Peer Review Comments on Steller Recovery Plan

The Steller Sea Lion Recovery Team completed a draft Recovery Plan in February 2006 and then solicited an external peer review from five highly qualified experts. The Recovery Team submitted a list of questions to the peer reviewers to focus their attention on a few key issues and questions of particular concern for the recovery of Steller sea lions.

The peer reviewers provided responses to those questions and editorial suggestions for the draft. After receiving the peer reviewers' comments and edits, the Team reviewed their recommendations and incorporated them as appropriate into the draft plan. The Team submitted the plan to NOAA Fisheries in March 2006 with unanimous endorsement from the 17 team members. This document contains an overview of those peer review comments and recommendations received, along with responses from the Recovery Team and NMFS.

Conservation Measures and Threats Assessment

Question Set #1: Does the recovery plan thoroughly describe what is known about potential threats to both the eastern and western populations? Can you identify additional threats to the species? Is the threats assessment in Section V(a) adequately supported?

Peer Review Comments:

- Although not explained, there apparently are differing views among team members on the need for and efficacy of current fisheries regulations to help assess the threat of fisheries on sea lions and to mitigate it. The reasons for these differences of opinions should be explained.
- A description and assessment of compliance and efficacy of current fisheries regulations should be included.
- The plan adequately included and addressed all of the potential threats to Steller sea lions.
- Management measures enacted to reduce fishery competition and direct killing of SSL were likely the key components that initiated the current recovery trend for the western DPS.
- The discussion of both points of view regarding the threat of Orca (killer whale) predation was appropriate.
- The rankings fail to convey uncertainty—other ranks may be appropriate—e.g. 'unable to decide based on existing data' or 'potentially high, unknown, uncertain'

Response: It was important that the Team provide guidance to NMFS and assign a rank to each threat using the best information available as well as its collective professional judgment. Uncertainty regarding the magnitude (and rank) of threats is conveyed in Table IV-1. One of the primary objectives of the Plan is to identify threats to the recovery of western Steller sea lions; competitive effects of fisheries were identified by the Team and NMFS as one of these threats. It is beyond the scope of the Plan to assess the efficacy of the current suite of fisheries regulations with respect to their impact on

recovery; this assessment will occur in the Biological Opinion on the groundfish fisheries in the North Pacific scheduled to be released in draft form in Spring 2008.

Recovery Criteria:

Question Set #2: Does the recovery plan adequately present an ecologically and biologically defensible recovery strategy for the western population of Steller sea lion? Are the recovery criteria – both the biological criteria and the listing factor criteria – scientifically defensible and supported? Do the recovery criteria meet the requirement of the ESA to insure the conservation of the species?

Comment: For the western DPS, a projected target population level should be specified in addition to the target rate of growth in criterion number one. A minimum viable population size should be identified as a measure of recovery for post-delisting purposes.

Response: The Steller sea lion was listed under the ESA in 1990 because of a sharp drop in its population size over a short period of time, not because it fell below a threshold population size. NMFS has identified a rate of growth that the population should achieve as well as the time span over which that growth should occur as one of the criteria for downlisting and delisting. While not specifically necessary to change listing status, NMFS has also identified what the population size at that time would be if it grew at the specified rate.

Comment: What is the rationale for the requirement that adjacent sub-regions cannot be declining when the overall criterion allows for two sub-regions to decline?

Response: NMFS and the Team decided that if two adjacent sub-regions were declining while the western DPS as a whole was adequately increasing, then it would not be prudent to downlist or delist. The rationale is that if this situation occurs, it would indicate that a significant portion of its range (ie. two adjacent sub-areas) was still in decline and suggests that NMFS has not fully understood or mitigated the threats to the population. This criterion prevents the loss of a significant portion of the range of the western DPS, which is a requirement of the ESA.

Comment: The recovery criteria are defensible and supported by information and analyses. However, the population continues to grow at below the rate for severely depleted pinniped populations, suggesting some level of non-natural or reproductive failure. Discussion is needed on the possible causes of the failure to achieve optimum growth.

Response: In the calculation of the Potential Biological Removal for Marine Mammal Stock Assessments under the Marine Mammal Protection Act, the default maximum growth rate (R_{max}) for pinnipeds is 12%. The eastern DPS has increased at approximately 3% per year for about 30 years, far below the default R_{max}, which suggests that there are other mortality sources within the range of the eastern DPS which have slowed its recovery. On the other hand, Steller sea lions may not be able to grow as fast as other, smaller pinnipeds (such as northern fur seals or California sea lions) due to their

relatively long period of maternal care (as long as 3 years) and low overall natality rate in a stable, equilibrium condition (~50% of mature females give birth each year; York 1994). There is discussion about possible changes in the environment that could lead to a depression of reproductive rates (presented in the nutritional stress section of the chapter of the Plan outlining factors potentially influencing the western population (Chapter III.B.11)).

