

**REVIEW AND COMPARISON OF RECOVERY
CRITERIA IN THE 2006 DRAFT REVISED
STELLER SEA LION RECOVERY PLAN**

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EXECUTIVE SUMMARY

This review was prepared to assist the North Pacific Fishery Management Council compare proposed recovery criteria in the 2006 Draft Revised Steller Sea Lion Recovery Plan with recovery criteria developed and implemented for other species. Eleven recovery plans (six from NMFS and five from USFWS) were included in the review, depending on available information in the plan and relevance to the SSL plan. Three of the plans were for species or sub-species that have been removed or proposed for de-listing from the ESA list (gray whale, Greater Yellowstone grizzly bear, and Northern Rocky Mountain gray wolf). Each plan was reviewed and pertinent information summarized in text and table format. Summaries of each recovery plan were presented in Appendix 1 (species under NMFS jurisdiction) or Appendix 2 (species under USFWS jurisdiction).

Results indicate that recovery criteria grouped into three categories: (1) those that included increasing or decreasing rates of population change by geographic areas; (2) those that included changes in the number of animals over a prescribed period and area; and (3) a mix of categories one and two. The 2006 Draft Revised Steller Sea Lion Recovery Plan was in the first category; the recovery criteria in the SSL plan were consistent with other criteria in plans in the first category and published by NMFS and the USFWS (i.e., for killer whale, fin whale, right whale, and manatee). Recovery criteria in the SSL recovery plan requiring rates of population increase over time in 5 of 7 regions were not unusual, compared to other plans in category 1. The SSL Recovery Plan included recommendations from the NMFS Quantitative Working Group for developing the listing or de-listing criteria.

Part of the review was to determine if recovery plans provided a rationale or scientific justification for the recovery criteria and recovery tasks. Some of the older plans (e.g., the gray wolf recovery plan which is 20 years old) did not contain the same amount of information or justification included in recent plans. However, in that plan and in the other ten recovery plans there was sufficient rationale and background to justify the proposed recovery criteria and the tasks needed to meet those criteria.

Habitat degradation was important as contributing to the species status or lack of recovery in all plans reviewed. Excessive mortality and low survival were contributors to reduced status in most (but not all) plans. Food limitation, disease/contaminants, or over harvesting were contributors to species decline or status in half or fewer of the plans. A PVA was used as an analytical tool in six of the ten plans (including the SSL plan).

Existing legislation was adequate to enhance the recovery and subsequent de-listing of gray whales, whereas numerous management and conservation actions were needed to enable the delisting of Northern Rocky Mountain gray wolves and Greater Yellowstone grizzly bears.

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I. Introduction

This report reviews recovery criteria included in the May 2006 Draft Revised Steller Sea Lion Recovery Plan (the May 2007 revision was not available at the time of this project). The report includes a summary of information on recovery planning and information on the listing, down-listing and delisting of Endangered Species Act (ESA) listed species in other parts of the U.S. The objective was to compile information on the criteria developed by recovery teams for changing the listing status of species on, or that were on, the ESA list of threatened or endangered species and to compare this information with the draft criteria proposed for down-listing and de-listing the Steller sea lion (SSL; *Eumetopias jubatus*). The report includes discussion and comparison of recovery actions (tasks) in the plans and their similarity to those in the SSL plan. The purpose of the review was to assist the North Pacific Fishery Management Council (Council) compare the proposed SSL recovery criteria with recovery criteria developed and implemented for other species elsewhere.

Recovery plans represent the primary tool used by both the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) for managing and conserving endangered species under their jurisdiction. In 1991 the U.S. Congress requested that the National Academy of Sciences study 'several issues related to the Endangered Species Act.' Some of the specific issues included were the definition of a species, recovery planning, conservation conflicts between species, and the role of habitat conservation (NRC 1995). Since the NRC review, the ESA and recovery planning by the agencies has come under further scrutiny. Various reviews of ESA recovery plans found that plans vary in the amount, quality, and type of information that they provide (Brigham et al. 2002; Tear et al. 1993), but they all require inclusion of specific topics such as species biology, recovery actions, recovery criteria, etc. The effectiveness of the plans in meeting their goal to conserve the species and remove it from the list was variable and equivocal. A preliminary review of the effectiveness of ESA recovery plans was published by Boersma et al. (2001). That review was followed by a comprehensive review of 135 recovery plans for 181 species conducted by the Society for Conservation Biology (SCB; summarized in Hoekstra et al. 2002). Results of that broad review, which was funded by the USFWS and the National Center for Ecological Analysis and Synthesis, were published in numerous papers in the journal *Ecological Applications* in 2002; data used in the reviews are available at their web site¹.

The ESA list of endangered and threatened species is not the only list of species at risk. The World Conservation Union, or International Union for the Conservation of Nature and Natural Resources (IUCN), also maintains a list that includes many of the species reviewed in this project. The overall aim of the Red List is to convey the urgency and scale of conservation problems to the public and policy makers, and to motivate the global community to try to reduce species extinctions. The IUCN has defined some quantitative criteria for inclusion of species in their Red Book of Threatened and Endangered Wildlife. The criteria are primarily oriented for terrestrial species and are difficult to apply to the marine ecosystem (Gerber 1999; Gerber and DeMaster 1999). In

¹ www.nceas.ucsb.edu/recovery

addition, the IUCN criteria do not include uncertainty in available data (Gerber and DeMaster 1999). The IUCN uses nine categories to describe the status of wildlife in their Red List system: Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Near Threatened, Least Concern, Data Deficient, and Not Evaluated. The classification as vulnerable under the IUCN is equivalent to threatened under the ESA. The SSL is listed as endangered under the IUCN Red List. The IUCN defines endangered as a species that is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any of the five criteria described on their web page. SSLs qualify as endangered through criteria (A) population reduction >80% and (B) probability of extinction in the wild at least 50% over the next ten years or three generations (IUCN definitions and criteria are at: http://www.iucnredlist.org/info/categories_criteria1994#categories). The IUCN red List does not include recovery planning.

As summarized in the Executive Summary of the draft 2006 SSL Recovery Plan, the SSL was listed as a threatened species under the ESA in April 1990 due to substantial declines in the western portion of the range. In contrast, SSLs in the eastern portion of the range (in southeastern Alaska and Canada) were increasing at 3% per year. Critical habitat was designated in 1993 based on the location of terrestrial rookery and haulout sites, spatial extent of foraging trips, and availability of prey items. In 1997, the SSL population was split into a western stock and an eastern stock based on demographic and genetic dissimilarities (Bickham et al. 1996; Loughlin 1997). Due to the persistent decline, the western stock was reclassified as endangered, while the increasing eastern stock remained classified as threatened. Through the 1990s the western stock continued to decline. However, the western population has shown an increase of approximately 3% per year between 2000 and 2004. This was the first recorded increase in the population since the 1970s. Based on recent counts, the western stock is currently about 60,000 animals (44,800 in Alaska and 16,000 in Russia) and may be increasing due to higher juvenile and adult survival. However, it remains unclear whether SSL reproduction has also improved and whether the observed 3% annual population growth will continue. The eastern stock is currently between 45,000 and 51,000 animals, and has been increasing at 3% per year for 30 years.

The first SSL recovery plan was completed in December 1992 and covered the entire range of the species. However, the recovery plan became obsolete after the split into two stocks in 1997. Therefore, in 2001, NMFS assembled a new SSL Recovery Team (Team) to revise the plan. The Team completed the draft revision in early 2006 and forwarded the plan to NMFS.

The draft 2006 SSL plan contains over 70 specific tasks contained within five broad actions required for species recovery. The plan also contains broad criteria for down-listing or de-listing the western and eastern stocks of SSL. These broad tasks each contain separate criteria that must be achieved before down-listing or de-listing can occur. The objective of this review is to summarize the criteria proposed for SSL recovery and for changing the listing of the western stock of SSLs and to compare these criteria to those contained in other recovery plans.

II. Methods

The SCB review mentioned above was based on >450 questions on 13 forms separated by topic which were completed by graduate students reviewing recovery plans in university seminars across the country. The completed forms included information from 135 plans; the information was then placed into a large data base for analysis. An abbreviated version of some of the questions contained in these forms applicable to the SSL plan, plus additional questions posed by the Council staff specific to the SSL recovery plan, were used in this review (see below). Extracted information was placed in both text and spreadsheet format and subjective comparisons made between each species' plan and the SSL plan.

