Steller Sea Lion and Northern Fur Seal Research Final Programmatic Environmental Impact Statement

May 2007

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EXECUTIVE SUMMARY

ES-1.0 Introduction

This executive summary provides an overview of the findings contained in the Steller Sea Lion (SSL), *Eumetopias jubatus*, and Northern Fur Seal (NFS), *Callorhinus ursinus*, Research Programmatic Environmental Impact Statement (PEIS). This PEIS evaluates the effects of the type and range of SSL and NFS research activities (*i.e.*, the alternative actions) that may be exercised in current and future grants. This PEIS assesses the direct and indirect effects of various levels of funding and different research techniques on SSLs and NFSs throughout the entire range of these species in United States (U.S.) waters and on the high seas, which includes parts of Alaska, Washington, Oregon, and California. The effects of research on these species as well as other components of the marine ecosystem and human environment are presented. The PEIS assesses the contribution of research activities to the cumulative effects on these species and resources, including effects from past, present, and reasonably foreseeable future events and activities that are external to the research activities. National Marine Fisheries Service (NMFS) also acknowledges that other views of science exist than are contained in this review, including Alaska Native traditional knowledge. NMFS is committed to working with Alaska Native communities and strives to incorporate Native traditional knowledge into environmental documents.

The National Oceanic and Atmospheric Administration's (NOAA) NMFS is responsible for management, conservation, and protection of SSLs under the Endangered Species Act (ESA) (ESA; 16 United States Code [U.S.C.] 1531 *et seq.*) and the Marine Mammal Protection Act (MMPA) (MMPA; 16 U.S.C. 1361 *et seq.*) and NFSs under the MMPA. NFSs in the Pribilof Islands (St. Paul and St. George Islands) are also managed under the Fur Seal Act of 1966 (16 U.S.C. 1151 *et seq.*).

In 1990, NMFS listed SSLs as "threatened" under the ESA, and in 1997 the agency recognized two distinct population segments (DPSs): the western DPS and eastern DPS. The segment of the population west of 144° W longitude was listed as "endangered", while the segment of the population east of this delineation remained listed as "threatened". Both DPSs of SSLs are listed as depleted stocks under the MMPA. NFSs, recognized as two distinct stocks (Eastern Pacific and San Miguel Island [California]), have never been listed under the ESA, but the Eastern Pacific stock was listed as "depleted" in 1988 (then as the Pribilof Island population) under the MMPA (Figure 1.4-1).

ES-2.0 Proposed Action

NMFS administers a research program that includes (1) directed grants from the Alaska Region's operational budget, (2) "pass-through" grants detailed in the federal budget, and (3) permits issued pursuant to the MMPA and ESA for the purpose of facilitating research on SSLs and NFSs in lands and waters under U.S. jurisdiction. Most research activities on these species require permits, which NMFS administers to qualified individuals and institutions through the Office of Protected Resources, Permits Division (F/PR1). Permits are granted provided the proposed research activities are consistent with the requirements of the ESA, MMPA and the criteria in NMFS implementing regulations (50 Code of Federal Regulation [CFR] parts 216 and 222). The proposed action is to disburse federal funds and issue permits for research on SSLs and NFSs, consistent with applicable federal laws.

ES-3.0 Purpose and Need

The purpose of the research on SSLs and NFSs, as stated in the Steller Sea Lion Recovery Plan (NMFS 1992) and Northern Fur Seal Conservation Plan (NMFS 1993), is to promote the recovery of the species' populations to levels appropriate to justify removal from ESA listings (SSL) and to delineate reasonable actions to protect the depleted species under MMPA. NMFS awards grants to support research on SSLs and NFSs, and issues permits to allow an exemption to the prohibition on ''takes'' of SSLs and NFSs, established under the ESA and MMPA. The ESA and the MMPA prohibit ''takes'' of threatened and endangered species, and of marine mammals, respectively. Many research activities, including aerial and vessel-based surveys, tagging and marking

procedures, attachment of scientific instruments, and collection of tissue samples, require approaching or capturing animals and may result in harassment or other acts otherwise prohibited under the ESA and MMPA.

The purpose of the analysis contained in this PEIS is to assess the effects of research activities on SSL and NFS populations and components of the marine ecosystem and human environment.

The project is needed to:

- Address NMFS' responsibility to implement the ESA and MMPA for species under its jurisdiction, including SSLs and NFSs, to: (1) promote recovery; (2) identify factors limiting the population; (3) identify reasonable actions to minimize impacts of human-induced activities; and (4) implement conservation and management measures.
- Satisfy NMFS' obligations under National Environmental Policy Act (NEPA) by analyzing the environmental consequences of research it funds and authorizes on SSLs and NFSs, sharing and soliciting public comments on this information, and providing the basis for NMFS research grant and permit decisions.

At present, 23 active grants fund research projects that involve human interaction with SSLs. All active and anticipated SSL research funded by past, present, and expected future federal grants are covered by this PEIS document. Research activities taking place under active grants range from actions such as aerial surveys, which could disturb individual SSLs, to the capture of sample populations, for collection of blood and tissue samples. A description of permits valid between January 1, 2006 and December 31, 2011 may be found in Appendix A of this PEIS. Together, these permits currently authorize takes of SSLs throughout their range in the U.S. by a variety of research activities. In addition to authorizing various studies, the permits allow for the mortality of up to 60 SSLs per year incidental to research activities, not to exceed 18 SSLs from the western population. Applications for additional permits for studies of SSLs using these and other methods are anticipated for at least as long as this species is listed under the ESA. Further, NMFS has an ongoing obligation under Section 117 of the MMPA to prepare stock assessments for each marine mammal stock in waters under the jurisdiction of the U.S. These stock assessments, which must describe the geographic range, minimum population estimate, current and net productivity rates, annual human-caused mortality and serious injury, and other factors that may be causing a decline or impeding recovery, are largely dependent upon information obtained from activities conducted under research permits. Thus, NMFS anticipates a need to continue to issue permits for research on SSLs for as long as this requirement of the MMPA is in place.

Consistent with the purpose of the MMPA (16 U.S.C. 1361 *et seq*.), the purpose of conducting research on NFSs is to contribute to the basic knowledge of marine mammal biology and ecology and to identify, evaluate, or resolve conservation problems for the species. Research needs for conservation of this species are identified in the Northern Fur Seal Conservation Plan. Currently, the Alaska Region has not made any specific grant awards for NFS research. However, one pass-through SSL grant does support a small NFS study. Six permits or authorizations are currently active for research directed at NFS in the wild and are valid through October 1, 2010. Active permits for research on NFSs in the wild, valid through October 1, 2010, may be found in Appendix A of this PEIS. The active permits authorize takes of NFSs in California, and in Alaska on the Pribilof Islands and Bogoslof Island. As with SSLs, these permits authorize a variety of research activities ranging from vessel or aerial surveys that may disturb animals, to capture and sampling of animals, which may result in injury or incidental mortality. Applications for additional permits for studies of NFSs using these and other methods are anticipated for as long as there is concern about the population status and potential impacts of human activities, and general interest in studies of the species biology and ecology. Further, as with SSLs, NMFS has an ongoing obligation under Section 117 of the MMPA to prepare stock assessments for each marine mammal stock in waters under the jurisdiction of the U.S. and therefore anticipates a need to continue to issue permits for research on NFSs for as long as this requirement of the MMPA holds.

ES-4.0 Issues Raised During Scoping and Where They Are Addressed

The first step in preparing an EIS is publishing a Notice of Intent (NOI) in the Federal Register (FR). On December 28, 2005, the NOI (70 FR 76780) announcing the preparation of this PEIS was published requesting public participation in the scoping process. In addition to providing background information on the purpose of issuing scientific research permits and providing the statutory requirements for permits that allow research on marine mammals, the NOI also provided a list of issues on which NMFS was seeking public input. These issues included: 1) types of research; 2) level of research; 3) coordination of research; 4) effects of research; 5) qualifications of researchers; and 6) criteria for allowing modifications or amendments to existing grants and permits; and for suspending or revoking permits. To provide a framework for public discussion, the NOI also presented preliminary concepts for alternatives that could be considered for the PEIS; however, the exact structure and number of alternatives were developed after the scoping process was complete.

Three scoping meetings were held early in the project to disseminate information to the public and obtain public input. The public comment period for scoping comments ran for 60 days (between December 28, 2005 and February 25, 2006, inclusive). The locations and dates for the scoping meetings were: Silver Spring, Maryland (January 18, 2006); Seattle, Washington (January 20, 2006); and Anchorage, Alaska (January 23, 2006). A brief summary of the substantive issues raised during public scoping is presented in more detail in Section 2.2. A more complete summary of formal comments is included in the Scoping Summary Report, attached as Appendix D. The following table provides general categories of the types of issue raised in the NOI and during the scoping process and where these issues are addressed in the PEIS.

