17 February 2011

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: Request for Amendment of Permit No. 14335
(Alaska SeaLife Center)

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the above-referenced permit amendment request with regard to the goals, policies, and requirements of the Marine Mammal Protection Act. The Alaska SeaLife Center requests that the permit be amended to revise the terms and conditions governing handling of animals and monitoring following surgical procedures and hot-branding.

RECOMMENDATIONS

Based on its review of the Alaska SeaLife Center's request and associated information, the Marine Mammal Commission recommends the National Marine Fisheries Service issue the requested amendment, provided that it conforms to the following conditions:

- that the amendment denies the Alaska SeaLife Center's request to change the allowable holding time of non-feeding juveniles from 10 days after capture to 10 days after arrival at the Center;
- that it includes authorization to implant juveniles with life history tags before they have regained capture weight if they are otherwise above a minimum weight, are healthy, and are feeding sufficiently well to be gaining weight; and
- that it includes authorization to release implanted juveniles 10 days after implantation provided that they meet all other criteria for release.

The Marine Mammal Commission also recommends that the National Marine Fisheries Service renew its efforts to find ways that it can authorize the permanent retention of non-releasable animals as an alternative to euthanasia.

RATIONALE

Permit No. 14335 was issued on 17 August 2009. It authorizes the Alaska SeaLife Center 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 investigate the decline of

the western stock and to assist recovery efforts. The Center may capture up to 20 pups and 32 juveniles of both sexes each year in the Gulf of Alaska and may maintain temporarily up to 12 of those juveniles at the Alaska SeaLife Center for use in associated projects. Such activities may include drug administration, anesthesia, fecal and urine collection, external and internal instrumentation, marking, morphometrics, behavioral observations, photogrammetry, tissue sampling, ultrasound, and x-ray. The permit also authorizes the research-related deaths of two Steller sea lions.

The permit conditions at issue are—

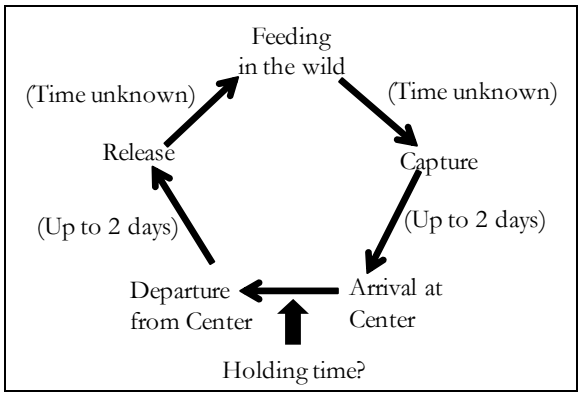
- B.6.c. "[a]nimals that fail to feed voluntarily within 10 days of capture must be returned to the wild."
- B.6.d. "[a]nimals that are below capture mass, must not be selected for LHX [life history] tag implantation."
- B.6.i.[5] "[p]rior to releasing sea lions in the wild, Steller sea lions used in captive research at the ASLC [Alaska SeaLife Center] must be…monitored at the ASLC for a minimum of two weeks following branding and surgical implantation of Life History Transmitters."

The Alaska SeaLife Center requests that the permit be amended to authorize it to (1) retain for eventual implantation and other studies animals that fail to feed for up to 10 days <u>following arrival</u> at the Alaska SeaLife Center's facility (rather than 10 days <u>following capture</u>, as currently authorized); (2) conduct surgery to implant instruments in animals that are below their capture weight; and (3) reduce the period of post-surgical monitoring from 14 days to 10 days. Based on its preliminary review of the Alaska SeaLife Center's request, the Service, by letter of 13 October 2010, asked the Alaska SeaLife Center for clarification as to why the requested changes were needed. The following are the Alaska SeaLife Center's responses and the Commission's comments thereon.

Condition B.6.c.—Returning Non-feeding Juveniles to the Wild

(1) The permit holder cites several studies (Rosen and Trites, 2002, Rea et al. 2007, Rea et al. 2009, Mellish and Horning 2010) that show that juvenile animals can tolerate complete fasts for 7 to 14 days and partial intake restrictions for much longer periods. The permit holder also cites a study by Noren et al. 2009 that utilized a dynamic state variable model to estimate the fasting capability for 100-kg juvenile Steller sea lions, which the permit holder states is smaller than the average mass of animals at entry into its transient juvenile program (130 <u>+</u> 27 kg). The permit holder noted that Noren et al. estimated the range for the duration of successful fasting to be 16 to 28 days for an animal with 15 percent total body fat and more than 28 days for an animal of 30 percent total body fat. The permit holder states that "[o]n average, individuals in the Transient Juvenile program for which we have body composition available (n=41) have averaged 16 <u>+</u> 7% total body fat, suggesting a high tolerance for a 10d fast."