Eleven recovery plans (six from NMFS and five from USFWS) were included in the review, depending on available information in the plan and relevance to the SSL plan. Two of the plans were for species or sub-species (and one proposed for delisting in April 2007) that have been removed from the ESA list (gray whale, Yellowstone grizzly bear, and Northern Rocky Mountain gray wolf—noted by * below).

The Councils' Scientific and Statistical Committee recommended at the March 2007 Council meeting that when practical, species chosen for the review be based on their similarity to SSLs in terms of taxonomy, population abundance and trends, commonality of threats, and relative magnitude of biological uncertainty (e.g., level of knowledge on vital rates). Species under NMFS jurisdiction were perused in terms of these criteria, especially for population abundance and trends, and similarity of uncertainty. The great whales listed under the ESA met these criteria but there was no recovery plan for sei whales. The gray whale had no recovery plan and was delisted in 1994, but because it is the only species delisted by NMFS comparable to the SSL issue, it is reviewed here in the context of its biology and numerical trends. The blue whale recovery plan is almost ten years old (1998) and contains no criteria for changing the species' listing status. The humpback whale recovery plan also is over ten years old (1991) and the proposed recovery criteria in the plan are characterized as biological goals, numerical goals, and political goals. Because of the context of that plan, it was difficult to make comparisons of recovery criteria to the SSL plan. However, the fin whale, southern resident killer whale and North Atlantic right whale plans contained criteria that allowed comparison to the SSL. The Hawaiian monk seal plan fit these criteria and was included in the review. The sperm whale plan was appropriate for inclusion but was arbitrarily excluded due to the overall number of plans in the review.

For those species under USFWS jurisdiction, the southern sea otter (*Enhydra lutris nereis*) was chosen based on its taxonomic similarity to sea lions and commonality of threats. Sea otters in Alaska (*Enhydra lutris kenyoni*) would have been a better choice because of the relative size of the population prior to the recent decline, the rate and duration of the recent decline, and level of knowledge on vital rates, etc. But the sub species was listed too recently and a recovery plan is not available. Also chosen were the

West Indian manatee, grizzly bear, spectacled eider, and gray wolf. The Canada lynx was originally proposed for review but the USFWS has not developed a Recovery Plan for that species. This review included seven species listed as endangered, three listed as threatened, and three species or populations that were delisted or considered for delisting (Table 1). Therefore, recovery plans for each agency chosen for this review included:

NMFS

Steller sea lion-western (E)
Hawaiian monk seal (E)
Fin whale (E)
Southern resident killer whale (E)
Northern Atlantic right whale (E)
Eastern Pacific gray whale*

USFWS

Southern sea otter (T)
West Indian manatee in Florida (E)
Grizzly bear (T) (Greater Yellowstone*)
Spectacled eider (T)
Gray wolf (E) (Northern Rocky Mountain *)

A. Summarize information in a spreadsheet for each species.

Each plan was reviewed and information from the following bullets extracted and inserted into a spreadsheet. Species under NMFS jurisdiction are presented first and those under USFWS second.

- Initial population size prior to and at the time of listing.
- Relative scale of population decline (temporal and percentage).
- Population size at down-listing or delisting.
- How long from listing to down-listing or delisting?
- Types of threat including habitat degradation, food limitation, over harvest, high mortality level, etc.
- Recovery criteria for that species (number and type).
- Were recovery criteria related to habitat, number of individuals, or both?
- Habitat issues factored into the listing decision (yes or no)?
- Number of recovery tasks suggested in the plan.
- Utilization of Population Viability Analysis (PVA) in recovery plans.

Additional to this information, the following seven questions were addressed, when possible.

1. Summary of recovery criteria
2. What were the key elements of the recovery plan and what were the recovery goals?
3. What has happened to the population over the years since the species was listed (or de-listed)?
4. What actions were taken to help the population recover?
5. For de-listed species, how were the threats mitigated so that the species could be de-listed?
6. Were monitoring efforts sufficient in determining if delisting was warranted or if recovery had been achieved?
7. Did the recovery plan provide a rationale or scientific justification for the recovery tasks?

B. Threat Similarity Index

In the scoping paper preliminary to this review it was proposed to include a threat similarity index (TSI) developed by Clark and Harvey (2002). Their TSI attempted to quantify the similarity of threats to species within multi-species recovery plans. That index was explored for this review and found to be duplicative of information in Table 2 and that the results were somewhat misleading. Results tended to infer some level of quantitative confidence to similarity of threats in single species plans that was likely not valid. The Clark and Harvey index compared threats to species in a common ecosystem (e.g., fish, insects, and plants in a river system) where here the single species plans were from different ecosystems. Consequently the inclusion of the TSI for this review was deleted.

C. Summarize and compare/contrast NMFS policy and guidelines for recovery planning.

DeMaster et al. (2004) stated that uniform guidelines for listing, reclassifying, or delisting species had not been developed by either NMFS or the USFWS. The lack of uniform guidelines for listing decisions has led to inconsistencies and inequities in the listing process. NMFS responded to this problem by establishing a Steering Committee and a Quantitative Working Group (QWG) to work toward developing quantitative procedures that would make listing decisions “more transparent, consistent, and scientifically and legally defensible.” Included in the recommendations was the use of population viability analysis (PVA) for development of listing and recovery criteria in that they provide extinction time probability functions. The QWG recommendations were reviewed for this project and compared to the justification for delisting criteria included in the draft SSL Recovery Plan.

III. Results and Discussion

Summary of recovery criteria.

The primary goal of this project was to review the proposed SSL recovery criteria and compare them to recovery criteria developed and implemented for other species elsewhere. The primary goal of all plans reviewed was to change the listing from either endangered to threatened or threatened to de-list. That goal, of course, is the statutory obligation of the agencies pursuant to the ESA so it was no surprise that it was the shared goal of all recovery plans. But all recovery plans differed in their suggested recovery criteria based on threats to the species, likelihood of extinction (compare Hawaiian monk seals and SSL), available information, technical expertise of team members, and many other variables. In regard to the species reviewed in this project, there were three general categories for changing listing with some overlap between categories. The first category included increasing or decreasing rates of population status or of changing vital rates over time with consideration to rates of change in geographic areas. The second category was based on the number of animals counted over a prescribed period and area. The third was a mix of categories one and two.

Recovery plans for species in the first category were the SSL, fin whale, North Atlantic right whale, southern resident killer whale, and West Indian manatee. Those in the

second category included southern sea otter, grizzly bear, spectacled eider, and Northern Rocky Mountain gray wolf. The third category included the Hawaiian monk seal. The use of categories one and two was agency specific with species under NMFS jurisdiction using the first category and those under USFWS jurisdiction using the second (except for the manatee). There was no recovery plan for the eastern North Pacific gray whale while it was listed under the ESA.

In terms of the first category that relied on changes in rates of population status, vital rates, and the like, the down-listing recovery criteria in the SSL plan require that western stock of SSLs increase for 15 years on average and that population ecology and vital rates be consistent with this increasing trend. The plan also requires that trends in non pups in at least 5 of the 7 sub-regions be consistent with this increasing trend. There is no numerical level of population numbers at which listing would change. It is useful to remember the context of the listing of SSLs in that part of the justification for the listing was the magnitude of the decline over a broad geographic area in a short time period. The NMFS and the Recovery Team considered the overall abundance of the species as appropriate listing or delisting criteria but used the weight of evidence on the nature and magnitude of the decline rather than absolute population level as crucial listing and delisting criteria. Similarly, the southern resident killer whale plan requires that the whales exhibit an increasing population trend at an average rate of 2.3%/year for 14 years and that available information on population and social structure be consistent with the observed increasing population trends. Criteria for down-listing fin whales to threatened (they like SSLs number in the tens of thousands) requires that the overall population in each ocean basin remain stable or increase for at least 26 years, or that the chance of quasi-extinction in each ocean basin is <1% in 100 years. The plan for the West Indian manatee requires that the average annual rate of adult survival is 90% or greater; the average annual percentage of adult female manatees accompanied by first or second year calves in winter is at least 40%; and the average annual rate of population growth is equal to or greater than zero.

Each of the four plans in the second category relies on the number of animals counted or estimated, or on the number of breeding pairs counted. In each case this number is relatively small when compared to population estimates for SSLs or fin whales. For example, the southern sea otter population could be considered for delisting when the average population level over a 3-year period exceeds 3,090 animals. The Northern Rocky Mountain gray wolf population could be considered recovered when a minimum of thirty or more breeding pairs comprising some 300+ wolves exist in a metapopulation. Spectacled eiders, a more numerous species, could be considered recovered when each of the three recognized populations is stable or increasing over 10 or more years and the minimum estimated population is at least 6,000 breeding pairs, or numbers at least 10,000 breeding pairs over 3 or more years, or numbers at least 25,000 breeding pairs in one year.

