

# Final Programmatic Environmental Impact Statement for the Marine Mammal Health and Stranding Response Program

February 2009

## Volume I: Final Programmatic Environmental Impact Statement

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Lead Agency:  
National Oceanic and Atmospheric Administration (NOAA)  
National Marine Fisheries Service (NMFS)  
Office of Protected Resources



Cooperating Agency:  
U.S. Department of Agriculture (USDA)  
Animal and Plant Health Inspection Service (APHIS)

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Abstract

The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) has the authority, delegated from the Secretary of Commerce, to take stranded marine mammals under Section 109(h) of the Marine Mammal Protection Act (MMPA) (16 U.S.C. 1379) and to establish and manage the Marine Mammal Health and Stranding Response Program (MMHSRP) under Title IV of the MMPA (16 U.S.C. 1421 *et seq.*). The MMHSRP includes: the National Marine Mammal Stranding Network; the Marine Mammal Unusual Mortality Event Program; the National Marine Mammal Tissue Bank and Quality Assurance Program; marine mammal health biomonitoring, research, and development; the Marine Mammal Disentanglement Network; the John H. Prescott Marine Mammal Rescue Assistance Grant Program; and information management and dissemination. This Final Programmatic Environmental Impact Statement (FPEIS) analyzes the potential environmental impacts of implementing the MMSHRP activities contained in the proposed action and alternatives.

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## **ABBREVIATIONS AND ACRONYMS**

|       |   |
|-------|---|
| AAZV  | American Association of Zoo Veterinarians                                       |
| ABR   | Auditory Brainstem Response   |
| ADFG  | Alaska Department of Fish and Game  |
| AEP   | Auditory Evoked Potential   |
| APHIS | Animal and Plant Health Inspection Service                                      |
| ASHPO | American Samoa Historic Preservation Office                                     |
| AVMA  | American Veterinary Medical Association   |
| BLM   | Bureau of Land Management   |
| CDFG  | California Department of Fish and Game  |
| CEQ   | Council on Environmental Quality  |
| CFR   | Code of Federal Regulations   |
| CI    | Co-Investigator   |
| CIMS  | Chesapeake Information Management System  |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CNMI  | Commonwealth of the Northern Mariana Islands                                    |
| CPR   | Cardio Pulmonary Resuscitation  |
| CSC   | Coastal Service Center  |
| DDT   | Dichloro-Diphenyl-Trichloroethane   |
| DEA   | Drug Enforcement Administration   |
| DIN   | Dissolved Inorganic Nitrogen  |
| DIP   | Dissolved Inorganic Phosphorus  |
| DOC   | Department of Commerce  |
| DOI   | Department of the Interior  |
| DPS   | Distinct Population Segment   |
| EA    | Environmental Assessment  |

|          |   |
|----------|---|
| EEZ      | Exclusive Economic Zone                             |
| EFH      | Essential Fish Habitat                              |
| EIS      | Environmental Impact Statement                      |
| EO       | Executive Order                                     |
| EPA      | Environmental Protection Agency                     |
| ERM      | Effects Range Median                                |
| ERL      | Effect Range Low                                    |
| ESA      | Endangered Species Act                              |
| ESU      | Evolutionary Significant Unit                       |
| FLMNH    | Florida Museum of Natural History                   |
| FOSC     | Federal On-Scene Coordinator                        |
| FR       | Federal Register                                    |
| GEPA     | Guam Environmental Protection Agency                |
| GMP      | Gulf of Mexico Program                              |
| HAB      | Harmful Algal Bloom                                 |
| HAS      | Hawaii Audubon Society                              |
| HAZWOPER | Hazardous Waste Operations and Emergency Response   |
| HSWRI    | Hubbs-SeaWorld Research Institute                   |
| IATA     | International Air Transport Association             |
| ICS      | Incident Command System                             |
| LOA      | Letter of Agreement                                 |
| m        | Meter   |
| mg/L     | Milligrams per liter                                |
| MMC      | Marine Mammal Commission                            |
| MMHSRA   | Marine Mammal Health and Stranding Response Act     |
| MMHSRP   | Marine Mammal Health and Stranding Response Program |

