MARINE MAMMAL COMMISSION
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31 August 2006

Ms. Kaja Brix, Assistant Regional Administrator
Protected Resources Division, Alaska Region
National Marine Fisheries Service
P.O. Box 21668
Juneau, AK 99802

Dear Ms. Brix:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the draft revised Steller Sea Lion Recovery Plan and the National Marine Fisheries Service's 24 May 2006 *Federal Register* notice soliciting comments on the revision. The Commission commends the Service and the Steller Sea Lion Recovery Team for their efforts on the plan and the progress it represents. In general, the draft presents a well-reasoned status assessment of the western and eastern populations of Steller sea lions and the challenges associated with recovery, particularly for the western population. It also emphasizes the importance of maintaining current conservation measures, investigating the effects of fishing using an adaptive management approach, and maintaining current monitoring and threat assessments. The Commission concurs with these general directions for research and recovery efforts.

RECOMMENDATIONS

To improve the revised plan and ensuing recovery efforts, the Marine Mammal Commission recommends that the National Marine Fisheries Service—

- use the population viability analysis (PVA) developed through collaboration of a team committee with a contracting analyst as a basis for establishing recovery criteria. The PVA provides greater assurance that the criteria (1) are measurable and objective, (2) are based on the populations' risks of extinction rather than simple indices that may not accurately reflect threats to the populations, and (3) take into account all the available pertinent information, including scientific uncertainty regarding the dynamics of the populations and factors affecting them;
- implement a rigorous experimental research program that employs a genuine adaptive management approach to assess the effects of fisheries on sea lions and their critical habitat, including not only short-term effects arising from the spatial and temporal distribution of fishing effort but also the long-term effects arising from catch levels based on a maximum sustainable yield (MSY) paradigm; and

- establish an interagency, interdisciplinary team to implement and coordinate the research needed to guide recovery efforts, including the experimental program to assess fishery effects.

RATIONALE

The Commission offers the following explanation for its recommendations.

Recovery criteria

With a few exceptions, the proposed downlisting and delisting criteria for the western population are not sufficiently specific to be measurable and objective. The plan describes criteria to satisfy the five listing factors of the Endangered Species Act and additional "biological" criteria. The criteria intended to satisfy the five listing factors are largely subjective and, for the most part, simply state that reclassification will not occur until circumstances are adequate. As such, the criteria provide no basis for confidence in their adequacy.

The biological criteria for downlisting and delisting also would benefit from reconsideration. These criteria are based primarily on any statistically significant increase in the number of animals older than pups (i.e., "non-pups") over a 15-year period (downlisting) and an average annual increase in non-pups of 3 percent over a 30-year period (delisting). The Commission's concerns with regard to these criteria are as follows.

- The downlisting and delisting criteria are not fully specified. The level of confidence (e.g., 90 percent, 95 percent) required to conclude that a trend is statistically significant should be specified explicitly to avoid later confusion;
- The delisting criterion may not be achieved for the western population even if it recovers fully to its pre-decline abundance. That is, it is feasible (if not likely) that the western population could recover slowly and/or irregularly without experiencing a 3 percent growth rate for a 30-year period; and
- The underlying concern with regard to the status of sea lion populations is their risk of extinction, which is best estimated using all the available information. As proposed, the downlisting and delisting criteria do not make full use of all available information on the populations' status and the pending influence of various threats including fishing, killer whale predation, climate variability, and long-term climate change. Over the past few decades, research has shown that sea lion population dynamics are complex and may be influenced by a variety of factors. To assess the status of these populations, the Commission believes it is important to fully account for the complexity of those dynamics, the various threats to sea lions, and the uncertainty regarding both.

We note that a recovery team committee worked with Dr. Daniel Goodman to conduct PVA analyses of the two populations, but that the team did not use the results of

those analyses to develop recovery criteria. The justification for rejecting the results is not clear. The draft revised plan suggests that the team switched to a "weight-of-evidence" approach, but it appears that it simply decided to limit the evidence it would use for developing recovery criteria. In our view, the PVA approach provides greater assurance that the criteria (1) are measurable and objective, (2) are based on the populations' risks of extinction rather than simple indices that may not accurately reflect threats to the population, and (3) take into account all the available pertinent information, including scientific uncertainty regarding the dynamics of the populations and factors affecting them. For those reasons, the Marine Mammal Commission recommends that the National Marine Fisheries Service and the recovery team use the PVA developed by the team committee with Dr. Goodman as a basis for establishing recovery criteria.