The recovery plan for the Hawaiian monk seal includes both trend and numerical criteria. For a change in listing status the plan requires that aggregate numbers exceed 2,900 total individuals, that at least 5 of the 6 main sub-populations are above 100 individuals, and

that survivorship of females in each subpopulation is high enough that, in conjunction with the birth rates in each subpopulation, the calculated population growth rate for each subpopulation is not negative (but see species summary for more detail). It is of interest to note the apparent disparity within NMFS for changing the listing of species under its jurisdiction. Monk seals can be down-listed when the population is at 2,900 and that 5 of 6 sub-populations are above 100 individuals. The proposed down-listing criteria for the western stock of SSLs (which number >44,000 animals) requires an increase for 15 years on average and that population ecology and vital rates are consistent with this increasing trend. The plan also require that trends in non pups in at least 5 of the 7 sub-regions be consistent with this increasing trend.

Summary of additional information for each species.

Table 1 provides summary information for each species reviewed for this project. The species include those that have been on the list since early versions of the ESA (1967 – manatee) to those recently added (2005—killer whale) with population estimates ranging from tens of breeding pairs or individuals to over 150,000 (fin whale). The western DPS of SSLs was added to the list as an endangered species in 1997 and number ~60,000 animals (44,800 in Alaska and 16,000 in Russia)).

Habitat degradation was important as contributing to a population's status or lack or recovery in all plans reviewed (Table 2). Similarly, excessive mortality and low survival were contributors to reduced status in most (but not all) plans. Food limitation, disease/contaminants, or over harvesting were contributors to species decline or status in half or fewer of the plans.

A PVA was used as an analytical tool in six of the ten plans. For those plans that did not use a PVA, two were written for species under NMFS jurisdiction (monk seal and right whale). The plans were written in 2004 (right whale) or 2006 (monk seal) but the team members for the right whale plan were either unaware of the guidelines and tools in DeMaster et al. (2004) or chose not to use them, including the recommendation to use a PVA for developing recovery criteria. The recovery team members for the monk seal plan proposed use of a PVA once population data become available from which a PVA could be based.

Summary of NMFS policy and guidelines for recovery planning.

The SSL Recovery Plan included recommendations from the NMFS QWG published in DeMaster et al. (2004) for developing the listing or de-listing criteria. The recommendations are discussed in the Plan in Appendix 3 – A PVA model for evaluating recovery criteria for SSLs. Those recommendations were incorporated in the development of the recovery criteria and in the formulation of the PVA provided to the Team by a contractor.

Text from the Appendix 3 of the Plan states that “the Team reviewed the overall model structure, assumptions, and parameter values used in the PVA, and decided to use a weight of evidence approach for the criteria instead of the quantitative probability of extinction approach. The PVA was instrumental in providing the Team with insights on how the threats

need to be addressed in order to develop down-listing and delisting criteria. Those insights were applied in using the weight of evidence approach in selecting the criteria, and in developing the listing factor criteria that determine how the threats must be controlled or eliminated.”

IV. Conclusions

For ease of review conclusions are presented in bullet format. Please see main text for rationale and context for the conclusions.

- ▶ Recovery criteria grouped into three categories: (1) those that included changes in rates of population change by geographic areas; (2) those that included changes in the number of animals over a prescribed period and area; and (3) a mix of categories one and two.
- ▶ The 2006 Draft Revised Steller Sea Lion Recovery Plan fits into the first category.
- ▶ Recovery criteria in the SSL plan are consistent with others published by NMFS and the USFWS (i.e., killer whale, fin whale, right whale, and manatee).
- ▶ Requirements in the SSL recovery plan for rates of population increase over time in 5 of 7 regions were not unusual, compared to other plans in category 1
- ▶ The SSL Recovery Plan included recommendations from the NMFS Quantitative Working Group for developing the listing or de-listing criteria.
- ▶ SSLs, fin whales, and spectacled eiders stand out amongst the other species reviewed and for which a recovery plan exists in that they number in the tens of thousands of animals versus hundreds (or less).
- ▶ In regard to the bullet above, it is important to put into context the rate and magnitude of population decline over time for some listed species and the level of knowledge on the cause of the decline and its mitigation.
- ▶ All the recovery plans contained sufficient rationale and background to justify the proposed recovery criteria and the tasks needed to meet those criteria.
- ▶ Habitat degradation was important as contributing to the species status or lack or recovery in all plans reviewed. Excessive mortality and low survival were contributors to reduced status in most (but not all) plans. Food limitation, disease/contaminants, or over harvesting were contributors to species decline or status in half or fewer of the plans
- ▶ A PVA was used as an analytical tool in six of the ten plans (including the SSL plan).

- Existing legislation was adequate to enhance the recovery and subsequent de-listing of gray whales, whereas numerous management and conservation actions were needed to enable the delisting of Northern Rocky Mountain gray wolves and Greater Yellowstone grizzly bears.

V. Acknowledgements

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APPENDIX I
NATIONAL MARINE FISHERIES SERVICE RECOVERY PLANS REVIEWED

Steller sea lion (*Eumetopias jubatus*)

Summary:

The species is listed under two stocks; the eastern stock is listed as threatened and the western stock as endangered. The western stock is reviewed here. It numbers over 60,000 animals (44,800 in the U.S. and 16,000 in Russia) with stable or increasing populations over much of its range. Primary threats to recovery are believed to be predation (from killer whales), habitat degradation in the form of reduced availability or quality of prey, and contaminants, all of which may be affecting natality and survival. In abbreviated form, the 2006 recovery plan recommends that to change the western stock from endangered to threatened the population for the U.S. region must increase for 15 years on average, and that population ecology and vital rates in the U.S. region are consistent with this increasing trend. Also, trends in non-pups in at least 5 of the 7 sub-regions must be consistent with the overall increasing trend for the US stock. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria for down-listing to threatened.

- The population for the U.S. region has increased (statistically significant) for 15 years on average, based on counts of non-pups (i.e., juveniles and adults).
- The population ecology and vital rates in the U.S. region are consistent with the trend observed under criterion 1. Certain vital rates are assumed necessary for long term growth. As a check on criterion 1, available information on pup counts, production (fecundity), juvenile survival rates, population age structure, gender ratios, and other observations should be examined to determine whether they support the observed population trend under criterion 1.
- The trends in non-pups in at least 5 of the 7 sub-regions are consistent with the trend observed under criterion 1. The population trend in any two adjacent sub-regions can not be declining significantly. Available information on the population ecology and vital rates for the sub-regions is consistent with the respective sub-region trend. The 7 sub-regions are:
 - a. Eastern Gulf of Alaska
 - b. Central Gulf of Alaska
 - c. Western Gulf of Alaska
 - d. Eastern Aleutian Islands (including the eastern Bering Sea)
 - e. Central Aleutian Islands
 - f. Western Aleutian Islands
 - g. Russia/Asia
- The ESA listing factor criteria are met.

2. What are the key elements of the recovery plan and what are the recovery goals?

The Plan identifies 78 substantive actions needed to achieve recovery of the western distinct population segment (DPS) by addressing the broad range of threats, and is geared toward three main objectives: (1) the collection of information on status and vital rates,

(2) research programs to collect information on the remaining threats to recovery, including fisheries and other anthropogenic factors, and (3) the implementation of conservation measures to remove impacts of remaining threats to recovery. The Plan highlights three actions that are especially important to the recovery program for the western DPS:

- Maintain current fishery conservation measures
- Design and implement an adaptive management program to evaluate fishery conservation measures
- Continue population monitoring and research on the key threats potentially impeding sea lion recovery

3. What has happened to the population over the years since the species was listed (or de-listed)?

Due to the persistent decline, the western DPS was reclassified as endangered in 1997, while the increasing eastern DPS remained classified as threatened. Through the 1990s the western DPS continued to decline. However, the western population has shown an increase of approximately 3% per year between 2000 and 2004. The western DPS is currently about 44,800 animals and may be increasing due to higher juvenile and adult survival. However, it remains unclear whether SSL reproduction has also improved and whether the observed 3% annual population growth will continue.