In the Commission's view, the response provided does support extending the holding time from 10 days after capture to 10 days after arrival at the facility. The question is how long a juvenile can tolerate fasting without possible serious consequences. The process and the times involved are as follows:



The fasting process begins when the animal last feeds before capture. In most, if not all, cases that time will not be known—it may have been hours or days. The transport time to the Center is no more than two days, and the Commission assumes that the transport from the Center to the release site also will be no more than two days. At the end of the cycle, it also is not clear how long it will be before the animal is able to feed itself.

The Center cites studies that indicate that (1) juveniles can tolerate fasts of 7 to 14 days, (2) juveniles with 15 percent body fat can tolerate at least 16 days of fasting, and (3) the juveniles that the Center is capturing contain 16 ± 7 percent body fat. (The Commission assumes the statistics are mean ± 95 percent confidence intervals for a normal distribution.) These statistics imply considerable uncertainty about tolerance for fasting (i.e., 7 to 14 days versus at least 16 days). They also indicate that almost half of the animals brought to the Center have had less than 15 percent body fat (i.e., about 47 percent between 9 and 16 percent body fat). Thus, their total fasting tolerance may be somewhere between 7 and 16 days. Under the current conditions in the permit, the allowable holding time at the Center is 8 days. If maximum transport times (to and from the Center) are added to that, then a juvenile that does not feed could be held for a maximum of 12 days, and its total fast could be 12 days plus time from feeding to capture and time from release to feeding. If those periods (from feeding to capture and from release to feeding) are each one day, then the total fast could be 14 days. Because the purpose of these limits is to ensure the well-being of juveniles that refuse to feed—and some of those juveniles may have as little as 9 to 10 percent body fat at capture—the Commission does not consider it advisable to extend the holding time. If juveniles have refused to feed for 8 days, the Commission also questions whether holding them another two days is of sufficient value to outweigh the associated risks. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service deny the Alaska SeaLife Center's request to change the allowable holding time of non-feeding juveniles from 10 days after capture to 10 days after arrival at the Center.

Condition B.6.d.—Criteria for Implanting Life History Transmitters

(2) The applicant states that current Condition B.6.d., which prohibits implanting an animal with an LHX tag if the animal is below its capture mass, would likely result in a minimum holding time of five weeks before an animal could be implanted.

The question here is when it is safe to proceed with implantation of a life history tag. The issue is complicated by the fact that virtually all juveniles brought into captivity are likely to lose weight at the beginning of captivity. The Center's information on captive juveniles clearly illustrates this weight loss phenomenon, which is then followed by weight gain. The Center's request is based on the idea that a juvenile brought into captivity need not regain all of its lost weight before it is ready for implantation.

Under current conditions, an animal must be at least at a minimum weight, must be feeding, and must have regained its capture weight. There is a downside to these conditions—that is, the longer the Center holds a juvenile in captivity, the more likely it is to be exposed to disease or pathogens and the more likely it is to habituate to humans. The Center has proposed a new set of criteria for determining when its researchers can proceed with implantation. The subject animal must be above a certain weight, it must be healthy, and it must be feeding. With one exception, the Commission concurs with these criteria. The exception pertains to feeding. Feeding is not an all-or-none phenomenon. A juvenile may be feeding, but it may not be taking enough food to sustain itself. Some animals refuse to take dead fish (e.g., herring) and may not feed until they are presented with live fish. Others may feed but only in small amounts. Therefore, the Commission does not believe that a criterion that the subject animal be feeding is sufficient. Instead, it believes that the criterion should be that the animal is feeding sufficiently well to be gaining weight. If that is the case, and the juvenile is healthy and above a minimum weight, then the Commission agrees that it may be useful to proceed with implantation in order to limit the total time the juvenile is held in captivity. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries Service approve Alaska SeaLife Center's request for authorization to implant juveniles with life history tags before they have regained capture weight if they are otherwise above a minimum weight, are healthy, and are feeding sufficiently well to be gaining weight.