Table ES-1
Issues Raised in the NOI and Scoping Comments and Where They Are Discussed in the PEIS

Issue	Sections in the PEIS where Issue is Discussed
Issues Identified in the NOI	
Types of Research	2.4.2 Components Common to All Alternatives; 2.6 Alternatives Carried Forward for Analysis; 3.2.1 Steller Sea Lions: 3.2.2 Northern Fur Seals: Chapter 4 Environmental Consequences; Appendix A Description of Active Permits; Appendix B Description of Research Methodologies
Level of Research	2.6 Alternatives Carried Forward for Analysis; 3.2.1.11 Past Research, Levels of Effort, Funding and Program Histories Chapter 4 Environmental Consequences; Appendix A Description of Active Permits
Coordination of Research	3.2.1 Coordination of Research: 3.7 Grant and Permitting Process; 4.7.2 Coordination; 5.3 Recommendations for Coordination of SSL and NFS Research
Effects of Research	2.3 Research Components of the Alternatives: 4.8 – 4.11 [Environmental Consequences of the Alternatives on Selected Resources]; Appendix B Description of Research Methodologies
Qualifications of Researchers	4.7.4 Mitigation and Conditions of Grants, Permits, and Authorizations; Appendix D Requirements for Obtaining a Grant or Permit for Research on Protected Species
Criteria for Allowing Modifications or Amendments to Existing Grants and Permits	4.7.4 Mitigation and Conditions of Grants, Permits, and Authorizations; Appendix D Requirements for Obtaining a Grant or Permit for Research on Protected Species
Issued Raised in Scoping Comments	
Alaska Native Issues	3.2.1 Steller Sea Lions; 3.2.2 Northern Fur Seals; 3.4.1 Subsistence Harvest; 3.5 Coastal Communities; 4.7.2.3 Coordination Required Under Co-Management Agreements; 4.9 Social and Economic Environment; 5.4 Recommendations for Coordination with Alaska Native Organizations; Appendix F Co-Management Agreements for St. George and St. Paul Islands
Alternatives	2.6 Alternatives; 4.7 Elements Common to All Alternatives; 4.8 – 4.11 [Environmental Consequences of the Alternatives on Selected Resources]
Branding/ Hot Branding	2.3 Research Components of the Alternatives: 3.2.1 Steller Sea Lions; 4.8 – 4.11 [Environmental Consequences of the Alternatives on Selected Resources]; Appendix B Description of Research Methodologies
Conservation of the Species/ Conservation Goals	1.2 Purpose and Need for Action; 3.2.1 SSLs; 3.2.2 NFSs; 4.8 – 4.11 [Environmental Consequences of the Alternatives on Selected Resources]
Coordination	3.2.1 Coordination of Research: 3.7 Grant and Permitting Process; 4.7.2 Coordination; 5.3 Recommendations for Coordination of SSL and NFS Research
Credentials of Researchers	4.7.4 Mitigation and Conditions of Grants, Permits, and Authorizations; Appendix D Requirements for Obtaining a Grant or Permit for Research on Protected Species

Table ES-1 (continued)
Issues Raised in the NOI and Scoping Comments and Where They Are Discussed in the PEIS

Issue	Sections in the PEIS where Issue is Discussed
Cumulative Effects	4.5 Steps for Identifying Cumulative Effects; 4.8 – 4.11 [Environmental Consequences of the Alternatives on Selected Resources]
Duplication of Research Effort	3.2.1 Coordination of Research: 3.7 Grant and Permitting Process; 4.7.2 Coordination; 5.3 Recommendations for Coordination of SSL and NFS Research
Editorial Comments	Editorial Comments Made During Scoping Related to the 2002 and 2005 EAs on the Effects of NMFS Permitted Scientific Research Activities on Threatened and Endangered SSLs and are not applicable to this PEIS.
Effects of Research	4.8 – 4.11 [Environmental Consequences of the Alternatives on Selected Resources]; Appendix B Description of Research Methodologies
Endangered Species Act	1.2 Purpose and Need for Action; 1.7 Federal Laws Applicable to SSL and NFS Research; 2.1.2 Relation of Alternatives to the Recovery and Conservation Plans; 1.9 Federal Permits, Licenses and Entitlements Necessary to Implement the Proposed Action; 3.2.1 Steller Sea Lions; 3.2.4 Other ESA-Listed Species; 4.8.4 Other ESA-Listed Species
Inadequate Information	4.3 Incomplete and Unavailable Information; Section 5.3.3 Monitoring Effects of Research
Methodology	Appendix B Description of Research Methodologies
Mitigation	4.7.4 Mitigation and Conditions of Grants, Permits, and Authorizations; Appendix B Description of Research Methodologies; Appendix E Requirements for Obtaining a Grant or Permit for Research on Protected Species
Marine Mammal Protection Act	1.2 Purpose and Need for Action; 1.7 Federal Laws Applicable to SSL and NFS Research; 2.1.2 Relation of Alternatives to the Recovery and Conservation Plans; 1.9 Federal Permits, Licenses and Entitlements Necessary to Implement the Proposed Action; 3.2.5 Other Marine Mammals; 4.8.5 Other Marine Mammals
Monitoring	4.7.5 Monitoring; 4.7.4 Mitigation and Conditions of Grants, Permits, and Authorizations; Section 5.3.3 Monitoring Effects of Research; Appendix D Requirements for Obtaining a Grant or Permit for Research on Protected Species
Mortality	2.5 Establishing Serious Injury and Mortality Limits Under the Alternatives; 4.8 – 4.11 [Environmental Consequences of the Alternatives on Selected Resources]
National Environmental Policy Act	1.2 Purpose and Need for Action; 1.5 Related NEPA Documents that Influence the Scope of this PEIS; 1.7 Federal Laws Applicable to SSL and NFS Research;
Potential Biological Removal	2.5 Establishing Serious Injury and Mortality Limits Under the Alternatives; 4.4.1 Impact Criteria for SSLs and NFSs; 4.8 – 4.11 [Environmental Consequences of the Alternatives on Selected Resources]
Permits, Grants and Applications	3.7 Grant and Permitting Process; 4.7.2 Coordination; 5.3 Recommendations for Coordination of SSL and NFS Research; 4.7.4 Mitigation and Conditions of Grants, Permits, and Authorizations; Appendix A Description of Active Permits; Appendix D Requirements for Obtaining a Grant or Permit for Research on Protected Species
Reporting Requirements	4.7.4 Mitigation and Conditions of Grants, Permits, and Authorizations; Section 5.3.2 Reporting Requirements; Appendix D Requirements for Obtaining a Grant or Permit for Research on Protected Species
Sample Sizes and Techniques	4.8.1 and 4.8.2 Environmental Consequences of the Alternatives on SSL and NFS: Appendix A Description of Active Permits; Appendix B Description of Research Methodologies
Take	2.5 Establishing Serious Injury and Mortality Limits Under the Alternatives; 4.4.1 Impact Criteria for SSLs and NFSs; 4.8 – 4.11 [Environmental Consequences of the Alternatives on Selected Resources]
Animal Welfare	1.2 Purpose and Need for Action; 1.7 Federal Laws Applicable to SSL and NFS Research 4.8.1 and 4.8.2 Environmental Consequences of the Alternatives on SSL and NFS

In addition to scoping, NMFS also conducted a series of focus group meetings in July and August 2006 with various agencies, researchers, Native Alaskan groups, and other interested parties to discuss the issues raised in scoping and previous NEPA-compliance activities, and to further inform the process of developing a reasonable range of alternatives.

ES-5.0 Public Comment Analysis and Response

The public comment period on the 2007 Draft PEIS began on February 16, 2007 and ended on April 2, 2007 for a total comment period of 45 days. During the public comment period three public hearings were held Silver Spring, Maryland; Seattle, Washington; and Anchorage, Alaska. Approximately 14 submissions were received by NMFS on the Draft PEIS by the deadline.

The Comment Analysis Report (CAR) appended to this document (Appendix C) summarizes the public comments. As the primary response-to-comment document for this PEIS, the CAR describes the methodology used by NMFS in reviewing and sorting the comments and presents a synthesis of all comments that address a common theme. It also documents changes made in the revised PEIS as a result of those comments. NMFS undertook a careful and deliberate approach to ensure that all substantive public comments were treated equally and reviewed, considered, and responded to on the basis of the quality and substantive content of the comment, and not on the basis of who wrote the comment or how many other comments agree with it. Commenters can reference how and where their comments were responded to by using the cross-reference tables in the CAR.

ES-6.0 Alternatives

Four alternatives were developed and are analyzed in this PEIS; they are described in more detail in Chapter 2. The alternatives represent a reasonable range of research granting and permitting options that fulfill the purpose and need for the federal action, (Chapter 1). The general policy direction of each alternative is described, followed by Table ES-2, which summarizes examples of specific research activities permitted under each alternative.