4. What actions were taken to help the population recover?

Each of the 61 discrete recovery actions in the 1992 Recovery Plan were accomplished to a substantial degree with one exception, which was to develop international conservation agreements. Much of the effort was focused on eliminating the most direct, and likely, causes of the decline (e.g., shooting, incidental takes) including the following:

- substantial reduction in disturbance of important rookeries and haulouts;
- substantial reduction in the incidental catch of SSLs in commercial fishing;
- significant efforts to reduce intentional take by prohibiting shooting at or near SSLs;
- intensive research to better describe the threats to SSLs;
- reduction in competitive interactions between commercial fisheries in Alaska;
- addition of information on status, foraging ecology, and survivorship.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

Not applicable; the species is currently listed as Endangered.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Yes. One of the key actions in the plan is to maintain or expand existing field efforts, including population monitoring.

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Yes. The Recovery Action Narrative provides detailed explanation and rationale for each of the suggested recovery tasks.

Hawaiian Monk Seal (*Monachus schauinslandi*)

Summary:

The species is listed as endangered. There are only about 1300 individuals and the population is declining. Primary threats to recovery are believed to be predation (from sharks), low survival of females, habitat degradation in the form of reduced availability or quality of prey, disease, and contaminants. The 2006 recovery plan recommends that to change the species from endangered to threatened the population's aggregate numbers exceed 2,900 total individuals and that at least 5 of the 6 main sub-populations in the Northwest Hawaiian Islands (NWHI) are above 100 individuals, that the main Hawaiian Islands (MHI) population is above 500, and that survivorship of females in each subpopulation in the NWHI and in the MHI is high enough that, in conjunction with the birth rates in each subpopulation, the calculated population growth rate for each subpopulation is not negative. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria.

- aggregate numbers exceed 2,900 total individuals in the NWHI;
- at least 5 of the 6 main sub-populations in the NWHI are above 100 individuals and the MHI population is above 500;
- survivorship of females in each subpopulation in the NWHI and in the MHI is high enough that, in conjunction with the birth rates in each subpopulation, the calculated population growth rate for each subpopulation is not negative

2. What are the key elements of the recovery plan and what are the recovery goals?

Key elements include: (1) Action must be taken to improve the survivorship of females, particularly juveniles, in sub-populations of the NWHI; (2) the extensive field presence must be maintained; (3) efforts must be made to ensure the continued natural growth in the main Hawaiian Islands; and (4) efforts must be made to effectively reduce the probability of the inadvertent introduction of infectious diseases.

The goal of this recovery plan is to assure the long-term viability of the Hawaiian monk seal in the wild, allowing initially for reclassification to threatened status and, ultimately, removal from the List of Endangered and Threatened Wildlife.

3. What has happened to the population over the years since the species was listed (or de-listed)?

The species is in a decline that has lasted 20 years and only around 1300 monk seals remain. Modeling predicts the species' population will fall below 1000 animals in the next five years.

4. What actions were taken to help the population recover?

The species has not recovered but the following management actions have occurred which likely slowed the decline.

- Establishment of the NWHI Coral Reef Ecosystem Reserve (CRER) in 2000. The designated waters comprised from 3-50 nautical miles round the NWHI.
- In September 2005, Hawaii designated the NWHI to be a state refuge, eliminating all commercial and recreational fishing in state waters along the 1,200-mile island chain while still allowing Native Hawaiians access for cultural practices.
- Established the NWHI Marine National Monument in 2006.
- The Navy, USCG, and USFWS have cleaned up contaminants that had been previously released on numerous NWHI sites inhabited by monk seals.
- An Area Contingency Plan for oil spill response within the Hawaiian monk seal range, including the NWHI was developed. The Hawaiian Monk Seal Unusual Mortality Plan includes the specific action plan approved for oiled Hawaiian monk seals.
- Efforts to reduce shark predation on pups and females were accomplished by lethal removal and hazing.
- In 2001, bottom-fish fishermen in the NWHI voluntarily implemented several measures aimed at minimizing interactions with monk seals and other marine mammals.
- Placement of a cap on the number of fishing permits and harvest levels for commercial and recreational fisheries.
- NMFS initiated a temporary “captive maintenance project” or Head-Start designed to restore the depleted monk seal population or to enhance survival of debilitated seals.
- Several management actions have been implemented to balance the sex ratio at Laysan Island by removing problem males involved in mortality of females.
- Removal of entanglement hazards, marine debris and derelict fishing gear from the NWHI has been a major management objective.
- Government and non-government organizations participate in education and outreach projects.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

Not applicable; the species is currently listed as Endangered.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Yes. One of the key actions in the plan is to maintain or expand existing field efforts, including population monitoring. The plan states that the extensive field presence that has been maintained during the breeding season in the NWHI is critical not just to the research efforts, but also to the active management and conservation of Hawaiian monk seal sub-populations. It is suggested that maintenance of the existing field efforts, or expansion of the effort, is a critical component of any monk seal recovery effort

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Yes. The Recovery Action Narrative provides detailed explanation and rationale for each of the suggested recovery tasks.

Fin Whale (*Balaenoptera physalus*)

Summary:

Fin whales, *Balaenoptera physalus*, are widely distributed in the world's oceans. They have been listed as endangered since 1973 under the precursor act to the ESA. Although most populations were depleted by modern whaling in the mid-twentieth century, there are still tens of thousands of fin whales worldwide; an estimated 56,000 in the North Atlantic, 85,000 in Antarctica, and a large but unknown population in the North Pacific. Commercial whaling for this species ended in the North Pacific in 1976, in the Southern Oceans in 1976-77, and in the North Atlantic in 1987. Fin whales are still hunted for subsistence in Greenland and subject to catch limits under the IWC. Although the main direct threat to fin whales was addressed by the IWC whaling moratorium, several potential threats remain. Among them are vessel collisions, entanglement in fishing gear, reduced prey abundance due to over fishing, habitat degradation, disturbance from low-frequency noise and the possibility that illegal whaling or resumed legal whaling will cause removals at biologically unsustainable rates. In general, the recovery plan recommends that to change the listing to threatened the overall population in each ocean basin (North Atlantic, North Pacific and Southern Oceans) should remain stable or increase for at least 26 years (1.5 generations; assumed generation time is 17 years), or the overall fin whale population in each ocean basin satisfies the risk analysis standard for threatened status (has no more than a 1% chance of quasi-extinction in 100 years). (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria to change listing from endangered to threatened.

Recovery criteria for fin whales take two forms: (1) criteria that indicate effective management and elimination of threats, and (2) criteria that reflect the status of the species itself. A workshop to provide guidance on appropriate levels of risk for listing and down-listing large cetaceans proposed that they should no longer be considered endangered when the probability of extinction is less than 1% in 100 years; they shall no longer be considered threatened when the probability of becoming endangered is less than 10% in a period of time no shorter than 10 years and no longer than 25 years, with the period depending on the volatility of the population, the power of monitoring to detect changes and the expected response time of the management agency.

Specific recovery criteria in the fin whale recovery plan require that the overall population in each ocean basin has remained stable or increased for at least 26 years (1.5 generations); or the overall fin whale population in each ocean basin satisfies the risk analysis standard for threatened status (has no more than a 1% chance of quasi-extinction in 100 years). In addition, factors that may limit population growth have been identified and are being or have been addressed to the extent that they allow for continued growth of populations.

2. What are the key elements of the recovery plan and what are the recovery goals?

Key elements of the proposed recovery program are (1) continued effective international regulation of whaling, (2) identifying and minimizing human-caused injury and mortality, (3) determining population structure and discreteness, and (4) estimating population sizes

and monitoring trends in abundance. The goal of the fin whale recovery plan is to promote their recovery to the point at which they can be down listed from endangered to threatened, and ultimately to remove them from the list. The intermediate goal is to reclassify the species from endangered to threatened.

3. What has happened to the population over the years since the species was listed (or de-listed)?

Fin whale populations were much reduced by commercial exploitation prior to their original listing in 1970 based on the precursor to the ESA. Commercial whaling for this species ended in the North Pacific in 1976, in the southern oceans in 1976-1977, and in the North Atlantic in 1987. Since then fin whales have been taken in low numbers by subsistence hunters in Greenland. Present population status is uncertain in all three populations (North Atlantic, North Pacific, and Antarctic) but tens of thousands of fin whales exist in all populations.

4. What actions were taken to help the population recover?

The IWC did not begin managing commercial whaling for fin whales on a species basis until 1969 in the North Pacific and 1976 in the North Atlantic. They were given full protection from commercial whaling in the Antarctic beginning in the 1976/1977 whaling season, the North Pacific in the 1976 season, and the North Atlantic in the 1987 season. Since 1987, the only area in the northern hemisphere where fin whales have been hunted legally is Greenland where the harvest of about 19 fin whales per year has been authorized.