Experimental management

The draft revised plan identifies fisheries, environmental variability, and predation by killer whales as the three most important threats to Steller sea lions. Each of these warrants investigation, as indicated by their inclusion in the recovery action outline. Nonetheless, as indicated on page 114 of the draft revised plan, the central controversy regarding the Steller sea lion decline has been the potential effects of fisheries on the Bering Sea/Aleutian Islands and Gulf of Alaska ecosystems generally and on Steller sea lions specifically. Because fishery effects are at the center of this controversy, and because they are amenable to management action, the Commission believes that investigation of fishery effects should be the first research priority. Such investigation will improve our understanding of and ability to manage the effects of fisheries on target stocks, ecologically related species, and ecosystems. For example, an experimental program will provide a mechanism to evaluate existing conservation measures, which will have benefits for fisheries as well as sea lions. In addition, an experimental approach should provide information to distinguish the effects of multiple potential risk factors, including not only fisheries but also climate variability and predation by killer whales. In short, a well-directed experimental approach should provide a stronger scientific foundation for management of these ecosystems, which should be to the benefit of all managers and decision-makers, including those responsible for the vital fisheries of Alaska.

The Commission has written to the Service on numerous occasions recommending that it initiate an experimental and adaptive approach to investigate these effects and means to avoid them. The MSY-based paradigm that is the basis for current fishery management has been challenged since the 1970s when the concept of optimum yield was developed to address shortcomings of the MSY approach to resource management. As defined, however, the concept of optimum yield does little more than recognize that other factors (i.e., social, economic, and ecological) may be important. By itself, the concept does not indicate how those factors may be important or how they should be managed. In Alaska, where numerous stocks of groundfish are harvested from the ecosystems and their corresponding biomasses have been reduced by as much as 60 percent or more, it seems not only reasonable, but also essential, to raise questions regarding the ecological effects of such biomass reductions. How, for example, has the development of commercial fisheries affected fish biomass (and prey

availability) in the areas recognized as Steller sea lion critical habitat compared to unfished conditions? What are the implications of those reductions for the energetics of foraging sea lions and their environment's carrying capacity? How are the distribution and productivity of a fish stock altered when 60 percent of its biomass is removed and the size distribution of the remaining fish is correspondingly reduced? If we are to make a successful transition to ecosystem-based management, these and other questions must be addressed directly in an experimental fashion.

The need for such an approach has been recognized and discussed for more than a decade (e.g., National Research Council 2003). As described in a 25 January 2006 letter to Admiral Lautenbacher, the Commission believes the current circumstances in Alaska are favorable for developing such an approach. For those reasons, the Marine Mammal Commission recommends that the Service implement an experimental program to assess fishery effects on Steller sea lions and their critical habitat, including not only short-term effects arising from the spatial and temporal distribution of fishing effort but also the long-term effects arising from catch levels based on an MSY paradigm. We recognize that implementing such an experimental approach will impose some constraints on the fishing industry and require its cooperation, but we believe such an approach is the only means of resolving basic questions about the ecological effects of fishing and distinguishing them from the effects of environmental variability.

Research coordination

The value of the draft revised recovery plan stems not from its completion but rather from its implementation. The revised draft reflects the current understanding of many of the important problems affecting the status of Steller sea lions and Alaska's marine ecosystems. The plan lists three major directions for research and management and then lists scores of implementation tasks. The valuable work already done to create the revision and identify these tasks will be lost if the plan is not effectively implemented. Doing so will require extensive coordination among researchers to ensure the research effort is focused, organized, and prioritized within a comprehensive ecological framework, and therefore most likely to provide the information needed to bring about Steller sea lion recovery.

In its 25 January 2006 letter to Admiral Lautenbacher, the Commission described the importance of advancing our understanding of Alaska's marine ecosystems through a progressive, coordinated research effort. The combination of multiple research agencies and organizations working in these ecosystems, the progressive leadership shown in fisheries management, and the value of well-managed fisheries and marine ecosystems to the state's future well-being all argue for a coordinated research and management program for these ecosystems. Such coordination will be helpful for addressing fundamental questions regarding the ecological effects of fishing, increasing research efficiency, avoiding unnecessary duplication, ensuring focus on important topics, and minimizing the potential for adverse effects of research on sea lions and other marine life.

For these reasons, the Marine Mammal Commission recommends that the National Marine Fisheries Service take the lead in establishing an interagency, interdisciplinary team to develop the ecological framework for implementing the recovery plan. The team should set priorities and oversee coordination of the research needed to guide recovery efforts, including the experimental program to assess fishery effects. The team should consist of leading scientists from regional science agencies and organizations and should include a range of disciplines to ensure that all needed expertise is included.

Please contact me if you have any questions regarding these recommendations.

Sincerely,

Timothy J. Ragen

Timothy J. Ragen, Ph.D.
Acting Executive Director

Reference

National Research Council. 2003. The decline of the Steller sea lion in Alaskan waters: Untangling food webs and fishing nets. National Academies Press, Washington, DC.

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