One way that the alternatives vary is that they have different thresholds for what would be considered an "acceptable" level of mortality associated with research activities. This threshold is based on a metric for fishery-related mortality that is defined in the MMPA; the Potential Biological Removal (PBR). The formula for PBR is a precautionary or conservative measure of human-caused mortality that could be expected to affect a population's ability to recover from a depleted state or to remain at a sustainable level. The PBR calculation contains provisions to account for uncertainty in population estimates and protects a larger fraction of annual productivity for depleted stocks through a recovery factor (Fr). For endangered populations, Fr is set at 0.1, so that 90 percent of the endangered population's annual net production is reserved for recovery of the population. NMFS has calculated that keeping human-caused mortality at or below PBR calculated with a recovery factor of 0.1 would increase the recovery time of endangered marine mammals by no more than 10 percent (Wade 1998). For threatened and depleted populations, Fr is generally set at 0.5 so that 50 percent of the population's annual net production is reserved for recovery. The MMPA requires NMFS to calculate PBR for each population of marine mammal in its annual stock assessment reports. PBR for the endangered western DPS of SSLs is 234 animals; PBR for the threatened eastern DPS of SSLs is 2,000 animals; PBR for the depleted eastern Pacific stock of NFSs is 15,262 animals; and PBR for the San Miguel Island stock of NFSs is 219 animals (Angliss and Outlaw 2007; Carretta *et al.* 2007).

There are a number of activities that do not require the types of research permits that are the subject of this PEIS, either because they would not result in takes of SSLs, NFSs, or other protected species; or because they are otherwise exempt from the prohibitions of the MMPA and ESA. These activities would be unaffected by any of the alternatives and are described in more detail in Section 2.4.1. There would be no impact on grant programs related to these types of activities under any of the alternatives. Common to all permits under any alternative are the statutory and regulatory criteria established under Section 10(a)(1)(A) of the ESA (16 U.S.C. 1539), Section 104 of the MMPA (16 U.S.C. 1374), and NMFS implementing regulations (50 CFR §216.31-216.41 and §222.301-222.309). Scientific research permits issued by NMFS pursuant to these statutes and regulations contain a number of conditions that are intended to ensure compliance of the research with the purposes of the MMPA and ESA. Other conditions commonly included in these permits are intended as measures to mitigate potential adverse impacts of the research. Mitigation for specific research procedures is discussed in Appendix B. Under any of the alternatives, researchers could obtain permits and be awarded grants for receipt and use of tissue samples from Alaska Natives who agree to provide samples from animals that have been taken legally for subsistence harvest or from animals that have been found dead (stranded) due to other causes.

A number of issues were raised by various stakeholders with regard to process and procedures associated with coordinating, conducting, and reporting on research activities. Though not specifically identified as elements of

the alternatives, these issues and a discussion on how this PEIS will help guide future NEPA compliance, are discussed in Chapter 5.

Alternative 1 – No Action: No New Permits or Authorizations

Under Alternative 1, no incidental or intentional mortality due to research activities would be authorized. The No Action Alternative would only allow research activities on SSLs and NFSs that either do not require a permit (i.e., do not result in takes of SSLs and NFSs) or are currently allowed under permits that have not been vacated by the May 26, 2006 court order (Civil Action No. 05-1392 ESH). No grants would be awarded for research that requires a permit, except for those activities authorized under existing permits. When the existing permits expire, all research activities that require a permit would cease.

This alternative would allow researchers to only use techniques that do not disturb animals in the wild, in order to monitor the populations and collect information pertinent to their recovery. Research under this alternative would not involve approaching or capturing animals to collect data. Research techniques could include remote sensing, behavioral observations, scat collection from vacant haulouts and rookeries, and aerial surveys conducted at distances and conditions that are not likely to result in takes (and therefore would not require permits). Researchers could obtain permits and be awarded grants for receipt and use of tissue samples from Alaska Natives who agree to provide samples from animals that have been taken legally for subsistence harvest and for receipt and use of tissues from animals that have been found dead (stranded) due to other causes.

Research on captive SSLs and NFSs (those already in captivity at this time) would be unaffected by these alternatives, which are specific to permits for research on free-ranging animals. However, under the No Action alternative, no additional SSLs or NFSs could be brought into captivity, either by removal from the wild or via captive breeding. There would be no change in geographic restrictions, such as the 3 nautical miles (nm), no approach buffer areas near rookery sites and the one-half statutory mile on land. These geographic restrictions are described in detail in Chapter 2 of this document.

Alternative 2 – Research Program without Capture or Handling

The policy direction of this alternative would be to issue permits and provide grant support to conduct research on SSLs and NFSs using methods that do not involve capture, restraint, tissue sampling, or risk causing animals to leave rookeries during the breeding season. This alternative would also prohibit intrusive research, where intrusive is defined in 50 CFR 216.3 to mean a procedure conducted for bona fide scientific research involving: a break in or cutting of the skin or equivalent, insertion of an instrument or material into an orifice, introduction of a substance or object into the animal's immediate environment that is likely either to be ingested or to contact and directly affect animal tissues (i.e., chemical substances), or a stimulus directed at animals that may involve a risk to health or welfare or that may have an impact on normal function or behavior (i.e., audio broadcasts directed at animals that may affect behavior). This restriction on intrusive activities would essentially limit research to census surveys and behavioral observations that have a very small potential to cause injury to animals. Under Alternative 2, the total amount of incidental mortality allowed under all permits and authorizations would not exceed 5 percent of PBR for each stock. No intentional lethal take would be authorized under Alternative 2.

Scat collection would be allowed but only from haulouts and rookeries during the non-breeding season. For research on rookeries during the breeding season, observers and remote sensing equipment would need to be placed on sites at times and in such a manner as to avoid disturbing animals. No activities involving capture, restraint, or disturbance of animals on rookeries during the breeding season would be permitted but disturbance on haulouts for resighting efforts and scat collection could be authorized. It is assumed that, under this alternative, more emphasis would be placed on developing remote sensing and other techniques that allow collection of physiological and nutritional data without capturing animals than under the Status Quo. It is likely that under this alternative there would be a higher amount of survey and observational takes requested compared to the Status Quo, as researchers would re-allocate funds and other resources away from projects that would not be permitted. Under this alternative it is assumed that the same level of non-intrusive activity for research on other marine

mammal species, especially other pinnipeds such as California sea lions, as under the Status Quo alternative would occur.

Alternative 3 – Status Quo Research Program

Under the Status Quo process, permits are issued to conduct research according to the scope and methods requested in the permit applications, with restrictions and mitigation measures required by the MMPA, ESA, and NMFS implementing regulations. Alternative 3 would implement the existing grant and permit process, which flexibly accommodates changes in funding levels, management priorities, scientific interests, research techniques, population status, and threats to the populations' recovery. Proposed research programs for SSLs must have impacts at a level below that which would jeopardize the continued existence of the species or result in adverse modification of critical habitat, as required by Section 7 of the ESA.

The scope of research activities conducted under this alternative depends substantially on the amount of funding that is available. Funding for SSL research peaked in 2001 and 2002, but has since decreased. For the purposes of this PEIS, the amount of funding and level of associated research on SSLs will be assumed to have reached peak levels under the permits issued at or before the initiation of this PEIS. For the purpose of analyzing the effects of that scope of research, the average number, types, and distribution of takes allowed by all permits before the court order will be used for the analysis of effects of this alternative. A peak funding and permit level probably has not been met for NFSs. Funding levels for research on NFSs have recently increased, as has interest in obtaining permits for research on this species. Depending on future funding opportunities and interest among the research community, both of which are linked to factors such as population trends, and speculation about the contribution of commercial fisheries and other factors to population status and prospects, funding for research on NFSs may increase over time. However, new permits have not been issued, pending completion of this PEIS. Thus, for this analysis we have used the number, types, and distribution of takes allowed by all permits approved by January 2006.

Under the Status Quo alternative, new permits would be issued for the same type and scope of research as occurred under SSL permits that existed before the court order vacated them in May 2006. It would also include all other existing permits for research on SSLs and NFSs that were not affected by that order (Appendix A). New permits would be issued to replace permits as they expire, such that the levels and types of research activities would continue to the extent that funding allowed. Under Alternative 3, the total amount of incidental mortality allowed under all permits and authorizations would not exceed 10 percent of PBR for each population.

New requests for permits and amendments to existing permits would be considered on a case-by-case basis and would be granted as long as the applicants satisfied all permit issuance criteria, including having a bona fide research project that was likely to contribute to recovery of the depleted, threatened, or endangered species. Under this alternative, each new permit request would be evaluated separately during Section 7 consultation, against the baseline of impacts from whatever permits were in effect at the time of the request. New permits would only be denied if it were determined that issuance would exceed the ESA jeopardy or adverse modification threshold when impacts were added to existing research and other activities in the baseline at the time the application was received.

Alternative 4 - The Preferred Alternative – Research Program with Full Implementation of Conservation Goals

This alternative would include not only those specific activities currently or previously permitted but any additional research activities or methods that are needed to implement the 2006 Draft Revised Recovery Plan for Steller Sea Lion (NMFS 2006a) (hereafter referred to as the 2006 Draft Recovery Plan) and the new revised 2006 Draft Conservation Plan for NFS (NMFS 2006b) (hereafter referred to as the 2006 Draft Conservation Plan), assuming they are consistent with the MMPA, ESA, and NMFS implementing regulations. These plans are discussed in more detail in Sections 3.2.1 and 3.2.2 and are included in their entirety in Appendix C.