Comment: The criteria should be linked to suitable habitat (e.g, 'At recovery we expect XX% of the suitable habitat to be occupied by the recovered SSL population').

Response: The ESA listing of the Steller sea lion was not prompted by a contraction of its range or a lack of suitable habitat. The Steller sea lion still occupies its entire range in the western DPS and almost all of its range within the eastern DPS. There are only a very small number of locations that used to function as rookeries where currently only a small number or no pups are born within the range of either DPS. Conversely, other locations that previously served only as haulouts are now rookeries. Loss of terrestrial habitat is not considered to be a major factor in recovery nor in the original listing. Degradation of foraging habitat within the marine environment, however, remains a threat to recovery, but it is not unoccupied. In order to prevent losing a significant portion of the species' range, NMFS will not downlist or delist the species if two adjacent sub-regions are declining, even if the western DPS as a whole is increasing.

Comment: The criteria should be tied to the Goodman PVA and updated periodically (three to five years) based on new information on population trends and vital parameters, rather than tied to a fixed rate of population change. The probability thresholds for extinction and threatened as specified in the PVA analysis (Appendix) are sufficient to specify changes to listing.

Response: Chapter V details the rationale used by the Team in their choice of how to use the PVA. Chapter V explains how the weight of evidence approach is the common method used by Recovery Plans. The PVA was one of many tools available to the Team. The factors responsible for the decline of Steller sea lions in the Western stock remain unclear. However, one part of the history that was useful to the team in trying to understand future challenges was to examine the magnitude of the past decline as a template of potential trends. As explained in Chapter V, the Team felt that the management changes put in place when the species was listed effectively eliminated the primary factor responsible for the rapid decline observed in 1985-89. However, the Team acknowledged that there were still unknowns as to all of the causes of that decline, as well as the lower rate of decline observed in the 1990s, and to ignore it completely would exceed the precautionary approach required by the ESA. The benefit of the PVA was the process that it forced the Team to work through, the realization that the population needs to grow, and the agreement that it needs to grow for an extended period of time (1.5 to 3 generations). This long term growth is necessary to show that threats identified by the Team are no longer affecting recovery. Taking all of this information into consideration, the Team chose the middle ground in terms of the criteria. NMFS believes that using the PVA as a guide was the right choice but that our knowledge of the

magnitude of past and future threats is too uncertain to use the PVA results directly to set recovery criteria.

Comment: There is no basis to develop the delisting criterion for Western DPS based on the Eastern DPS over the last 30 years.

Response:

NMFS believes that it was appropriate for the Team to review the recent history of the eastern DPS as they developed downlisting and delisting criteria for the western DPS. The eastern DPS was not considered a model for the western DPS in the sense that the western DPS is expected to perform in the exact same way. However, the eastern DPS lives in a similar, sometimes overlapping environment and is subjected to many of the same factors affecting its survival and reproduction. The eastern DPS has experienced many of the same threats as the western DPS and has displayed a long term population trend that may be representative of Steller sea lions in Alaska. The eastern DPS provides a useful overview of a possible recovery scenario for Steller sea lions.

The rate of recent increase by the eastern DPS was used in the PVA to test the extinction risk for the western DPS, because the Team needed a plausible future population trajectory for which extinction risk could be calculated at time horizons of interest (e.g., 15 and 30 years). As such, the recent history of the eastern DPS and the PVA were helpful to both NMFS and the Team in the process of setting recovery criteria for the western DPS.

Comment: The time periods for 15 and 30 years are not well-justified.

Response: The 15 and 30 year periods used in the downlisting and delisting criteria represent 1.5 and three generations of Steller sea lions, respectively. They also represent significant lengths of time over which the western DPS must increase during which it is also very likely to experience considerable change in the environment, including an oceanographic regime shift. Sea lions born in one regime state would breed in another. If the western DPS continues to increase through both regime states despite environmental change (as the eastern DPS has), then its performance would suggest that environmental change was not a threat to recovery.

Recovery Strategy

Question Set #3: Are the recovery actions appropriate and sufficient to meet recovery goals? Are there other recovery actions that have not been included in the plan but should be, in order to achieve recovery?

Comment: One reviewer suggested that the adaptive management idea is complicated and would require long-term designs. Confounding sources of variation will make the results of any experiments difficult to interpret; therefore, this should not be a number one priority. A second reviewer contradicted this statement by suggesting that the

adaptive management is a priority and should be more proscribed in terms of research hypotheses.

Response: NMFS acknowledges the difficulties inherent in designing and implementing an adaptive management program. However, without a program of this nature, it will not be possible to distinguish the magnitude of various threats to recovery. The comments will be taken into account as NMFS develops a plan for an adaptive management program. It is beyond the scope of the Plan to work through all of these issues. Instead, the Plan points to the need for such a program and for NMFS, with the help and guidance of scientists, managers and the public, to design it.