|          |  |
|----------|--|
| MMPA     | Marine Mammal Protection Act                               |
| MSDS     | Material Safety Data Sheet                                 |
| NAO      | NOAA Administrative Order                                  |
| NCCR     | National Coastal Condition Report II                       |
| NEPA     | National Environmental Policy Act                          |
| NERR     | National Estuarine Research Reserve                        |
| NHPA     | National Historic Preservation Act                         |
| NMFS     | National Marine Fisheries Service                          |
| NMMTB    | National Marine Mammal Tissue Bank                         |
| NMS      | National Marine Sanctuary                                  |
| NOA      | Notice of Availability                                     |
| NOAA     | National Oceanic and Atmospheric Administration            |
| NOI      | Notice of Intent   |
| NPDES    | National Pollutant Discharge Elimination System            |
| NPS      | National Park Service                                      |
| NRCS     | Natural Resources Conservation Service                     |
| NRDC     | Natural Resources Defense Council                          |
| NRHP     | National Register of Historic Places                       |
| NWHICRER | Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve |
| NWR      | National Wildlife Refuge                                   |
| OCNMS    | Olympic Coast National Marine Sanctuary                    |
| OSHA     | Occupational Safety and Health Administration              |
| OSP      | Optimum Sustainable Population                             |
| PAH      | Polycyclic Aromatic Hydrocarbon                            |
| PCB      | Polychlorinated Biphenyls                                  |
| PCCS     | Provincetown Center for Coastal Studies                    |

|                   |  |
|-------------------|--|
| PEIS              | Programmatic Environmental Impact Statement  |
| PFMC              | Pacific Fishery Management Council   |
| PI                | Principal Investigator   |
| PIT               | Passive Integrated Transponder   |
| POP               | Persistent Organic Pollutant   |
| POTW <sub>s</sub> | Publicly Owned Treatment Works   |
| PR1               | Office of Protected Resources, Permits, Conservation and Education Division (NMFS) |
| ROD               | Record of Decision   |
| SA                | Stranding Agreement  |
| SAV               | Submerged Aquatic Vegetation   |
| SHPO              | State Historic Preservation Officer  |
| TCP               | Traditional Cultural Property  |
| THPO              | Tribal Historic Preservation Officer   |
| TOC               | Total Organic Carbon   |
| UME               | Unusual Mortality Event  |
| U.S.C.            | United States Code   |
| USCG              | U.S. Coast Guard   |
| USDA              | U.S. Department of Agriculture   |
| USFS              | U.S. Forest Service  |
| USFWS             | U.S. Fish and Wildlife Service   |
| USGS              | U.S. Geological Survey   |
| VHF               | Very High Frequency  |
| VIDPNR            | Virgin Islands Department of Planning and Natural Resources                        |
| WDFW              | Washington Department of Fish and Wildlife   |
| WGMMUME           | Working Group on Marine Mammal Unusual Mortality Events                            |

## Executive Summary

The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) has prepared this final Programmatic Environmental Impact Statement (PEIS) pursuant to the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 Code of Federal Regulations 1500-1508), and the NOAA environmental review procedures (NOAA Administrative Order 216-6).

### ES.1 Proposed Actions

With the passage of the Marine Mammal Protection Act (MMPA) in 1972, Congress gave jurisdiction over marine mammals in U.S. waters to the Federal government. All cetaceans and all pinnipeds, except walrus (*Odobenus rosmarus*), were placed under the jurisdiction of the Department of Commerce, of which NMFS is a part. The Department of the Interior, U.S. Fish and Wildlife Service was given authority over walrus, sea otters (*Enhydra lutris*), sirenians (manatees [*Trichechus spp.*] and dugongs [*Dugong dugon*]), and polar bears (*Ursus maritimus*).

In 1992, the Marine Mammal Health and Stranding Response Program (MMHSRP) was formalized with the passage of Title IV, an amendment to the MMPA entitled The Marine Mammal Health and Stranding Response Act. This Act charged the Secretary of Commerce to develop a marine mammal health and stranding response program with three goals:

1. Facilitate the collection and dissemination of reference data on the health of marine mammals and health trends of marine mammal populations in the wild;
2. Correlate the health of marine mammals and marine mammal populations, in the wild, with available data on physical, chemical, and biological environmental parameters; and
3. Coordinate effective responses to unusual mortality events by establishing a process in the Department of Commerce in accordance with Section 404.

