over a five-year period to harass Steller sea lions (animals of both sexes and all ages) from the eastern and western populations in the course of conducting aerial and vessel surveys, behavioral observations, monitoring, and scat collection. One purpose of the proposed research is to provide a statistical assessment of post hot-branding pain and distress in Steller sea lions branded by the National Marine Fisheries Service, the Oregon Department of Fish and Wildlife, the Alaska SeaLife Center, and the Alaska Department of Fish and Game. Up to 96 sea lion pups (half branded, half not branded) annually would be involved in this study. The proposed research also would assess the nutritional status and energetic needs of Steller sea lions using non-invasive techniques (e.g., scat collection, etc.). For this purpose, up to 30 juvenile and 30 adult Steller sea lions from each stock (eastern and western) would be captured and physically restrained or anesthetized, instrumented (e.g., multi-channel accelerometer biologgers, global satellite positioners, VHR radio transmitters), and sampled (skin, tissue, vibrissae, blood, fluids, and blubber). Authorization is requested for the accidental mortality of up to one Steller sea lion annually. The research would be conducted at selected rookeries in Alaska where branding has been conducted. Harbor seals, northern fur seals, and killer whales would be harassed incidental to the proposed research on Steller sea lions. The proposed research is a continuation of that authorized under permit No. 715-1875, which expires in August 2009.

Based on its review of the application, the Commission notes that—

- the application states that multiple blood samples will be collected from pups after branding to measure cortisol and adrenaline as indicators of stress. The applicant should provide additional information on how this will be accomplished without subjecting the animal to the additional stress resulting from handling. As a related matter, we note that the applicant is proposing to use a catheter to collect blood samples, presumably in an attempt to alleviate the stress of restraint and handling. The applicant should provide additional details concerning how the catheter would be placed and monitored;
- two groups of pups (branded and controls) would be maintained in fenced recovery areas and observed for approximately 5 or 6 hours and would be released near where they were captured. The application states that “[p]ast experience indicates that pups and mothers

- reunite following such events.” The application should describe what monitoring measures have been and will be used to determine whether mothers and pups reunite;
- The applicant should provide additional information regarding the monitoring of animals being maintained in fenced recovery areas to prevent animals from being wedged in cracks in the rocks or suffocated in pile-ups. The Service should require that the research be suspended pending review of circumstances if a pup dies in the recovery area and permanently suspended if more than one pup dies;
  - the application states that pups will be released near where they were captured, and that past experience indicates that pups and mothers reunite following such events (e.g., an unpublished study has shown that approximately 60 percent of the pups had reunited with their mothers within 2 hours 15 minutes after branding, and less than 24 hours after branding greater than 80 percent had reunited (ASLC, pers. comm. 2007). Nevertheless, the application should describe in detail the steps that will be taken to ensure that all pups unite with their mothers; and
  - the application states that all proposed research also must be covered by permits issued by the University of British Columbia animal care committee; however, no documentation from the committee has been provided. The Service should require that the applicant provide such documentation. Although we assume that the documentation will satisfy the applicable requirements in Canada, the Service should ensure that it also meets the requirements applicable under the Animal Welfare Act.

### **Northern Fur Seal Research**

#### **14327 (782-1708-05), National Marine Mammal Laboratory**

The applicant is requesting authorization over a five-year period to investigate population status and trends, demographic parameters, health and condition, and foraging ecology of northern fur seals in U.S. waters, including rookeries and haul-out sites in Alaska (e.g., St. Paul, St. George, Otter Islands, and Bogoslof Island) and California (San Miguel Island and the Farallon Islands). The proposed research is a continuation of that authorized under permit No. 715-1708-05, which expires in August 2009. Up to 700 northern fur seals annually from the San Miguel Island stock would be captured, restrained, sampled, (body composition and milk intake in pups would be studied using tritiated water [ $^3\text{H}_2\text{O}$ ] or deuterium oxide [ $\text{D}_2\text{O}$ ]), and instrumented. Up to 35,725 fur seals annually would be disturbed incidental to the research activities. Up to 22,820 fur seals from the eastern Pacific stock per year (in three of the five years that would be covered by the permit) and up to 9,320 fur seals per year (in the other two years) would be captured, restrained, sampled (body composition and milk intake in pups would be studied), and instrumented. Up to 335,125 seals per year (in three of the five years) would be disturbed incidental to these activities. The application states that dependent pups and near-term females would not be instrumented. The applicant requests authorization for the unintentional mortality of 7 animals per year from the San Miguel Island stock (up to 4 pups and 2 non-pups on San Miguel Island and 1 pup on the Farallon Islands) and up to 11 animals per year from the eastern Pacific stock (up to 8 pups and 3 non-pups). The applicant states that the requested accidental mortalities include those that occur post-release and

any that involve non-target animals when the mortality can be attributed to the research activities. The applicant also requests authorization to harass up to 150 Steller sea lions from the western population and up to 18,700 California sea lions annually incidental to the research. The applicant further requests authorization to test various methods of chemical immobilization on adult male northern fur seals using remote delivery techniques in an attempt to place instruments on and sample this age group.