The fin whale is protected under both the ESA and the MMPA. It is listed as endangered by the World Conservation Union (IUCN) and is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The CITES classification is intended to ensure that no commercial trade in the products of fin whales occurs across international borders.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

Not applicable; the species is currently listed as endangered.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

It is difficult to say. Fin whales are pelagic species that occur over a vast area of the world's oceans; conducting surveys to estimate abundance and trends is extremely difficult and expensive. Because fin whales move freely across international borders, it would be unreasonable to confine recovery efforts to U.S. waters, and the recovery plan stresses the importance of a multinational approach to management. The plan recognizes the limits imposed by the national nature of protective legislation

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Yes. The Recovery Action Narrative provides detailed explanation and rationale for each of the suggested recovery tasks.

Southern Resident (Puget Sound) Killer Whale (*Orcinus orca*)

Summary

Overall killer whales as a species are not listed on the ESA. However, the southern resident stock of killer whales that resides primarily in Puget Sound and British Columbia is listed as endangered. It numbers about 90 individuals. Primary threats to recovery are believed to include reduced prey (salmon) availability, pollution/contamination, vessel effects, oil spills, and acoustic effects. In abbreviated form, the recovery plan recommends that to change from endangered to threatened the stock has to exhibit an increasing population trend at an average growth rate of 2.3 % per year for 14 years, and that available information on social structure and population structure are consistent with the increasing trend. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria to change listing from endangered to threatened.

--The Southern Resident DPS has exhibited an increasing population trend at an average growth rate of 2.3 % per year for 14 years (one cycle).

-- Available information on social structure and population structure are consistent with the observed increasing population trend, and they are indicative of an increasing or stable population. Quantitative measures for some population parameters include representation from at least three pods, and at least one reproductive age male in each pod.

2. What are the key elements of the recovery plan and what are the recovery goals?

There is considerable uncertainty regarding which threats may be responsible for the decline in the southern resident killer whale population or which is the most important to address for recovery. The plan lays out an adaptive management approach and a recovery strategy that addresses each of the potential threats based on the best available science. The recovery program outline links the management actions to an active research program to fill data gaps, and links to monitoring to assess effectiveness. Threats include reduced prey (salmon) availability, pollution/contamination, vessel effects, oil spills, and acoustic effects.

The goal of the plan is to restore the endangered southern residents to the point where they no longer require the protections of the ESA which may be achieved with sustained average growth of 2.3 % per year for 28 years.

3. What has happened to the population over the years since the species was listed (or de-listed)?

The species is stable at low levels and has increased slightly (by 7-8 individuals) over the past 10 years.

4. What actions were taken to help the population recover?

--Critical habitat under the ESA was designated in 2006.

--Named a “state candidate species” by the Washington Department of Fish and Wildlife in June 2000, which qualified them for consideration as endangered, threatened, or sensitive under state law.

-- Killer whales received federal protection from disturbance under Canada’s Marine Mammal Regulations (MMR) of the Fisheries Act in 1994.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

Not applicable; the species is currently listed as endangered.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Yes. One of the key actions in the plan is to maintain or expand existing field efforts, including population monitoring. The plan recommends conducting research to facilitate and enhance conservation efforts and to continue the annual census to monitor trends in the population, identify individual animals, and track demographic parameters.

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Yes. The Recovery Action Narrative provides detailed explanation and rationale for each of the suggested recovery tasks.

North Atlantic Right Whale (*Eubalaena glacialis*)

Summary:

The species is listed as endangered. It numbers about 300 individuals with unknown population trends (but no recovery is apparent). Primary threats to recovery include entanglement in fishing gear, vessel strikes, habitat degradation, noise, contaminants, and climate/ecosystem change. In abbreviated form, the recovery plan recommends that to change to threatened status population ecology and vital rates (1) indicate an increasing population that has increased for a period of 35 years at an average rate of increase equal to or greater than 2% per year, (2) that none of the known threats are limiting the population's growth rate, (3) that no right whales are allowed to be harvested for commercial purposes, and (4) disease is not appreciably affecting the recovery. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria to change listing from endangered to threatened.

The workshop on guidance on appropriate levels of risk for listing and down-listing decisions developed in a workshop for large cetaceans as discussed above for fin whales also applies to right whales. That guidance suggested that a large cetacean species shall no longer be considered endangered when the probability of extinction is less than 1% in 100 years; it shall no longer be considered threatened when the probability of becoming endangered is less than 10% in a period of time no shorter than 10 years and no longer than 25 years, with the period depending on the volatility of the dynamics of the population, the power of monitoring to detect changes and the expected response time of the management agency.

The North Atlantic right whale recovery plan included recovery criteria specific to right whales, including:

- The population ecology (range, distribution, age structure, and gender ratios, etc.) and vital rates (age-specific survival, age-specific reproduction, and lifetime reproductive success) are indicative of an increasing population.
- The population has increased for a period of 35 years at an average rate of increase equal to or greater than 2% per year.
- None of the known threats are known to limit the population's growth rate, including:
 - Habitat degradation from oil spills, noise pollution, dredging and contaminants;
 - Recreational and educational activities are adequately regulated by the permitting;
 - No right whales are allowed to be harvested for commercial purposes; and
 - Disease is not appreciably affecting the recovery of the species.

2. What are the key elements of the recovery plan and what are the recovery goals?

Ship collisions and entanglements in fishing gear are the most common anthropogenic causes of mortality in North Atlantic right whales. The plan suggests that action is needed to reduce these significant threats, and thus improve their survival. Other potential threats are habitat degradation, noise, contaminants, and climate and ecosystem change.

The ultimate goal of this recovery plan is to promote the recovery of North Atlantic right whales to a level sufficient to warrant their removal from the ESA list; the intermediate goal is to reclassify the species from endangered to threatened.

3. What has happened to the population over the years since the species was listed (or de-listed)?

Past population estimates were based on limited information but the best estimate of population size for the North Atlantic right whale in 1991, when the first recovery plan was adopted, was 350 animals. The population is currently believed to contain only about 300 individuals and it remains unclear whether its abundance is static, undergoing modest growth or, as recent modeling exercises suggest, currently in decline. However, there has been no apparent sign of recovery in the last 15 years and the species may be rarer and more endangered than previously thought. Because the right whale is a long-lived species, extinction may not occur in the near future, but the possibility of biological extinction in the next century is very real.

4. What actions were taken to help the population recover?

- NMFS developed Regional Recovery Plan Implementation Teams in the southeastern U.S. (1993) and the northeastern U.S. (1994). Both developed plans to reduce ship strikes, improve habitat, reduce exposure to contaminants, monitor status and trends, reduce entanglement, and coordinate research.
- In August 1996, NMFS formed the Atlantic Large Whale Take Reduction Team to reduce incidental mortality and serious injury.
- In May 1996, NMFS established the Atlantic Offshore Cetacean Take Reduction Team to address incidental take of several marine mammal species (including right whales) in offshore fisheries.
- NMFS established a team of scientists to respond to all marine mammal entanglements, with an emphasis on right and humpback whale entanglements.
- NMFS published a proposed rule in 1996 restricting vessel approach to right whales.
- Many groups are involved in efforts to reduce ship strikes and to report right whale movements including (but not limited to) aerial surveys, education, updated navigational publications, etc.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

Not applicable; the species is currently listed as endangered.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Yes. The highest priority in this plan is reducing ship strikes and entanglement in fisheries gear. Secondary, but still high priority, needs involve identification and monitoring of the status, trends, distribution and health of the species. One of the key actions in the plan is to maintain or expand existing field efforts, including population monitoring. The plan recommends continuing the annual census to monitor trends in the population, identify individual animals, and track demographic parameters.

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Yes. The Recovery Action Narrative provides detailed explanation and rationale for each of the suggested recovery tasks.

Eastern North Pacific Gray Whale (*Eschrichtius robustus*)

Summary:

The species was listed as endangered along with the other 'great' whales with passage of the ESA in 1973. Through protection afforded by the MMPA and ESA, the Mexican government's protection of its calving grounds in Baja California, and international protection through the International Whaling Commission the species has rebounded and is presently estimated to exceed pre-exploitation numbers. It was delisted in 1994. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria to change listing from endangered to threatened.

Not applicable; there is no Recovery Plan.

2. What are the key elements of the recovery plan and what are the recovery goals?

There is not now nor was there a Recovery Plan for the Eastern North Pacific gray whale.