The MMHSRP developed the following four Proposed Actions to encompass the activities of the MMHSRP:

1. Issuance of the *Policies and Best Practices for Marine Mammal Stranding Response, Rehabilitation, and Release* (Policies and Best Practices) as final guidance.
2. Issuance of a new Endangered Species Act (ESA)/MMPA permit to the MMHSRP. The new permit would include current and future response activities for endangered species,

1           disentanglement activities, biomonitoring projects, and import and export of marine mammal  
2           tissue samples. The permit would be issued no later than July 1, 2009 and would expire in  
3           five years.

4           3. Continuation of current MMHSRP operations, including response, rehabilitation, release, and  
5           research activities, with renewal and authorization of Stranding Agreements (SAs) and  
6           Scientific Research Authorizations and other NMFS activities referenced in Section 1.3.1.

7           4. Continuation of the Prescott Grant Program.

8           The action area for the Proposed Actions and alternatives includes all areas where MMHSRP  
9           activities may occur. The action area encompasses the coastal zone and Exclusive Economic Zone of  
10          the U.S., its territories, and possessions, and adjacent marine waters. The coastal zone includes  
11          coastal waters, adjacent shorelands, intertidal areas, salt marshes, wetlands, and beaches. The action  
12          area also includes the marine mammal rehabilitation facilities of the stranding network.

## 13          **ES.2 Purpose and Need**

14          The purposes of the Proposed Actions are to respond to marine mammals in distress, including those  
15          stranded, entangled, and out of habitat, and to answer research and management questions about  
16          marine mammal health. Stranded and distressed marine mammal response is conducted for many  
17          reasons including NMFS' legislative mandate and the need to obtain data for management and  
18          scientific purposes. Marine mammals are also sentinels of ecosystem health and may provide  
19          valuable links to human health. Response to marine mammals is also conducted out of a concern for  
20          animal welfare and ocean stewardship.

21          NMFS is charged with the national oversight and collaboration of the MMHSRP, and creating  
22          policies that will work for the majority of participants. The MMHSRP has identified several needs  
23          for effectively carrying out the mandates of Title IV:

24                1. Operational efficiency - To operate the MMHSRP effectively and efficiently, maximizing the  
25                benefits from opportunistic events while making the best use of limited resources;

26                2. Quality data - To collect data on marine mammal health and health trends in an organized and  
27                consistent manner to meet current and future information needs for appropriate conservation  
28                and management; and

29                3. Safety - To implement policies to ensure that MMHSRP activities are conducted humanely  
30                and in a manner that protects the safety of volunteers and the public to the maximum extent  
31                possible.

1 **ES.3 Alternatives**

2 The alternatives to implement the Proposed Actions are grouped into the following six topics: SAs  
 3 and response; carcass disposal; rehabilitation activities; release activities; disentanglement; and  
 4 biomonitoring and research activities. A No Action Alternative, Status Quo Alternative, and  
 5 Preferred Alternative are designated under each issue. The No Action Alternative for each issue is  
 6 based upon NMFS not undertaking the coordination and operation of the MMHSRP. Current SAs  
 7 would not be renewed and new SAs would not be issued. The Policies and Practices manual and the  
 8 ESA/MMPA permit would not be issued. As current SAs expired, the current National Stranding  
 9 Network would cease to exist. Once the current ESA/MMPA permit expires on June 30, 2009, the  
 10 current disentanglement network would no longer function.

11 Table ES-1 summarizes the alternatives considered in the PEIS and which of the four Proposed  
 12 Actions the alternatives would impact.