Many of the research activities related to priorities listed in the 2006 Draft Recovery Plan have been used by past and current research programs under the Status Quo permits. However, there are some research questions listed in the plan that have not received adequate attention in the past, at least for certain sex/age classes. Some of these research questions may require use of techniques or protocols that have not previously been requested or permitted on SSLs and NFSs. As such, they may involve unique or uncertain risks to the animals.

Under Alternative 4, NMFS would consider proposals for research that posed a higher risk of injury to individual animals, including intentional lethal take of moribund animals or other specified individuals, if the permit applicant could demonstrate that the research had a reasonable chance of providing significant data relevant to conservation of the species. Permit issuance criteria under the MMPA and ESA would still prohibit research from putting the species at a disadvantage or in jeopardy. Under Alternative 4, the total amount of incidental mortality allowed under all permits and authorizations would not exceed 15 percent of PBR for each population.

Regarding the eastern DPS, the 2006 Draft Recovery Plan recommended the initiation of a status review to consider removing the eastern DPS from the ESA's List of Threatened and Endangered Wildlife. Key components of this plan relative to research activities have not been prioritized in the SSL plan but would be likely to include population trend monitoring, genetics research to refine population structure, monitoring terrestrial habitat threats, monitoring for unusual mortality events that may be related to contaminants or other human factors, and monitoring of fishery management plans to ensure that these remain consistent with SSL requirements. These are activities that have been permitted under the Status Quo and would be considered under Alternative 4.

Alternative 4 represents an extensive research program that would be able to simultaneously address multiple issues over a huge geographical space. To be fully implemented, such a program would require a much larger research budget than is currently allocated to these species. It would also require greater administrative support for the Grants, Permits, and Regional Offices of NMFS in order to process the large number of projects efficiently. For the purposes of this PEIS, it is assumed that the grants and permits processes will be essentially the same as under the Status Quo. However, if adequate funding was available to implement this expanded research program, it is likely that NMFS would adopt one or more of the measures, discussed in Chapter 5, to expedite the review process and to improve communication and coordination, not only between researchers, but between the various branches of NMFS involved in the research program, the Alaska Native communities affected by research, other federal and state agencies, and the general public.

As the Preferred Alternative, this approach allows the agency to fully implement the recommendations in the species' conservation and recovery plans. Full implementation of the plans would lead to a better understanding of these species, more informed management decisions and the prospect of recovery.

Table ES-2
Research Activities Allowed Under Each Alternative

Research Activities	Alternative 1 No Action: No New Permits or Authorizations	Alternative 2 Research Program Without Capture or Handling	Alternative 3 – Status Quo Research Program	Alternative 4 Research Program with Full Implementation of Conservation Goals
Research activities on live animals with NO capture, restraint, or collection of tissues				
Aerial surveys	*	√	√	√
Vessel surveys	*	√	√	√
Ground surveys	*	√	√	√
Scat collection	*	√	√	√
Remote video/photographic monitoring	*	√	√	√
Receipt of tissue samples from Alaska Natives that have taken the animal legally for subsistence harvest	√	√	√	√
Receipt of tissue samples from animals found dead from other causes	√	√	√	√
Research activities on live animals that requires capture, restraint, or collection of tissues				
Collection of morphometric measurements	--	--	√	√
Collection of blood samples	--	--	√	√
Muscle biopsies	--	--	√	√
Skin biopsies	--	--	√	√
Blubber samples	--	--	√	√
Fecal and fluid samples	--	--	√	√
Extraction of pre-molar teeth	--	--	√	√
Collection of vibrissae, hair, and nails	--	--	√	√
Enema or stomach intubation	--	--	√	√
Bioelectric Impedance Analysis	--	--	√	√
Ultrasound	--	--	√	√
Stable isotope injection	--	--	√	√
Chromic oxide and Co-EDTA	--	--	√	√
Temporary marking	--	--	√	√

Table ES-2 (continued)
Research Activities Allowed Under Each Alternative

Research Activities	Alternative 1 No Action: No New Permits or Authorizations	Alternative 2 Research Program Without Capture or Handling	Alternative 3 – Status Quo Research Program	Alternative 4 Research Program with Full Implementation of Conservation Goals
Research activities on live animals that requires capture, restraint, or collection of tissues				
Attachment (external) of scientific instruments measurements	--	--	√	√
Attachment (external) of scientific instruments measurements	--	--	√	√
Insertion/implantation (internal) of instruments	--	--	√	√
Temporary captivity	--	--	√	√
Intentional take of animals	--	--	--	√

Note: * No new permits or authorizations would be issued under Alternative 1. However, grants could be issued and surveys, observations, and scat collections could occur under circumstances that would not result in disturbance or takes.

Key: -- Not Allowed
√ Allowed

Alternatives Not Carried Forward for Analysis

A research moratorium, which would involve not allowing any research and revoking all active research permits, was not carried forward because it would not be consistent with NMFS legal mandates; to monitor the status of marine mammals and recover threatened and endangered species. A permanent "no research" policy would end all research activities and compromise NMFS' ability to monitor distribution and abundance of the species. Without some level of research surveys, NMFS would not be able to monitor the status of the endangered population, nor assess whether protective measures, such as regulations prohibiting fishing in critical habitat, were achieving the desired effect on recovery of the species.

Alternatives that would allow research not consistent with the requirements of the MMPA and ESA, or with NMFS implementing regulations, were also not carried forward because they would not meet the minimum environmental standards established by these laws, or would require revision of the statutes by Congress. For example, an alternative that would allow researchers to conduct research using methods that would not meet the humane standard under the MMPA or that would not be likely to contribute to conservation of the endangered species that was the subject of the permit, as required by the ESA, was not considered further because it would not meet these minimum requirements of the statutes governing research on protected species. Similarly, an alternative that would allow research permits to be issued for an indefinite time period, or for longer than five years, was not carried forward because it would not meet the minimum requirements for permits as currently stipulated in NMFS implementing regulations. It is not within the scope of this PEIS to address the substantial impediments to changing the governing laws (i.e., ESA, MMPA, and NEPA) and regulations concerning research on marine mammals.

ES-7.0 Summary of Environmental Consequences

Alternative 1 – No Action: No New Permits or Authorizations

Research conducted under Alternative 1 would not cause any mortalities or sub-lethal effects on SSLs or NFSs in the wild. Due to previously collected data and samples, research conducted under Alternative 1 would provide a minor amount of information to support the conservation objectives listed in the Recovery Plan.

Alternative 2 – Research Program without Capture or Handling

With the restrictions on authorized research methods, researchers might choose to expand efforts with non-intrusive techniques or might elect not to pursue research on SSLs and NFSs. In other words, the level of non-intrusive research authorized could be more or less than the Status Quo, depending on the response of individual researchers and agencies to the policy represented in this alternative. For the purposes of analysis, the number of takes under each research activity will be defined as the numbers of animals affected by non-intrusive research activities under the Status Quo for those activities (see mortality assessment Tables 4.8-1, -2, -13, -14, -25, -26, -37, and -38).

For the western DPS of SSLs, estimated mortality from research activities under Alternative 2 is 3.4 SSLs per year (1.5 percent of PBR) which is considered negligible on the population level. The magnitude of sub-lethal effects as they relate to population level changes in productivity under Alternative 2 is unknown. Research conducted under Alternative 2 could provide a moderate amount of information to support the conservation objectives listed in the Recovery Plan. For the eastern DPS of SSLs and both populations of NFSs, estimated mortality from research activities under Alternative 2 is less than 1 percent of PBR and is considered negligible. For all of these populations, the conclusions regarding sub-lethal effects and the contribution to conservation objectives are similar to those stated above for the western DPS.

Alternative 3 – Status Quo Research Program

For Alternative 3, the numbers of animals exposed to different research activities is taken directly from the permits that were valid on January 1, 2006, including those permits that were subsequently vacated by court order on May 26, 2006 (Civil Action No. 05-1392 [see mortality assessment Tables 4.8-3 through 4.8-7, 4.8-15 through 4.8-19, 4.8-27 through 4.8-31, and 4.8-39 through 4.8-43]). It does not include activities that had been applied for (permits or amendments) but not yet authorized at the time this PEIS was initiated. For survey and monitoring types of activities, the number of animals exposed to potential disturbance depends on how many animals are in a particular place at a particular time. To account for potential interannual variation in the distribution and abundance of animals within a survey area, researchers are encouraged to estimate the maximum number of animals that could be exposed (surveyed). Researchers generally estimate this number based on information in Stock Assessment Reports (SARs) and previous experience. When applying for permits, researchers may add a "buffer" to this maximum number of animals to make sure they do not exceed their permit allowance should the actual number of animals encountered be greater than predicted.