Based on its review of the application, the Commission notes that—

- the applicant proposes that, for any activities requiring gas anesthesia, a qualified veterinarian or an individual who has received training from a veterinary anesthetist and who has significant experience in anesthetizing otariids will be present to administer anesthesia and monitor vital signs of the animals. As noted previously in this letter, the Commission believes that having an experienced marine mammal veterinarian present to carry out or supervise all activities involving the use of both chemical and inhaled anesthesia should be adopted as a standard practice. The applicant should confirm that a veterinarian will be present for this purpose. In addition, a curriculum vitae of the veterinarian or veterinarians who would be involved in the research should be provided if not already on file with the Permits Office;
- dependent pups and near-term females will not be instrumented, but the application does not indicate the minimum age of pups that would be captured, restrained, measured (standard morphometrics), weighed, marked (flipper tags, clip fur, paint, and/or bleach), and instrumented with internal PIT tags annually. This should be clarified;
- the application states that six pups smothered between 1999 and 2008 during round-ups on St. Paul Island. Subsequent to each incident, “[t]he field crew was reminded of methods that reduce the density and stacking of pups in small areas, and efforts were increased to monitor the status of pup groups, and/or to closely monitor the terrain and the animals in order to identify and prevent situations with potential for harm to the animals.” The application should clarify precisely what steps the applicant proposes be undertaken before and during round-ups to ensure that field crews closely monitor the terrain and the animals in order to prevent such deaths;
- the application states that the Alaska Fisheries Science Center indicates that it is establishing an IACUC to be convened in the spring of 2009, prior to the start date of the proposed research. When this committee is established, all research proposed in this application will be submitted for review. To the Commission’s knowledge, such a committee has not yet been established. The Permits Office should ensure that the applicant’s research has in fact been reviewed and approved by an IACUC and should refrain from issuing the permit until it has received written confirmation of IACUC review and approval.

**14329 (715-1785), North Pacific Universities Marine Mammal Research Consortium**

The applicant is requesting authorization over a five-year period to conduct studies on the foraging ecology, demographics, behavior, and changes in body size of northern fur seals. Up to



2,335 northern fur seals would be captured, restrained, tissue-sampled, and marked (including branding) annually. Up to 39,130 fur seals annually would be disturbed during scat collections and incidental to capture activities. When capturing females, the applicant would make every attempt to capture only those that are about to return to sea on their first post-birth foraging trip, thereby minimizing disturbance to pups and mothers during the first week after birth. The applicant also proposes to complete a pilot study to determine the feasibility of branding (hot and freeze-branding) as a viable marking method. Up to 200 pups, 100 of each sex in each year (a total of 400 pups over two years), and up to 50 juvenile males in each of two years (a total of 100 juvenile males over two years) would be branded. Branding of pups would occur between mid-August and mid-November, prior to weaning. The applicant requests authorization for the accidental mortality of 14 adult females, 8 juvenile males, and 24 pups annually. The applicant also requests authorization to harass annually up to 600 animals from the western population of Steller sea lions incidental to the research on northern fur seals.

The Commission notes that—

- the application states that all proposed research also must be authorized under permits issued by the University of British Columbia animal care committee. However, no copies of such permit or other documentation of the committee's review has been provided. The Service should require the applicant to provide such documentation. Although we assume that the documentation will satisfy the applicable requirements in Canada, the Service should ensure that it also meets the requirements applicable under the Animal Welfare Act;
- all procedures involving tissue biopsy or requiring close contact with the mouth of the subject animals will be completed using isoflurane anesthesia (Haulena 2007) under the supervision of a veterinarian. It is unclear, however, whether a veterinarian will be present in the field to oversee administration of anesthesia and the conduct of all invasive procedures. Clarification of this point should be provided. A veterinarian should be present during all procedures requiring the administration of anesthesia;
- the applicant states that the time between capture and release will be about one hour or less, and that all animals will be released at the tagging site and are expected to return by themselves to their pups (as has been the case in other years). The applicant states that none of the females that have been handled in past years died as a result, and it believes the likelihood of a female dying during capture is extremely low. The applicant states that, should a female die, it is very unlikely that her pup could be identified. Nonetheless, the applicant should clarify what, if any, steps would be taken to identify pups of lactating females before attempting to immobilize the animal and why it is proposing to immobilize lactating females before identifying their dependent pups; and
- the degree of overlap between this work and that of the National Marine Mammal Laboratory is not clear. Both proposed studies involve extensive disturbance and may involve overlapping objectives. Because of the potential effects of handling and disturbing so many animals could be significant, the Service should require the two applicants to combine or coordinate their work to ensure that it does not involve unnecessary duplication, handling, and disturbance.