Recovery Actions

Question Set #4: Are the recovery tasks presented in the plan's Implementation Schedule appropriately prioritized to facilitate recovery?

Comment: Stronger rationales for the high priority tasks are needed so that those tasks that are essential clearly stand out from others. Those actions that are most likely to improve overall recovery rates in the short-term should be designated as the highest priority. For example, recovery action 1.2.1 'Estimate vital rates—Continue to estimate survival fecundity and immigration/emigration rates through branding/resight program' should be Priority 1 in order to track closely with criterion no. 2.

Response: NMFS used the following definitions (which follow from ESA implementing regulations) to assign priorities to recovery actions:

a. Priority 1 - An action that must be taken to prevent extinction or to prevent the species from declining irreversibly in the foreseeable future.
b. Priority 2 - An action that must be taken to prevent a significant decline in species population / habitat quality or some other significant impact short of extinction.
    i. (a) Actions that should either be taken first, or are of primary importance.
    ii. (b) Actions that follow priority 2a actions, or are of secondary importance.
c. Priority 3 - All other actions necessary to provide for full recovery of the species.

Because of the status of the western DPS and the required definitions of priority 1-3 actions, there is only one priority 1 action, which involves the counting of pups and nonpups at selected locations to estimate population trend. This is required information to track the status of the population relative to the recovery criteria. In the latest draft of the Plan, the list of priority 2 actions was divided into priority 2a and 2b actions based on the order in which they should or must occur, as well as NMFS' and the Team's professional judgment regarding the action's importance in achieving recovery.

Comment: The rationale for assigning priorities 2 and 3 to the following critical recovery tasks should be explained, or, alternatively, those tasks should be upgraded to priority 1: (1) protect rookeries and haulouts (task 2.2 currently ranked priority 3); (2) document and characterize the areas where representative age/sex/classes of animals from the western population forage at different times of the year (tasks 2.3.3 and 2.3.4, currently ranked priority 2); (3) improve groundfish assessment surveys to better determine seasonal and inter-annual patterns of prey distributions, movements, and abundance at scales relative to sea lions (task 2.6.1 currently ranked priority 2); (4) use fishery observer [and VMS] data to assess the spatial-temporal distribution of the groundfish fishery (task 2.6.3 currently ranked priority 2); and (5) monitor abundance, condition, and vital rates (task 1.1, ranked priority 1 and tasks 1.2.1, 1.2.3, 1.2.4, and 1.31 ranked priority 2).

Response: Part of this comment has already been addressed in the previous response. In addition, NMFS believes that (1) rookery and haulout sites are adequately protected, yet new threats (e.g., oil and gas development) may subject some sites to additional risk. This action involves compiling a catalog of current and historical rookeries and haulouts, their locations, and range of numbers counted at each site for use in impact assessment. As such, it is a priority 3 action. (2) Actions 2.3.3 and 2.3.4 involve gaining a greater understanding of the foraging ecology of Steller sea lions. They are priority 2a actions, because they are both actions that must be taken to prevent a significant decline in species population / habitat quality or some other significant impact short of extinction, should be taken first, and are of primary importance. These are not actions that must be taken to avoid extinction, which is the definition of priority 1 actions. (3 & 4) Actions 2.6.1 and 2.6.3 involve the acquisition of information about distribution, movements and abundance of groundfish as well as the distribution and magnitude of the groundfish fisheries. Action 2.6.1 is a priority 2b action because improvements in groundfish assessment surveys would be beneficial, but by themselves are not actions that must be taken to avoid extinction of Steller sea lions. It is of secondary importance to other actions because it does not involve the acquisition of information on sea lions directly. Action 2.6.3 is a priority 2a action because it involves the use of information about the distribution of one of the main threats to recovery of western Steller sea lions, competition with fisheries. However, it is not an action that by itself will prevent extinction. (5) Action 1.1.1 (counting of pups and nonpups to monitor population trend) is a priority 1 action, while all other actions in part 1 are priority 2. Monitoring of condition and vital rates are both important, but are not required to prevent extinction.

Comment: A multi-year implementation plan involving the State, other federal agencies, the NPFMC, and other interested parties is needed and should be noted in the preface or introduction to the plan.

Response: NMFS agrees and noted this in Recovery Action 1.5 in the Executive Summary.

Other General Comments:
Comment: The plan lacks integration. A general synthesis section on multiple causation in ecological systems, need for long-term research and monitoring, and model development to evaluate different hypotheses is needed.

Response: NMFS re-organized the information in Chapters III and IV which includes the discussion of factors potentially influencing the western DPS and threats to its recovery. NMFS also rewrote the Synthesis section (Chapter IV.B) in response to this comment. The need for long-term research and monitoring as well as model development is addressed in the actions requiring an implementation plan (Action 1.5) and an adaptive management program (Action 2.6.8).