For some activities, such as capture of juveniles at sea, researchers have applied for and received permits to capture a specific number of animals. However, due to financial constraints or the logistical difficulty of capturing animals, the actual number of captures has been less than the number authorized. For procedures that are intended to test specific hypotheses or provide statistically robust data for modeling or other applications, the number of animals requested to be captured or sampled may be based on a "power analysis" determination of sample size. Such statistical power calculations depend on the level of statistical resolution needed to either test the hypothesis or detect an environmental pattern (the effect). In all cases, the analysis of effects will be based on the number of takes authorized in the permits rather than the number of actual takes reported after the field season.

For the western DPS of SSLs, estimated mortality from research activities under Alternative 3 is 15 SSLs per year (6.3 percent of PBR) which is considered negligible on the population level. The magnitude of sub-lethal effects as they relate to population level changes in productivity under Alternative 3 is unknown. Research conducted under Alternative 3 could provide a significant amount of information to support the conservation objectives listed in the Recovery Plan. For the eastern DPS of SSLs, estimated mortality from research activities under Alternative 3 is 26 SSLs per year (1.3 percent of PBR) which is considered negligible on the population level. For the eastern NFSs, estimated mortality is less than 1 percent of PBR and is considered negligible. For the San Miguel Island NFS, estimated mortality is 5 NFSs per year (2.3 percent of PBR) which is considered negligible. For the eastern DPS of SSLs and both populations of NFSs, the conclusions regarding sub-lethal effects and the contribution to conservation objectives are similar to those stated above for the western DPS.

Alternative 4 – The Preferred Alternative - Research Program with Full Implementation of Conservation Goals

Alternative 4 includes all research activities that would be needed to address all information objectives identified in the 2006 Draft Recovery Plan SSL (NMFS 2006a). While such a program would be likely to require a substantial increase in future funding levels and the sources of that funding have not yet been established, it will be assumed for the purposes of this PEIS analysis that sufficient funding would be secured to implement an expanded research program under Alternative 4.

This alternative would include the same types of research as described in the Status Quo, plus activities that have not been authorized under the Status Quo, including new permits and permit amendments that were pending as of January 2006. It could also include some types of techniques and activities that have not been previously requested or authorized, including intentional lethal take. The scope of research required to address all 2006 Draft Recovery Plan objectives has been estimated by NMML (see mortality assessment Tables 4.8-8 through 4.8-12, 4.8-20 through 4.8-24, 4.8-32 through 4.8-36, and 4.8-44 through 4.8-48) and is used in this analysis as a proxy for the scope of proposals that would arise from many sources under a favorable funding environment.

For the western DPS of SSLs, estimated mortality from research activities under Alternative 4 is 35 SSLs per year (12.7 percent of PBR), which is considered minor on the population level. The magnitude of sub-lethal effects as they relate to population level changes in productivity under Alternative 4 is unknown. Research conducted under Alternative 4 could provide a significant amount of information to support the conservation objectives listed in the Recovery Plan. For the eastern DPS of SSLs and both populations of NFSs, the scope of research conducted under Alternative 4 would be the same as under Alternative 3 and would yield the same conclusions regarding mortality (negligible), sub-lethal effects (unknown), and contribution to conservation objectives (major).

Cumulative Effects

The 2006 Draft Recovery Plan and the 2006 Draft Conservation Plan identified a host of anthropogenic and natural factors that could be contributing to the cumulative effects on these populations. The contribution of research activities to these cumulative effects is discussed, especially with regard to potential mortality, sub-lethal effects through disturbance and injury, and efforts to promote conservation of the species.

The primary contributors to cumulative anthropogenic mortality for the western DPS of SSLs are subsistence harvest (average 191 animals per year) and incidental take in fishing gear (average 25 animals per year). This totals 216 animals per year, which is 92 percent of PBR for this population (234 animals). Alternative 1 would contribute no mortalities to this total and would therefore have no cumulative effect on mortality. Alternative 2 would contribute an estimated 3 mortalities per year, raising the overall total to about 219 animals, which is 94 percent of PBR. Alternative 3 would contribute an estimated 15 mortalities per year, raising the overall total to about 230 animals, which is 98 percent of PBR. Alternative 4 would contribute an estimated 30 mortalities per year, raising the overall total to about 245 animals, which is 105 percent of PBR. Under the criteria developed to assess the impacts of the alternatives on the population level (Table 4.4-1), the estimated mortality due to research is considered negligible under Alternatives 1, 2, and 3 and minor under Alternative 4. Using the same impact

criteria, the cumulative level of mortality for this population would be considered major under all alternatives even though the contribution of research would be negligible or minor. The cumulative levels of anthropogenic mortality for the eastern DPS of SSLs and both populations of NFSs are well below 10% of PBR under all alternatives and are considered negligible.

The conclusion of a major cumulative effect from mortality for the western DPS of SSLs in this NEPA analysis does not mean that the population would decline under any of the alternatives. The impact criteria developed for this PEIS are based on thresholds of fishery related mortality that result in major regulatory changes to the fisheries. These thresholds of mortality are expressed as a percentage of PBR. The formula for PBR, as defined in the MMPA, is a precautionary or conservative measure of human-caused mortality that could be expected to affect a marine mammal population's ability to recover from a depleted state. The formula compensates for uncertainties that might prevent population recovery, such as biases in the estimation of population size, reproductive rate, or stock structure. For endangered marine mammals such as the western DPS of SSLs, the formula reserves 90 percent of the population's annual net production for recovery of the stock. This means that human-caused mortalities that exceeded PBR would not cause the population to decline (unless human-caused mortality accounted for all of the annual net production, [i.e., 1,000 percent of PBR]), but could slow the rate at which the population recovers. Total cumulative human-caused mortalities approaching or slightly above 100 percent of PBR, as what occurs under all of the alternatives, would therefore be unlikely to cause the population to decline but could slow its recovery.

Tables ES-3 through ES-10 provide summaries of the environmental consequences of the alternatives on biological and socioeconomic resources analyzed in this PEIS.

Table ES-3
Summary of Direct/Indirect and Cumulative Effects – SSLs Western DPS - Section 4.8.1

	Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
SSL Western DPS				
Direct / Indirect effects				
Mortality	• No mechanism for mortality.	• Mortality 3.4 SSLs/yr (1.5% of PBR[1]); negligible on population level. • Disturbance effects minor.	• Mortality 14.8 SSLs/yr (6.3% of PBR[1]); negligible on population level. • Individuals could be disturbed >4x/yr; moderate effect.	• Mortality 29.8 SSLs/yr (12.7% of PBR[1]); minor on population level. • Individuals could be disturbed >5-6x/yr; moderate effect.
Sub-Lethal Effects	• No mechanism for sub-lethal effects.	• Magnitude of sub-lethal effects to productivity unknown. • Disturbance effects minor.	• Magnitude of sub-lethal effects to productivity unknown. • Individuals disturbed >4x/yr; moderate effect.	• Magnitude of sub-lethal effects to productivity unknown. • Individuals disturbed >5-6x/yr; moderate effect.
Contribution to Conservation Objectives	• Increased level of scientific uncertainty over time.	• Increased level of scientific uncertainty over time.	• Major contribution to conservation efforts. • Contributes to both immediate and long-term needs.	• Major contribution to conservation efforts. • Contributes to both immediate and long-term needs; highly dependant on funding.
Cumulative Effects				
	• No additional anthropogenic mortalities. • No additional sub-lethal effects. • Contribution to conservation efforts minimal.	• Contributes 3.4 SSL mortalities/yr. • Total mortality[2] 219/yr (93.6% of PBR[1]); major cumulative effect. • Cumulative effects of disturbance and sub-lethal effects unknown. • Contributes more data to conservation objectives than Alt. 1.	• Contributes 14.8 SSL mortalities/yr. • Total mortality[2] 230/yr (98.5% of PBR[1]); major cumulative effect. • Cumulative effects of disturbance and handling, and sub-lethal effects unknown. • Contributes more data to conservation objectives than Alts. 1 and 2.	• Contributes 29.8 SSL mortalities/yr. • Total mortality[2] 245/yr (104.9% of PBR[1]); major cumulative effect. • Cumulative effects of disturbance and handling, and sub-lethal effects unknown. • Contributes more data to conservation objectives than Alts. 1, 2 and 3.

Table ES-3 (continued)
Summary of Direct/Indirect and Cumulative Effects – SSLs Eastern DPS – Section 4.8.1

	Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
SSL Eastern DPS				
Direct / Indirect effects				
Mortality	• No mechanism for mortality.	• Mortality 3.2 SSLs/yr (0.2% of PBR[1]); minor on population level. • Disturbance effects minor.	• Mortality 25.5 SSLs/yr (1.3% of PBR[1]); negligible on population level. • Individuals could be disturbed >4x/yr; moderate effect.	• Same as Alt. 3.
Sub-Lethal Effects	• No mechanism for sub-lethal effects.	• Magnitude of sub-lethal effects to productivity unknown. • Disturbance effects minor.	• Magnitude of sub-lethal effects to productivity unknown. • Individuals disturbed >4x/yr; moderate effect.	• Same as Alt. 3.
Contribution to Conservation Objectives	• New analyses and syntheses from existing data but increased scientific uncertainty over time.	• Contributes to most conservation objectives except perhaps genetics.	• Major contribution to conservation efforts. • Contributes to conservation objectives.	• Same as Alt. 3.
Cumulative effects				
	• No additional anthropogenic mortalities. • No additional sub-lethal effects. • Contribution to conservation efforts minimal.	• Contributes 3.2 SSL mortalities/yr. • Total mortality[2] 13/yr (0.7% of PBR[1]); negligible cumulative effect. • Cumulative effects of disturbance and sub-lethal effects unknown. • Contributes to all conservation objectives except perhaps monitoring disease and genetic refinement.	• Contributes 25.5 SSL mortalities/yr. • Total mortality[2] 36/yr or 1.8% of PBR[1]); negligible cumulative effect. • Cumulative effects of disturbance and handling, and sub-lethal effects unknown. • Contributes to all conservation objectives.	• Same as Alt. 3.