3. What has happened to the population over the years since the species was listed (or de-listed)?

The population increased to pre-exploitation levels of >20,000 animals warranting de-listing in 1994.

4. What actions were taken to help the population recover?

The species was protected under the ESA and MMPA and the Whaling Convention Act, and the Convention on International Trade in Endangered and Threatened Species (CITES) has prohibited possible international trade.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

--The eastern Pacific gray whale recovered in spite of increased human use of coastal habitat.
-- Reduction of possible injury or death resulting from vessel impact has been reduced by restrictions imposed by Mexican and US regulations.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Not applicable; there is no Recovery Plan.

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Not applicable; there is no Recovery Plan.

APPENDIX II

U.S. FISH AND WILDLIFE SERVICE RECOVERY PLANS REVIEWED

Southern Sea Otter (*Enhydra lutris nereis*)

Summary:

The sub-species is listed as threatened and ranges in California from Half Moon Bay to Point Conception. The southern sea otter population was exploited to near extinction from an estimated historical population (in California) of approximately 16,000 animals. Since the early 1970s, population counts have ranged between 1,250 and 2,300 animals. It now numbers about 2,150 animals with declining trends in the late 1990s; current trends are equivocal. Primary threats to recovery are believed to be habitat degradation (including oil spills and other environmental contaminants) and human take (including shooting, entanglement in fishing gear, and harassment). Recent declines in abundance may be related to: (1) infectious disease resulting from increased immune deficiencies or elevated parasite and pathogen exposure; (2) incidental mortality caused by commercial fishing activities; or (3) food resource limitation. The recovery plan recommends delisting the sub-species when the average population level over a 3-year period exceeds 3,090 animals. The current estimate for the lower limit of the optimum sustainable population is approximately 8,400 individuals, thus qualifying for depleted status under the MMPA. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria to change listing from threatened to de-listing.

The southern sea otter population should be considered for delisting when the average population level over a 3-year period exceeds 3,090 animals.

2. What are the key elements of the recovery plan and what are the recovery goals?

The present strategy for recovering the southern sea otter is to (1) determine the cause of increased mortality, (2) mitigate that cause, and (3) allow the number and range of sea otters to increase to such a size that there will be enough survivors to recolonize the range without genetic bottleneck effects in the event of a major oil spill in central California. Additionally, the plan recommends that the population be large enough to detect with adequate statistical assurance a declining trend in abundance prior to the population reaching the threshold for endangered status.

The recovery objective is to manage human activities that may jeopardize the continued existence of the species or damage or destroy habitat critical to its survival such that the species recovers to the point where it can be removed from the List

3. What has happened to the population over the years since the species was listed (or de-listed)?

Population counts have ranged between 1,250 and 2,300 animals and declined from the mid-1970s to the early 1980s then increased from the mid-1980s to the mid 1990s. There was little range expansion during the latter period. Between 1995 and 1999, population counts declined, but the population's range expanded both to the south and the north. The current population

status is less certain, with recent counts being relatively stable. The decline from the mid 1970s to the early 1980s apparently resulted from entanglement mortality in fishing gear. Once the entanglement problem was identified and rectified through State regulations, the population immediately began to increase. The cause of the recent decline remains uncertain. In the 20th century, the southern sea otter population never increased at the species' maximum potential of 17- 20%/ year, although this rate of increase is typical of recovering populations in Washington, British Columbia, and Alaska.

4. What actions were taken to help the population recover?

- A recovery plan for the southern sea otter was completed in 1991 then revised twice, the most recent being in 2003.
- Expanded efforts to increasing the range of sea otters in California to lessen the risk of a single oil spill event reducing the otter population below a viable level.
- Decision within USFWS that additional translocations are not recommended as the best way to accomplish the objective of increasing the range and number of sea otters.
- Restrictions and closures were imposed on the gill and trammel net fisheries in California to reduce mortality from entanglement with a subsequent resurgence in population growth.
- Decreasing the likelihood of a major oil spill event within the sea otter's range.
- The revised plan stated that it is in the best interest of recovery of the southern sea otter population to declare the experimental translocation of sea otters to San Nicolas Island a failure and to discontinue the maintenance of the otter-free-zone in southern California.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

Not applicable; the species is currently listed as threatened.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Yes, The Plan is clear in its priority in continuation of monitoring efforts. It states 'that one of the most critical activities concerning the conservation and management of the southern sea otter will be to continue ongoing monitoring programs for population abundance and distribution. Given the rapidity with which otter populations can decline..., surveys should be performed at a minimum of once a year and ideally twice a year. Population count data are the only effective measure of trends in abundance and are critical in evaluating the success of measures taken to mitigate the currently high level of mortality. Further, because the definition of recovery is dependent on these data, ongoing systematic population monitoring is required to determine when the species has recovered sufficiently to allow delisting.'

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Yes. The Recovery Action Narrative provides detailed explanation and rationale for each of the suggested recovery tasks.

West Indian Manatee (*Trichechus manatus latirostris*)

Summary:

The USFWS has written a Recovery Plan for each of the two subspecies of West Indian manatee: the Florida manatee, *T. manatus latirostris*, which occurs in the southeastern U.S., and the Antillean manatee, *T. manatus manatus*, found throughout the remainder of the species' range. This summary is for the Florida subspecies which are listed as endangered. Manatees probably are almost as geographically widespread today as they were historically; however, they appear to be less abundant in many regions. Despite considerable effort in the early 1980s, scientists have been unable to develop a useful means of estimating or monitoring trends in the size of the overall manatee population in the southeastern United States. The highest two-day minimum count of manatees from winter synoptic aerial surveys and ground counts was 3,276 manatees in January 2001. During the winter, cold temperatures keep the population concentrated in peninsular Florida and many manatees rely on the warm water from natural springs and power plant outfalls. During the summer they expand their range and on rare occasions are seen as far north as Rhode Island on the Atlantic coast and as far west as Texas on the Gulf coast. The most significant problem presently faced by manatees in Florida is death or injury from boat strikes, water control structures, and navigational locks. Threats to habitat caused by coastal development throughout much of the manatee's Florida range are also of concern. The long-term availability of warm-water refuges is uncertain if minimum flows and levels are not established for the natural springs on which many manatees depend, and as deregulation of the power industry in Florida occurs. For changing the listing to threatened four of the regions in which it occurs shows annual rate of survival of adults is 90%, that annual percentage of females with a first or second year calf in winter is 40%, and the annual growth rate is equal to or greater than zero. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria

Reduce threats to manatee habitat or range, as well as threats from natural and manmade factors by: (1) identifying minimum spring flows; (2) protecting selected warm-water refuge sites; (3) identifying for protection foraging habitat associated with the warm-water refuge sites; (4) identifying for protection other important manatee areas; and (5) reducing unauthorized human caused "take."

Achieve the following population benchmarks in each of the four regions over the most recent 10 year period of time: (1) statistical confidence that the average annual rate of adult survival is 90% or greater; (2) statistical confidence that the average annual percentage of adult female manatees accompanied by first or second year calves in winter is at least 40%; and (3) statistical confidence that the average annual rate of population growth is equal to or greater than zero.

2. What are the key elements of the recovery plan and what are the recovery goals?

Key elements and proposed actions needed for recovery of the manatee are (1) to minimize causes of manatee disturbance, harassment, injury and mortality, (2) determine and monitor status, (3) protect, identify, evaluate, and monitor manatee habitats, and (4) facilitate manatee recovery through public awareness and education. The primary goal is to assure the long-term viability of the Florida manatee in the wild, allowing initially for reclassification to

threatened status.

3. What has happened to the population over the years since the species was listed (or de-listed)?

The status and trends on manatees is uncertain. Despite considerable effort in the early 1980s, scientists have been unable to develop a useful means of estimating or monitoring trends in the size of the overall manatee population in the southeastern U.S. The highest two-day minimum count of manatees from winter synoptic aerial surveys and ground counts was 3,276 manatees in January 2001.

4. What actions were taken to help the population recover?

- USFWS and others have made large efforts to reduce watercraft-related injuries and deaths.
- Similar efforts have been undertaken to reduce death and injury by regulating floodgate and navigational lock structures.
- Protection of manatee habitat by commenting on construction permits, development of county manatee protection plans, and land acquisition.
- Continuance of the efforts for injured manatee rescue, rehabilitation, and release.
- Increased efforts to reduce injury and death by increased public education, awareness, and support.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

Not applicable; the species is currently listed as endangered.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Probably not. The annual synoptic surveys have too many weaknesses to reliably gauge the health of the population. Therefore, the USFWS has established population related benchmarks for certain aspects of manatee demographics (based upon mark/recapture studies and population modeling) that it will use to help determine the success of manatee conservation efforts.