Condition B.6.i.[5]—Length of the Post-implantation Period

(3) The permit holder identifies two primary factors to supports its request to decrease the post-surgery holding time of animals from 14 to 10 days. One is the small risk of infection and the other is the animal's ability to resume normal foraging activities.

The Alaska SeaLife Center cites various studies, including Mellish et al. (2007), that suggest that surgical implantation of life history tags in juvenile Steller sea lions is generally well tolerated. Mellish et al. found that "[t]he general response [of juvenile Steller sea lions] to LHX implantation was limited, with significant changes only in haptoglobin levels." Their study states that "[a] [haptoglobin] range of 0–300 mg/dl was considered baseline for temporarily captive animals from the same population, with highest reported levels of 500 and >1000 mg/dl in a branded and severely infected/abscessed sea lion (Mellish et al. 2007, Thomton and Mellish 2007). Over 60% of the post-operative haptoglobin values were below the 300 mg/dl threshold, and all values had returned to baseline by five weeks." The study further states that "[a]n immediate response (i.e., 1 week) might be expected as a result of the surgical procedure alone, as appears to be the case with hot-branding (Mellish et al. 2007). A delayed response sustained beyond 2–3 weeks may indicate a rejection of the

implant device, or necrosis around the implant site. Neither pattern was evident, with only temporary elevations in acute-phase proteins."

Regarding a Steller sea lion's ability to resume normal foraging activities following surgery, the Alaska SeaLife Center cites a study by Walker et al. 2009. That study demonstrated that there were temporary changes in six of eleven measured parameters after surgery (including changes in standing time, back arch, time on ventral side, time alert, lying time, and locomotion). At 10–12 days post-surgery, back arch, lying, and standing behaviors were still greater than pre-surgery levels. In contrast, there was no effect on the time animals spent in the water, which was used as a correlate for foraging.

Based on experience with other marine mammals, the Commission believes that the most important phases of healing will have occurred within 10 days of surgery. It further believes that any infection occurring as a result of the surgery will almost certainly be evident within 10 days. It recognizes that the implantation site may still be tender and that the implanted animals may favor those sites, as was evident in the Walker et al. (2009) study. It also recognizes that some parts of the healing process will continue for weeks or months. Still, at this point the issue is whether the extra four days of monitoring in captivity outweigh the added risk of exposure and habituation in captivity. Based on the existing evidence, the Commission does not believe that is the case. Therefore, the Marine Mammal Commission recommends that the National Marine Fisheries authorize the Alaska SeaLife Center to release implanted juveniles 10 days after implantation provided that they meet all other criteria for release.

Alternatives to Euthanasia

Lastly, the Commission notes that Permit No. 14335 does not authorize permanent placement of Steller sea lions determined to be non-releasable. In fact, condition III.B.6.h. specifies that animals taken under the permit that are deemed to be non-releasable must be humanely euthanized. The Service explained the rationale for this condition in its 26 August 2009 memorandum to the record responding to the Alaska SeaLife Center's original appeal of the condition. The Service noted that the permit condition was appropriate because Steller sea lions are listed under the Endangered Species Act and permanent retention of non-releasable animals requires authorization (e.g., a research or enhancement permit) under both the Marine Mammal Protection Act and the Endangered Species Act. Obtaining such permits can take six months or longer, which presents an obstacle to placement at most facilities. Also, the recipient facility must be in compliance with Animal and Plant Health Inspection Service standards setting the minimum size of the primary enclosure. This space requirement can be an impediment for many facilities, especially those seeking to maintain male Steller sea lions.

Although the permanent placement of non-releasable Steller sea lions presents challenges, the Commission believes that permanent maintenance of non-releasable animals in captivity may be preferable to euthanasia, particularly if the animals are not severely compromised. As such, the Marine Mammal Commission recommends that the National Marine Fisheries Service renew its efforts to find ways that it can authorize the permanent retention of non-releasable animals as an

alternative to euthanasia. In particular, it believes that the Service should consider ways in which section 109(h) of the Marine Mammal Protection Act, in conjunction with an Endangered Species Act enhancement permit, might be used to provide the necessary authorization.

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

Sincerely,

Timothy J. Ragen, Ph.D.
Executive Director