[1] - PBR = potential biological removal
[2] - Total mortality = total human-caused mortality (i.e., research, subsistence, commercial fishing, etc.)
Note: For more detail on effects please see Chapter 4 of the PEIS.

Table ES-4
Summary of Direct/Indirect and Cumulative Effects – NFSs - Section 4.8.2

	Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
Eastern Pacific Stock NFS				
Direct / Indirect effects				
Mortality	• No mechanism for mortality.	• Mortality 1.2 NFSs/yr (<0.1% of PBR[1]); negligible on population level.	• Mortality 47.8 NFSs/yr (0.3% of PBR[1]); negligible on population level.	• Mortality 67 NFSs/yr (0.4% of PBR[1]); negligible on population level.
Sub-Lethal Effects	• No mechanism for sub-lethal effects.	• Duration of activities short-term. • Effects of disturbance and sub-lethal effects negligible.	• Magnitude of sub-lethal effects to productivity unknown; large number of animals disturbed. • Geographic extent and frequency/duration of disturbance moderate.	• Magnitude of sub-lethal effects to productivity unknown; large number of animals disturbed. • Geographic extent and frequency/duration of disturbance moderate.
Contribution to Conservation Objectives	• Contribution to conservation objectives minor.	• Contribution to conservation objectives minor.	• Addresses many immediate and long-term needs. • Moderate contribution to conservation efforts.	• Addresses most immediate and long-term needs. • Major contribution to conservation efforts; highly dependant on funding.
cumulative effects				
	• Mortality negligible; (< PBR of 14,546). • No cumulative sub-lethal effects. • Contribution to conservation efforts minimal.	• Contributes 1.2 NFS mortalities/. • Total mortality[2] 757/yr (5.0% of PBR[1]); negligible cumulative effect. • Cumulative effects of disturbance and sub-lethal effects unknown; contribution of research considered negligible. • Contributes more data to conservation objectives than Alt. 1.	• Contributes 47.8 NFS mortalities/yr • Total mortality[2] 804/yr (5.3% of PBR[1]); negligible cumulative effect. • Cumulative effects of disturbance and handling, and sub-lethal effects unknown. • Moderate contribution to conservation objectives; contributes more than Alts. 1 and 2.	• Contributes 67 NFS mortalities/yr • Total mortality[2] 823/yr (5.4% of PBR[1]); minor cumulative effect. • Cumulative effects of disturbance and handling, and sub-lethal effects unknown. • Major contribution to conservation objectives; contributes more than Alts. 1, 2 and 3.

Table ES-4
Summary of Direct/Indirect and Cumulative Effects – NFSs - Section 4.8.2

	Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
San Miguel Island Stock NFS				
Direct / Indirect effects				
Mortality	• No mechanism for mortality.	• Mortality 0; negligible on population level.	• Mortality 5.0 NFSs/yr (2.3% of PBR[1]); negligible on population level.	• Same as Alt. 3.
Sub-Lethal Effects	• No mechanism for sub-lethal effects.	• Duration of activities short-term. • Effects of disturbance and sub-lethal effects negligible.	• Magnitude of sub-lethal effects to productivity unknown. • Geographic extent of disturbance is major (concentrated on San Miguel Island). Duration and frequency is minor	• Same as Alt. 3. Additional methods/ procedures could be authorized but are unknown at this time.
Contribution to Conservation Objectives	• Not listed as threatened or endangered; no conservation objectives.	• Not listed as threatened or endangered; no conservation objectives.	• Not listed as threatened or endangered; no conservation objectives.	• Not listed as threatened or endangered; no conservation objectives.
cumulative effects				
	• No additional anthropogenic mortalities. • No additional sub-lethal effects. • Not listed as threatened or endangered; no conservation objectives.	• Population is increasing; no population-level effects expected therefore, cumulative effect negligible. • Cumulative effects of disturbance and sub-lethal effects unknown; contribution of research considered negligible. • Not listed as threatened or endangered; no conservation objectives.	• Contributes 5.0 NFS mortalities/yr • Total mortality[2] 5.7/yr (2.7% of PBR[1]); negligible cumulative effect. • Cumulative effects of disturbance and handling, and sub-lethal effects unknown. • Not listed as threatened or endangered; no conservation objectives.	• Same as Alt. 3. • Additional methods/ procedures could be authorized but are unknown at this time.

[1] - PBR = potential biological removal
[2] – Total mortality = total human-caused mortality (i.e., research, subsistence, commercial fishing, etc.)
Note: For more detail on effects please see Chapter 4 of the PEIS.

Table ES-5
Summary of Direct/Indirect and Cumulative Effects - Killer Whales, other ESA-Listed Species, and Other Marine Mammals (Cetaceans, Pinnipeds) - Sections 4.8.3, 4.8.4, 4.8.5

Effect		Alternative 1 No Action: No New Permits or Authorizations	Alternative 2 Research Program without Capture or Handling	Alternative 3 Status Quo Research Program	Alternative 4 (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
Direct/Indirect	Effects on survival or reproductive success due to SSL and NFS research	• Research vessels investigating the role of killer whale in SSL and NFS population dynamics not requiring authorization for incidental take or disturbance could result in rare injury or death from strikes, as well as short-term discharges and increased turbidity. • Effects of research on California sea lions as a surrogate species for SSLs would be short-term and negligible. • Overall effects considered negligible.	• Likely increase in marine vessel research due to permitted incidental take or disturbance of SSL and NFS; potential effects resulting mortality, injury, and disturbance considered negligible. • Potential local increase in available killer whale prey around rookeries and haulouts. • Overall effects considered negligible.	• The frequency and geographic extent of marine vessel use for the purposes of research could increase; potential effects resulting mortality, injury, and disturbance considered negligible. • Overall effects considered negligible.	• Similar to Alternative 3, effects considered negligible.
	Disturbance due to SSL and NFS research	• Marine research vessel disturbance from visual cues and noise pollution could result in stress and avoidance behavior, displacement, interference with whale communication and echolocation, modifications to whale surfacing, respiration, and diving cycles. • Short-term disturbance of other animals during California sea lion research activities is considered negligible. • Overall effects considered short-term and negligible.	• Marine research vessel disturbance would result in the same effects as Alternative 1. • Opportunistic sightings during SSL and NFS low-altitude aerial surveys could cause negligible behavioral changes in a few individuals. • Sea otters concentrated in the vicinity of SSL and NFS haulouts could potentially be disturbed, effects considered negligible. • Overall effects considered negligible.	• Few or no marine vessels or aircraft would seek out or occur in the vicinity of whales under this alternative, there would be no measurable effects of disturbance. • Few sea otters are likely to occupy areas where research activities occur. • Overall effects considered negligible.	• Similar to Alternative 3, effects considered negligible.

Table ES-5 (continued)
Summary of Direct/Indirect and Cumulative Effects - Killer Whales, other ESA-Listed Species, and Other Marine Mammals (Cetaceans, Pinnipeds) - Sections 4.8.3, 4.8.4, 4.8.5

Effect		Alternative 1 No Action: No New Permits or Authorizations	Alternative 2 Research Program without Capture or Handling	Alternative 3 Status Quo Research Program	Alternative 4 (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
Cumulative		• Potential killer whale cumulative effects difficult to predict (commercial fisheries, intentional shooting, vessel traffic, and marine pollution, global climate change, long-term regime shifts). • Internal (few) and external (numerous) factors could affect survival and reproductive success of other ESA species. De-listing likely prevented as a result of past actions. • There has been no apparent affect on California sea lions from past or present actions, including incidental research. • California sea lions removed from the wild for research as a surrogate to SSLs would not approach the species' PBR. • Negligible contribution to overall cumulative effects from SSLs and NFSs research activities.	• Same as Alternative 1. • Negligible contribution to overall cumulative effects from SSLs and NFSs research activities.	• Same as Alternative 1. • Negligible contribution to overall cumulative effects from SSLs and NFSs research activities.	• Same as Alternative 1. • Negligible contribution to overall cumulative effects from SSLs and NFSs research activities.