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Yes. The Recovery Action Narrative provides detailed explanation and rationale for each of the suggested recovery tasks.

Grizzly Bear (*Ursus arctos horribilis*)

Summary:

Grizzly bear distribution in the lower 48 states has been reduced to less than 2% of the historical range. Of the 50,000 or so bears in the area during the Lewis and Clark expedition, only about 1,400 remain. The remaining populations are separated into six or seven fragments of a once contiguous range. Each of the six or seven fragments is managed separately with defined 'recovery zones' whose boundaries may change with varying biological information. Bears both inside and outside the recovery zones are listed as threatened, except for the Greater Yellowstone area bears which were delisted in April 2007. Currently, the greatest threats to grizzly bears are human-caused mortality and the conservation of existing habitat. Since grizzly bears are a secretive, wide-ranging species that occupies rugged terrain, population counts are difficult to obtain. Instead the recovery plan used population goals to measure population status including (1) sufficient reproduction to offset human-caused mortality, (2) adequate distribution and breeding of animals throughout the area, and (3) a limit on total human-caused mortality. With these three goals in mind, three population monitoring parameters were proposed: (1) the number of females with cubs seen annually, (2) the distribution of females with cubs or family groups seen throughout the ecosystem, and (3) the annual number of known human-caused mortality. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria

Each individual population will remain listed until its specific recovery criteria are met. The species throughout the lower 48 states can be de-listed when the populations in all recovery zones are de-listed. The recovery criteria include a minimum number of females with cubs seen annually, distribution of family groups throughout the zone, and a limit on human-caused mortality. Specifics of these three criteria are different for each zone. For example, the original criteria for the de-listed Greater Yellowstone area grizzly bear included 15 females with cubs over a running 6-year average both inside the recovery zone and within a 10-mile area surrounding the zone; 16 of 18 segments occupied by females with young from a running 6-year sum, plus additional requirements for segments of the recovery zone. These were in addition to a limit of 4% human-caused mortality of which no more than 30% could be females. However, under court ruling these criteria have been revised upward to account for recent information on population trends and levels of mortality.

2. What are the key elements of the recovery plan and what are the recovery goals?

The key elements are to reduce human-caused mortality and to conserve existing habitat with the overall goal to remove all grizzly bear populations from the list. The specific demographic recovery goals are specific to each zone and include the three population monitoring parameters listed above. The second overall goal is to demonstrate the existence of adequate regulatory mechanisms for population and habitat management through the development of a conservation strategy for each zone.

3. What has happened to the population over the years since the species was listed (or de-listed)?

For some recovery zones the population is improving; the Greater Yellowstone area grizzly bear distinct population segment (DPS) was delisted in 2007. Overall grizzly bear population numbers are difficult to obtain but available information suggests that their status is stable or improving slowly in most areas.

4. What actions were taken to help the population recover?

- The USFWS hired a national grizzly bear recovery coordinator in 1981 to coordinate and direct recovery.
- Promulgation of a recovery plan, the first in 1982 with subsequent revisions.
- Establishment of working groups for each recovery zone to develop a process for public involvement, develop recovery and implementation tasks and objectives, and delineate boundaries for each zone.
- A number of State management measures, specifically those related to reducing human-caused mortality, and public awareness have arrested or slowed the decline of grizzly bears populations in several areas.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

All but the Greater Yellowstone Area bears are still listed. For the Greater Yellowstone Area bears the threats were mitigated by regulation on the level of human-induced mortality and conservation of habitat through federal and state efforts.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Similar problems exist for grizzly bears in terms of adequate population monitoring, so probably not. The annual synoptic surveys have too many weaknesses to reliably gauge the health of the population. Therefore, the USFWS has established population related benchmarks for certain aspects of grizzly bear demographics that it will use to help determine the success of conservation efforts.

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Yes. The Recovery Action Narrative provides detailed explanation and rationale for each of the suggested recovery tasks.

Spectacled eider (*Somateria fischeri*)

Summary:

The species is listed as threatened. Three breeding populations exist, the Yukon-Kuskokwim Delta (YKD), North Slope of Alaska (NS), and Arctic Russia (AR). The breeding range of the YKD population is much reduced and the population has declined by more than 96% since the mid 1970s. The NS breeding population has experienced localized declines but data are insufficient to determine overall trends. The AR breeding population is large and the world-wide population is estimated at over 360,000 spectacled eiders. Analysis of Common Eider demographic data (a closely related species) suggest that adult survival may be the most important variable affecting population growth. Lead poisoning from ingested shotgun pellets may have contributed to the rapid decline observed in the YKD but other factors such as predation, human harvest, injury, and research impact have been implicated but their relative importance is unknown. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria

Spectacled eiders will be considered recovered when each of the three recognized populations (1) is stable or increasing over 10 or more years and the minimum estimated population is at least 6,000 breeding pairs, or (2) numbers at least 10,000 breeding pairs over 3 or more years, or (3) numbers at least 25,000 breeding pairs in one year.

2. What are the key elements of the recovery plan and what are the recovery goals?

One of the principal elements of the plan is to reduce mortality, especially through management action to reduce or eliminate mortality from lead pellets. Other elements include: 1) coordination or recovery efforts, (2) quantify and monitor existing breeding populations, (3) determine molting, migration, and wintering areas, (4) conduct research on demography and biology and develop appropriate models, and (5) determine obstacles to recovery and causes of decline. As with all other plans, the recovery goal is to achieve population levels that merit delisting of the species.

3. What has happened to the population over the years since the species was listed (or de-listed)?

The YKD breeding population remains low and somewhat stable, but the population data are difficult to obtain. The NS breeding population likely is still in decline. Overall the world population remains high and is not in peril.

4. What actions were taken to help the population recover?

--Sport and subsistence harvest is prohibited under the Migratory Bird Treaty (but it is allowed in the YKD and NS areas).

-- As with all listed species, federal agencies are required to consult with the USFWS when the agency's actions may affect the species.

--Non-toxic shot must be used for all waterfowl hunting (lead shot has been prohibited for hunting in the U.S. since 1991).

--Publication of guidelines for protection of breeding and feeding grounds.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

Not applicable. Species is still listed as threatened.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Yes. One of the key actions in the plan is to maintain or expand existing field efforts to monitor the status and trends of breeding pairs. The plan states that the extensive field presence is required during the breeding season and is critical not just to the research efforts, but also to the active management and conservation. It is suggested that maintenance of the existing field efforts, or expansion of the effort, is a critical component of any spectacled eider recovery effort

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

Yes. The rationale and justification for the recovery tasks are explained in text form within the plan and in the attached appendices.

Gray wolf -- Northern Rocky Mountain (*Canis lupus irremotus*)

Summary:

The Northern Rocky Mountain gray wolf is one of 32 recognized subspecies. The gray wolf in the lower 48 states is listed as endangered. The listing comprises three distinct population segments (DPS) for the species, one of which is the Northern Rocky Mountain DPS. The USFWS manages each of the DPSs separately and the changing of listing status is specific to each designated DPS. All gray wolves were listed in the 1980s; the Northern Rocky Mountain (NRM) DPS was proposed for delisting in 2007. The original recovery plan emphasized natural processes for recovery and translocation when needed. The USFWS measures wolf recovery by the number of breeding pairs since wolf populations are maintained by packs that successfully raise pups. At the end of 2000, the NRM population first met its numerical and distributional recovery goal of a minimum of 30 breeding pairs and over 300 wolves well-distributed among Montana, Idaho, and Wyoming. This minimum recovery goal was again exceeded in 2001, 2002, 2003, 2004, 2005, and 2006. (Please refer to Tables 1 and 2 for summaries of listing and recovery plan information)

1. Summary of recovery criteria

The Plan specifies a recovery criterion of 10 breeding pairs of wolves (defined in 1987 as 2 wolves of opposite sex and adequate age, capable of producing offspring) for 3 consecutive years in each of three distinct recovery areas--(1) northwestern Montana, (2) central Idaho (3) and the Yellowstone National Park. The Plan also states that if two recovery areas maintain 10 breeding pairs for three successive years, gray wolves in the NRM can be reclassified to threatened status and if all three recovery areas maintain 10 breeding pairs for three successive years, the NRM wolf population can be considered fully recovered and can be considered for delisting. These criteria were revised so that, at a minimum, the recovery goal should be thirty or more breeding pairs comprising some 300+ wolves in a metapopulation. At the end of 2000, the NRM population first met its numerical and distributional recovery goal of a minimum of 30 breeding pairs and over 300 wolves well-distributed among Montana, Idaho, and Wyoming. This minimum recovery goal was again exceeded in 2001, 2002, 2003, 2004, 2005, and 2006. Because the recovery goal must be achieved for three consecutive years, the temporal element of recovery was not achieved until the end of 2002. By the end of 2006, the NRM wolf population had achieved its numerical and distributional recovery goal for seven consecutive years.