**14328 (new), Alaska SeaLife Center**

The applicant is requesting authorization over a five-year period to study the winter habitat and movement patterns of adult male northern fur seals in the Bering Sea and northern North Pacific Ocean, and to obtain information on diet and general health status of the seals. Up to five adult male northern fur seals would be captured annually, just prior to their departure from rookeries on the Pribilof Islands, instrumented with a satellite-linked datalogger, and have samples of blubber, vibrissa, and blood taken. Animals would be darted with immobilizing agents (e.g., Telazol, ketamine, midazolam, and medetomidine). An experienced veterinarian would supervise all aspects of activities involving the handling of the animals and the collection of samples and would be present, should emergency procedures be needed. The applicant requests up to five accidental deaths over the five-year period covered by the permit.

The Commission notes that—

- the applicant is proposing to study a rather small sample size due to the costs of the instruments and the logistics of the study site. Although the Commission encourages the applicant to increase its sample size to the extent possible, given the limited knowledge of the natural history of adult male fur seals, we believe that the proposed study should provide valuable information; and
- the application does not provide information regarding whether the proposed research has been reviewed and approved by the applicant's IACUC. The Service should require the applicant to provide documentation of IACUC review and approval prior to issuing the permit.

**14330 (continuation of permit No. 1118-1881), Aleut Community of St. Paul Island Tribal Government**

The applicant is requesting a five-year permit to fulfill its responsibilities under the Biosampling, Disentanglement, and Island Sentinel program, as established under the June 2000 co-management agreement between the Service and the Aleut communities. The applicant requests authorization to harass (1) up to 850 northern fur seals annually incidental to collecting biological samples from dead stranded and subsistence-hunted marine mammals for distribution to researchers studying the decline of northern fur seals; (2) up to 8,500 northern fur seals during disentanglement activities; and (3) up to 3,400 northern fur seals annually during haul-out and rookery observations, monitoring, and remote camera maintenance. Research would be carried out throughout the year over a five-year period on St. Paul, Otter, and Walrus Islands and Sea Lion Rock in the Pribilof Islands.

The Commission notes that—

- the application is not clear as to whether the applicant has independent authority to collect biological samples for its research and for distribution to other researchers or whether

authorization for such collections is being sought under this permit. This should be clarified. If this permit is intended to provide the authorization for collecting, archiving, or sharing samples with other researchers, the Commission notes that it may not be possible at this stage to determine that the eventual use of the samples will constitute bona fide research under the Marine Mammal Protection Act; and

- the Service's *Federal Register* notice states that samples from dead stranded and subsistence-hunted marine mammals may be exported to researchers in other countries. However, the application does not appear to specify to what countries the samples will be exported, which researchers would receive them, or what research would be conducted on the samples. This should be clarified.

Any permit issued by the Service should require that the applicant (1) obtain all necessary permits under the Convention on International Trade in Endangered Species of Wild Fauna and Flora before importing or exporting any marine mammal parts; (2) maintain detailed records indicating the source of each specimen and the circumstances under which it was collected; and (3) provide reports to the Service demonstrating that each specimen was taken in accordance with the laws of the country of origin, was not taken in violation of the Marine Mammal Protection Act or other applicable U.S. laws, and is being used only for bona fide scientific purposes.

**14331 (continuation of permit No. 1119-1882), Aleut Community of St. George Island, St. George Traditional Council**

The applicant is requesting a five-year permit to fulfill its responsibilities under the Biosampling, Disentanglement, and Island Sentinel program, as established under the co-management agreement between the Service and the Aleut communities. The applicant is requesting authorization to harass (1) up to 450 northern fur seals annually incidental to collecting biological samples from dead stranded and subsistence-hunted marine mammals for distribution to researchers studying the decline of northern fur seals; (2) up to 6,050 northern fur seals during disentanglement activities; and (3) up to 9,000 northern fur seals annually during haul-out and rookery observations, monitoring, and remote camera maintenance. Research would be carried out over a five-year period on St. George Island in the Pribilof Islands.

The Commission notes that—

- the application is not clear as to whether the applicant is seeking independent authority to collect biological samples for its own research and for distribution to other researchers or whether authorization for such collections is being sought under this permit. This should be clarified. If this permit is intended to provide the authorization for collecting, archiving, or sharing samples with other researchers, the Commission notes that it may not be possible at this stage to determine that the eventual use of the samples will constitute bona fide research under the Marine Mammal Protection Act; and
- the Service's *Federal Register* notice states that samples from dead stranded and subsistence-hunted marine mammals may be exported to researchers in other countries. However, the

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application does not appear to specify to what countries the samples will be exported, what researchers would receive them, or what research would be conducted on the samples. This should be clarified.

Any permit issued by the National Marine Fisheries Service should require that the applicant (1) obtain all necessary permits under the Convention on International Trade in Endangered Species of Wild Fauna and Flora before importing or exporting any marine mammal parts; (2) maintain detailed records indicating the source of each specimen and the circumstances under which it was collected; and (3) provide reports to the Service demonstrating that each specimen was taken in accordance with the laws of the country of origin, was not taken in violation of the Marine Mammal Protection Act or other applicable U.S. laws, and is being used only for bona fide scientific purposes.

Please contact me if you have any questions concerning the Commission's comments and recommendations.

Sincerely,



Timothy J. Ragen, Ph.D.  
Executive Director

Enclosures

Literature Cited: [As provided in the individual permit applications]