Table ES-6
Summary of Direct/Indirect and Cumulative Effects – Seabirds - Section 4.8.6

Effect		Alternative 1 No Action: No New Permits or Authorizations	Alternative 2 Research Program without Capture or Handling	Alternative 3 Status Quo Research Program	Alternative 4 (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
Direct/Indirect	Effects on survival or reproductive success due to SSL and NFS research	• Potential effects when accessing high ground above the SSL and NFS rookeries for behavioral observation or installation/maintenance of remote sensing equipment. • Negligible affect on survival and reproductive success.	• Aerial surveys not anticipated to affect nesting seabird ESA-listed bird species. Mortality of adults or chicks unlikely based on aircraft elevation. • Effect of research activity considered negligible.	• Potential disturbance increase to adjacent nesting seabirds from land-based census activities and intensive sampling. • Effects to reproductive success from land-based activities would be very low. • Effects of disturbance from research activity on seabird survival or productivity would be negligible. • Effects on ESA-listed species are unlikely and are considered negligible.	• Same as Alternative 3, effects considered negligible.
	Disturbance due to SSL and NFS research	• Potential nesting disturbance associated with remote observations of SSL or NFS, installation and maintenance of remote camera equipment, especially if helicopters use is required. • Effects are considered negligible.	• Potential effects from short-term aerial survey overflights and land-based observations. Potential for small loss of eggs or chicks from panic flights. • Effects considered negligible.	• Potential effects from short-term aerial survey overflights and land-based observations would be the same as Alternative 2. Effects from scat collection or other survey activity would be negligible. • Effects considered negligible.	• Potential effects from short-term aerial survey overflights and land-based observations would be the same as Alternative 2. • Effects considered negligible.
Cumulative		• All seabird groups have experienced infrequent mortality events in the recent past, and all are susceptible to future human-caused mortality factors. • Negligible contribution from SSLs and NFSs research activities.	• Same as Alternative 1. • Negligible contribution from SSLs and NFSs research activities.	• Same as Alternative 1. • Negligible contribution from SSLs and NFSs research activities.	• Same as Alternative 1. • Negligible contribution from SSLs and NFSs research activities.

Table ES-7

Summary of Direct/Indirect And Cumulative Effects – Subsistence Harvest – Section 4.9

Effect	Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
SUBSISTENCE HARVEST				
Direct/Indirect	• None of the research methods would directly affect the subsistence harvest of SSLs or NFSs, therefore direct effects are considered to be negligible. • Depending on the ultimate biological consequences of the reduced scope of research, the indirect effects could be minor.	• It is unlikely that any of the research methods would directly affect the subsistence harvest of SSLs or NFSs, therefore direct effects are considered to be negligible. • Depending on the ultimate biological consequences of the reduced scope of research, the indirect effects could be minor.	• It is likely that only a few, if any, of the same individual SSLs or NFSs used for research would be included in the subsistence harvest, therefore direct effects are considered to be negligible. • Because basic informational needs outlined in the Plans would be addressed, indirect effects are considered positive and minor.	• The possible intensity and wide geographic area of permitted research has the potential to affect SSL subsistence harvest, therefore direct impacts are considered to be moderate. • Because research would directly address the needs outlined under the Plans, indirect effects to SSL are considered positive and minor. • It is likely that only a few, if any, of the same individual NFSs used for research would be included in the subsistence harvest, therefore direct and indirect effects are considered to be negligible.
Cumulative	• Depending on how economic change is negotiated, small communities that rely heavily on SSL and NFS subsistence harvest may result in a minor cumulative effect.	• Depending on how economic change is negotiated, small communities that rely heavily on SSL and NFS subsistence harvest may result in a minor cumulative effect.	• Subsistence activities of SSLs and NFSs would return to level prior to vacation of permits, resulting in negligible cumulative effects.	• The extent of the effect on harvesters is unknown and is ultimately dependent on the level of overlap between SSL and NFS subsistence populations and those studied by researchers. • Cumulative effects are considered moderate to major, with major effects being more possible in small communities.

Table ES-8

Summary of Direct/Indirect And Cumulative Effects – Interactions with Communities – Section 4.9

Effect		Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
INTERACTIONS WITH COMMUNITIES					
Direct/ Indirect	Economic	• For larger and more economically diversified communities, the decrease in revenue associated with less research is likely to result in negligible direct impacts. • Smaller communities, such as St. George and St. Paul, could experience minor direct impacts. • A redirection of research funds could result in minor indirect effects.	• For both small and large communities, the potential decrease (but possible maintenance) in revenue associated with different research methods is likely to result in negligible direct impacts. • A redirection of research funds could result in minor indirect effects.	• As research practices would be the same as those prior to the court order, direct and indirect effects are considered negligible.	• The proposed intensity and wide geographic range of research, direct effects are considered to range between minor and major, on a localized basis in some communities. • The possible intensity and wide geographic area of permitted research would result in moderate direct impacts. • Indirect effects considered negligible.
	Educational	• For more populous communities, the decrease in education opportunities is likely to result in negligible direct impacts. • Communities such as St. George and St. Paul, where research related education opportunities are important to a higher proportion of the population, could experience minor indirect impacts. • A redirection of research funds could result in minor indirect effects.	• The educational opportunities that remain would be less engaging than the Status Quo, but still available, therefore the direct educational effects are considered negligible. • A redirection of research funds could result in negligible indirect effects.	• As research practices would be the same as those prior to the court order, direct and indirect effects are considered negligible.	• Educational opportunities would likely increase, therefore direct effects would range from negligible in large communities to major in small communities. • Indirect effects are considered negligible.

Table ES-8

Summary of Direct/Indirect And Cumulative Effects – Interactions with Communities – Section 4.9

Effect		Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
INTERACTIONS WITH COMMUNITIES					
Direct/ Indirect	Sociocultural	• The potential for positive and/or negative sociocultural interactions would decrease, therefore direct effects are considered negligible. • A redirection of research funds could result in negligible indirect effects.	• The potential for positive and/or negative sociocultural interactions would decrease, therefore direct effects are considered negligible. • A redirection of research funds could result in longer stays in local communities to collect data, therefore indirect effects range from minor to negligible.	• As research practices would be the same as those prior to the court order, direct and indirect effects are considered negligible.	• The proposed intensity and wide geographic range of research would result in some direct sociocultural interactions. Therefore effects are considered to be negligible (especially if community collaboration continues). • Indirect effects are considered negligible.
Cumulative		• Cumulative effects would be considered minor, depending of how members of the community negotiate economic growth or recession.	• Cumulative effects would be considered minor, depending of how members of the community negotiate economic growth or recession.	• Cumulative effects would be considered negligible, depending of how members of the community negotiate economic growth or recession.	• The proposed intensity and wide geographic range of research has the potential to result in major cumulative effects in smaller communities and minor to moderate cumulative effects in larger communities

Table ES-9
Summary of Direct/Indirect And Cumulative Effects – Environmental Justice – Section 4.9

Effect	Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
ENVIRONMENTAL JUSTICE				
Direct/Indirect	• No direct effects on subsistence harvest. Educational outreach would likely decrease. Therefore, direct effects are considered minor. • Permitting restrictions and lack of research may potentially contribute to a failure to stop or reverse population declines which may influence subsistence harvesting in some small communities. Therefore, indirect effects are considered minor.	• No direct effects on subsistence harvest. Educational outreach and volunteer opportunities would likely continue. Therefore, direct effects are considered negligible. • Permitting restrictions and lack of research may potentially contribute to a failure to stop or reverse population declines which may influence subsistence harvesting in some small communities. Therefore, indirect effects are considered minor.	• As research practices would be the same as those prior to the court order, direct and indirect effects are considered negligible.	• Due to increased research scope and intensity, some of the research practices (i.e., chemical and drug injections and aerial surveys) could influence Alaska Native subsistence use of SSL and/or NFS in small coastal communities. Therefore, direct effects are considered moderate. • Indirect effects are considered negligible.
Cumulative	• Lower research levels could lead to a decrease in educational interaction opportunities and lower numbers of animals available for subsistence. Therefore, cumulative effects are considered minor.	• Lower research levels could lead to a decrease in educational interaction opportunities and lower numbers of animals available for subsistence. Therefore, cumulative effects are considered minor.	• As research practices would be the same as those prior to the court order, direct and indirect effects are considered negligible.	• Due to increased research scope and intensity, some of the research practices (i.e., chemical and drug injections and aerial surveys) could influence some subsistence animals used by small communities. Therefore, cumulative effects are considered minor.