2. What are the key elements of the recovery plan and what are the recovery goals?

The key elements by which the plan measures wolf recovery is by the number of breeding pairs observed for a certain time period and over specified geographic areas. A breeding pair is defined as an adult male and an adult female wolf that have produced at least 2 pups that survived until December 31 of the year of their birth, during the previous breeding season. The goal to delist the DPS has been achieved.

3. What has happened to the population over the years since the species was listed (or de-listed)?

The DPS has increased in number and distribution and has met its delisting criteria. The USFWS has proposed that the Northern Rocky Mountain DPS be delisted.

4. What actions were taken to help the population recover?

See #5 below.

5. For de-listed species, how were the threats mitigated so that the species could be de-listed?

The USFWS:

- Reintroduced wolves from southwestern Canada to remote public lands in central Idaho and Yellowstone National Park.
- Monitored wolf distribution and numbers.
- Controlled wolves that attacked livestock by moving them, conducted other non-lethal measures, or killed them.
- Conducted research on wolf relationships to ungulate prey, other carnivores and scavengers, livestock, and people.
- Provided accurate science-based information to the public through reports and mass media so that people could develop their opinions about wolves and wolf management from an informed perspective
- Radio-collared and monitored over 814 wolves in the NRM to assess population status, conduct research, and to reduce/resolve conflicts with livestock.

6. Are monitoring efforts sufficient in determining if delisting is warranted or if recovery has been achieved?

Yes. See number 7 below.

7. Does the recovery plan provide a rationale or scientific justification for the recovery tasks?

The original plan is twenty years old and did not contain the same amount of information or justification included in recent plans. However, there was sufficient rationale and background to justify the proposed recovery criteria and the tasks needed to meet those criteria.

Table 1. Summary profiles of species reviewed.

Species	Status	Year Listed	Recovery Plan Year	Critical Habitat	Approx. abundance
National Marine Fisheries Service Species					
Steller sea lion --western DPS	endangered	1997	2006-draft	Y	~60,000
Hawaiian monk Seal	endangered	1976	2006	Y	~1,300
Fin whale	endangered	1970	2006	N	>150,000
Southern resident killer whale	endangered	2005	2006-draft	Y	90
North Atlantic right whale	endangered	1973	1991/2004	Y	~300
Eastern North Pacific gray whale	delisted 1994	1973	none	N	>20,000
US Fish and Wildlife Service Species					
Southern sea otter	threatened	1977	1982/2003	N	3,090
West Indian manatee	endangered	1967/1973	2001 1982,	Y	3,276
Grizzly bear	threatened ¹	1975	1993	N	1,400
Spectacled eider	threatened	1993	1996	Y	1,700 pr
Gray wolf	endangered ²	1973	1987	N	>30+ pr

Footnotes:

1. Greater Yellowstone 'recovery zone' bears were delisted in April 2007.
2. Northern Rocky Mountain gray wolf was proposed for delisting in 2007.

Table 2. Comparison of 2006 Draft Revised Steller Sea Lion Recovery Plan to other recovery plans developed by NMFS and the USFWS.

Species	ESA listing status; date	Previous status on ESA	Population size prior to listing	Population size at listing	Most recent population estimate	Pop. decline prior to listing (%)	Temporal aspect of declines	Population size needed to change listing	Number of factors involved in listing or change	Number of years from original listing to change
National Marine Fisheries Service Species										
Steller sea lion (<i>Eumetopias jubatus</i>) - western stock	E; 1997	T	~220K	<50K	~60K	~75	B	% change	3	7
Hawaiian monk seal (<i>Monachus schauinslandi</i>)	E; 1976	n/a	unk.	~1.4K	~1.3K	n/a	A,B	2.9K	13	n/a
Fin whale (<i>Balaenoptera physalus</i>)	E; 1970	n/a	>220K	>150K	~150K	unk. ¹	A	% change	2	n/a
Southern resident killer whale (<i>Orcinus orca</i>)	E; 2005	none	~200	~90	~90	>50	C	% change	2	n/a
North Atlantic right whale (<i>Eubalaena glacialis</i>)	E; 1973	n/a	>350	350	~300	~15	A	% change	4	n/a
Eastern North Pacific Gray Whale (<i>Eschrichtius robustus</i>)	delisted	T	~18-24K	3.5K	>20K	84	A	delisted	4	20
US Fish and Wildlife Service Species										
Southern sea otter (<i>Enhydra lutris nereis</i>)	T/1977	n/a	unk. ²	"small"	~2.1K	footnote ²	A,C	3,090 %	2	n/a
West Indian manatee (<i>Trichechus manatus latirostris</i>)	E/1967	n/a	unk. ²	>1.2K	3.2K	footnote ²	A,B	change ⁴	2	n/a
Grizzly bear (<i>Ursus arctos horribilis</i>)	T/1975	n/a	50K	1.0K	~1.4K	>90	A,B	400/zone	3	n/a
Spectacled eider (<i>Somateria fischeri</i>)	T/1993	none	47.7K pr ⁵	1.7K pr	~1.7K pr	>90	C	>6K pr	6	n/a
Northern Rocky Mountain gray wolf (<i>Canis lupus irremotus</i>)	delisted	E	unk. ²	?	30+ pr	footnote ²	A,B	30+ pr	5	34

Table 2. (continued).

Species	Recovery Criteria Related to SSL Plan										
	Number of key threats	Habitat degradation	Food limitation	Over harvesting	Excessive mortality	Low survival	Disease; contaminants	Number of recovery actions	Number of tasks within recovery actions	Habitat issues part of recovery (y/n)	Was a PVA used in the plan?
National Marine Fisheries Service Species											
Steller sea lion (<i>Eumetopias jubatus</i>) - western stock	13	y	y	n	y	y	n	5	78	y	y
Hawaiian monk seal (<i>Monachus schauinslandi</i>)	10	y	y	n	y	y	y	14	120	y	n
Fin whale (<i>Balaenoptera physalus</i>)	14	y	n	n	n	n	n	8	22	y	y
Southern resident killer whale (<i>Orcinus orca</i>)	7	y	y?	n	y	y	y	7	65	y	y
North Atlantic right whale (<i>Eubalaena glacialis</i>)	6	y	n	n	y	y	y	5	145	y	n
Eastern North Pacific Gray Whale (<i>Eschrichtius robustus</i>)	there was no recovery plan developed for ENP gray whales										
US Fish and Wildlife Service Species											
Southern sea otter (<i>Enhydra lutris nereis</i>)	6	y	y	n	y	y	y	7	25	y	y
West Indian manatee (<i>Trichechus manatus latirostris</i>)	4	y	n	n	y	y	n	4	95	y	n
Grizzly bear (<i>Ursus arctos horribilis</i>)	2	y	n	y	y	n	n	8	48	y	y
Spectacled eider (<i>Somateria fischeri</i>)	2	y	y	y	y	y	y	9	116	y	y
Northern Rocky Mountain gray wolf (<i>Canis lupis irremotus</i>)	2	y	n	y	y	y	n	5	101	n	n

(See footnotes on next page)

Table 2. (Continued)

Footnotes:

1. The number of fin whales in the world's oceans prior to commercial exploitation is not known; nor is the present population level in most areas. Presently, tens of thousands of fin whales occur world wide.
2. The southern sea otter, manatee, gray wolf, and grizzly bear were hunted extensively; pre-exploitation population levels are not known thus the percentage of decline to the present cannot be calculated.
3. The temporal aspect of the species' decline is gauged as: A. depressed by commercial or other exploitation; B. most recent decline occurred over >20 years; and C. most recent decline occurred over <20 years.
4. Population surveys are inadequate to gauge status so population benchmarks of manatee demographics are used.
5. Population values are for one of the three breeding populations: the Yukon-Kuskokwim Delta; The North Slope population is larger but declining; the Russian is not in peril (see text). World population is >360K.