Table ES-10
Summary of Direct/Indirect And Cumulative Effects –Economic Effects of Funding for Research– Section 4.10

Effect	Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
ECONOMIC EFFECTS OF FEDERAL FUNDING FOR SSL AND NFS RESEARCH				
DIRECT/INDIRECT EFFECTS				
Economic Effects of Changes in Research Expenditures	• Due to permitting restrictions, research would be of limited value, which would likely lead to less available research funding. Reduced funding would likely have major negative direct and indirect effects to both institutional and independent researchers.	• Depending on the amount of funding for non-intrusive research that could be procured, direct and indirect negative effects would be considered minor to both institutional and independent researchers.	• Because funding would maintain at about Status Quo levels, direct and indirect effects would be considered negligible to both institutional and independent researchers.	• Because it is unclear whether a more extensive research program would actually lead to greater funding levels, direct and indirect positive effects would be range from minor to moderate to both institutional and independent researchers.
Economic Effects of Changes in Research Output	• Permitting restrictions and a lack of research might contribute to a failure to stop or reverse population declines Therefore, negative direct and indirect effects would be considered major to the concerned public. • The direct and indirect effects among the public concerned about research-associated mortality would be negligible.	• To the extent that conservation objectives would be addressed, direct and indirect positive effects to the concerned public could be minor to major, depending on the ultimate biological outcome of the research. • The direct and indirect effects among the public concerned about research-associated deaths would be minor.	• To the extent that conservation objectives would be addressed, direct and indirect positive effects to the concerned public could be minor to major, depending on the ultimate biological outcome of the research. • The direct and indirect effects among the public concerned about research-associated deaths would be moderate.	• To the extent that conservation objectives would be addressed, direct and indirect positive effects to the concerned public could be minor to major, depending on the ultimate biological outcome of the research. • The direct and indirect effects among the public concerned about research-associated deaths would be moderate to major.

Table ES-10
Summary of Direct/Indirect And Cumulative Effects –Economic Effects of Funding for Research– Section 4.10

Effect	Alternative 1: No Action; No New Permits or Authorizations	Alternative 2: Research Program Without Capture or Handling	Alternative 3: Status Quo Research Program	Alternative 4: (Preferred Alternative) Research Program with Full Implementation of Conservation Goals
CUMULATIVE				
Economic Effects of Changes in Research Expenditures	• The highly restrictive research environment (and lack of new scientific contributions) would offer the least incentive for federal research investments. Therefore, cumulative effects would be considered major.	• The moderately restrictive research environment would offer moderate incentive for federal research investments. Therefore, cumulative effects would be considered minor.	• The permissive research environment (and possibility of new scientific contributions) would offer researchers a greater ability to offset federal funding losses with other sources. Therefore, cumulative effects would be considered minor.	• The highly permissive research environment (and possibility of new scientific contributions) would offer researchers the greatest ability to offset federal funding losses with other sources. Therefore, cumulative effects would be considered moderate.
Economic Effects of Changes in Research Output	• The highly restrictive research environment might contribute to a failure to stop or reverse population declines. Therefore, cumulative effects on public welfare loss associated with extinction of populations are considered major. • Cumulative effects on public welfare loss due to research-associated mortality are considered negligible.	• The moderately restrictive research environment might help to stop or reverse population declines. Therefore, cumulative effects on public welfare gain associated with survival of populations are considered minor. • Cumulative effects on public welfare loss due to research-associated mortality are considered minor.	• The permissive research environment might help to stop or reverse population declines. Therefore, cumulative effects on public welfare gain associated with survival of populations are considered moderate to major. • Cumulative effects on public welfare loss due to research-associated mortality are considered moderate.	• The highly permissive research environment might help to stop or reverse population declines. Therefore, cumulative effects on public welfare gain associated with survival of populations are considered moderate to major. • Cumulative effects on public welfare loss due to research-associated mortality are considered moderate to major.

ES-8.0 NEPA Compliance Implementation and Recommendations

The SSL and NFS Research PEIS addresses research permit and grant activities that are expected to occur over the foreseeable future. The process for preparing grant and research permit applications and how they will be reviewed for NEPA compliance using this PEIS is described in more detail in Chapter 5. In addition to providing a NEPA compliance "road map", Sections 5.1 and 5.2 provide guidance to research permit and grant applicants in preparing their applications, and provide other stakeholders with an understanding of the level of subsequent NEPA review that will take place.

NMFS anticipates that applications for grants, new permits, and amendments to permits will be submitted in the future. There is no formal schedule for submission of permit applications or limitation on the date by which applications must be received, meaning they can be submitted at any time throughout a calendar year. The permit process schedule is thus initiated and driven by the applicants. In contrast, the schedule for submission of grant applications is initiated by NMFS with a call for proposals, the timing of which will depend on availability of funds. Each time a permit application is received or a grant cycle is initiated, the requests will be reviewed by NMFS to determine whether the activity proposed by the applicant is covered by the assessment of impacts in the Final SSL and NFS Research PEIS.

The Final SSL and NFS Research PEIS identifies Alternative 4 as the Preferred Alternative. The Record of Decision (ROD) associated with the PEIS will identify any conditions of approval that are relevant to permit and grant applications, and will provide a listing of research permit and grant activities addressed by the Preferred Alternative. Both constitute a decision document that will be used for the purpose of documenting NEPA compliance of ongoing and future activities addressed within the PEIS. Proposed research permit and grant activities that are identified and analyzed within the Preferred Alternative will be subject to routine NEPA compliance implementation. Proposed research permit and grant activities that are not identified and analyzed within the Preferred Alternative will be subject to a separate NEPA compliance action, to be determined at the time the application is submitted.

Coordination of the Grant and Permit Review Process

At present, grant and research permit applications are submitted separately, and often at different times, therefore individual NEPA compliance reviews are conducted separately by F/PR1 and Grants Program staff for permits and grants, respectively. Staff from these two program offices coordinate to the extent practicable, and share NEPA compliance documentation where applicable. This process will be reviewed by NMFS to determine whether more formalized coordination is appropriate. NMFS will develop a process for linking permit and grant reporting compliance, including enforcement purposes.

Coordination of Research and Monitoring of Effects

There is a need to analyze the results of monitoring that has occurred, and to establish new monitoring requirements and incorporate them in a long-term monitoring plan. Therefore, in response to this concern, NMFS intends to phase-in the implementation of the Preferred Alternative during 2007, and 2008 if necessary, to limit approval of intrusive activities associated with rookery research during pupping season to a specific set of rookeries and haulouts, some of which will be subject to a permit condition to conduct a post-research activity monitoring program to observe the potential effects of research activities. Results of the monitoring program will be assessed to determine the uncertainty that currently exists regarding research effect, and determine what conditions subsequent to intrusive actions at rookeries and haulouts should be permitted and implemented into a long-term research coordination and monitoring plan (Section 5.2.1).

Development of a Formalized Research Implementation Plan

The 2006 Draft SSL Recovery Plan describes the need for an implementation plan and team as follows: "An implementation plan should be developed that includes a comprehensive ecological and conceptual framework

that integrates and further prioritizes the numerous recovery actions provided in this plan. The implementation plan should provide a synthesis of the individual actions and coordinate their implementation in a cohesive strategy (Section V.B)". The 2006 Draft NFS Conservation Plan also references the need for an implementation schedule.

- The 2006 Draft SSL Recovery Plan also places the responsibility for monitoring of combined impacts of research at the NMFS Alaska Region. While the implementation of that plan may rest at a NMFS regional office, NMFS believes the development of that plan should be the responsibility of an independent review group. Section 202 of the MMPA recommends that the Marine Mammal Commission (MMC) and its Committee of Scientific Advisors, or a similar body, undertake, or cause to be undertaken, reviews and studies as it deems necessary in connection with its assigned duties as to the protection and conservation of marine mammals, and conduct reviews of, amongst other activities, research programs conducted under the authority of the MMPA, and of all applications for permits for scientific research, and further to recommend to the Secretary such steps as it deems necessary or desirable to protect and conserve marine mammals with regards to these activities. NMFS believes the development of this plan is of such importance that the MMC and its Committee of Scientific Advisors should oversee the development of the research implementation plan and provide that plan to the Secretary as a recommendation for its implementation. At this time demonstration of an effective effort to implement a long-term research plan for SSLs and NFSs may be the single most important thing that NMFS can do to instill a sense of confidence and trust in the research and management efforts on behalf of the species of concern.

Animal Welfare Act Compliance and Best Practices

NMFS recognizes the need for an IACUC committee and has determined that an IACUC review process must be common to all alternatives. Thus, NMFS will be developing an IACUC independent of this NEPA process. SSL and NFS research, as well as all other marine mammal research, will be subject to the IACUC review once the process is established. At present NMFS has appointed a committee to develop a policy on how to implement this process. The committee will determine whether IACUCs should be established for each science center, regionally, or nationally. For more detail, please see Chapter 5.

Coordination with Alaska Native Organizations

NMFS has formally established co-management agreements with Alaska Native organizations for specific marine mammals, including SSLs and NFSs (Appendix F). In addition, the agency recognizes both the special relationship provided under Government-to-Government Consultation requirements (Executive Order 13175), and potential contribution of traditional knowledge to the management of SSLs and NFSs. Chapter 5 provides some recommendations for additional coordination with Alaska Natives regarding SSL and NFS research.

ES-9.0 Next Steps

This executive summary is a snapshot of the contents of the Steller Sea Lion and Northern Fur Seal Research Final PEIS. Following release of the final PEIS to the public in May 2007, the Agency will make its decision concerning SSL and NFS research. NMFS will issue its ROD no later than June 2007. This decision document will conclude the NEPA process on the proposed action. For updates on the Final PEIS, please visit the NMFS website at http://www..nmfs.noaa.gov/pr/permits/eis/steller/htm.