13 **Table ES-1. Alternatives Considered in Detail**

| Alternative                                     | Description  | Proposed Action(s) Impacted |
|---|--|-----------------------------|
| <b><i>Stranding Agreements and Response</i></b> |  |                             |
| Alternative A1                                  | No Action- SA's expire, stranding response would end.  | <b>1, 2, 3, 4</b>           |
| Alternative A2                                  | Status Quo- Current SAs would be renewed, current stranding response activities continue. Final SA criteria would not be issued.                                 |                             |
| Alternative A3                                  | SAs issued to any applicants after review, new SA template would not be utilized. Final SA criteria would not be issued. Current and future activities included. |                             |
| Alternative A4 (Preferred)                      | Final SA criteria would be implemented, new SA template would be utilized, current and future activities included.   |                             |
| Alternative A5                                  | Final SA criteria would be implemented, new SA template would be utilized, and response to threatened, endangered, or rare animals would be required.            |                             |
| <b><i>Carcass Disposal</i></b>                  |  |                             |
| Alternative B1                                  | No Action- SA's expire, no carcass disposal would occur, carcasses would be left where stranded.   | <b>1, 3</b>                 |
| Alternative B2                                  | Status Quo- Current methods of carcass disposal continue.  |                             |
| Alternative B3 (Preferred)                      | Status Quo with the recommendation to transport chemically euthanized animal carcasses off-site.   |                             |



**Table ES-1. Alternatives Considered in Detail (continued)**

| Alternative   | Description   | Proposed Action(s) Impacted |
|---|---|-----------------------------|
| <b><i>Rehabilitation Activities</i></b>             |   |                             |
| Alternative C1                                      | No Action- Current SAs would expire, stranding response would cease, and animals would not be rehabilitated.  | <b>1, 2, 3, 4</b>           |
| Alternative C2                                      | Status Quo- Current rehabilitation activities would continue. Final Rehabilitation Facility Standards would not be implemented.   |                             |
| Alternative C3 (Preferred)                          | New SAs would be issued, rehabilitation activities continue. Final Rehabilitation Facility Standards would be implemented.  |                             |
| Alternative C4                                      | New SAs would be issued, rehabilitation activities would continue. Rehabilitation of threatened, endangered, and rare animals would be required; response to other animals would be optional. Final Rehabilitation Facility Standards would be implemented. |                             |
| <b><i>Release of Rehabilitated Animals</i></b>      |   |                             |
| Alternative D1                                      | No Action- Current SAs would expire, stranding response and rehabilitation would cease, and therefore there would be no animals to release.   | <b>1, 2, 3, 4</b>           |
| Alternative D2                                      | Status Quo- Current release activities would continue. Adaptive changes to release activities would not be permitted. Final release criteria would not be implemented.  |                             |
| Alternative D3 (Preferred)                          | New SAs would be issued, release activities continue. Final release criteria would be implemented and would include adaptive management of release activities.  |                             |
| <b><i>Disentanglement Activities</i></b>            |   |                             |
| Alternative E1                                      | No Action- No disentanglement network.  | <b>1, 2, 3, 4</b>           |
| Alternative E2                                      | Status Quo- Disentanglement network would continue current activities, no modifications or new members added  |                             |
| Alternative E3 (Preferred)                          | Disentanglement network would continue current activities on East Coast with modifications to West Coast network. The Disentanglement Guidelines and training prerequisites would be implemented.   |                             |
| <b><i>Biomonitoring and Research Activities</i></b> |   |                             |
| Alternative F1                                      | No Action- Biomonitoring and research activities would not occur.   | <b>2, 3</b>                 |
| Alternative F2                                      | Status Quo- New ESA/MMPA permit would continue current biomonitoring and research activities.   |                             |
| Alternative F3 (Preferred)                          | New ESA/MMPA permit would be issued to include current and future biomonitoring and research activities.  |                             |

1 **ES.4 Environmental Impacts and Mitigation**

2 The environmental impacts of the alternatives were analyzed for the following resources:

- 3 • Biological resources: protected and sensitive habitats, submerged aquatic vegetation (SAV)  
4 and macroalgae, sea turtles, marine mammals, threatened and endangered species, fish, birds,  
5 and other wildlife;
- 6 • Water and sediment quality;
- 7 • Human health and safety;
- 8 • Cultural resources; and
- 9 • Socioeconomics.

10 Table ES-2 summarizes the impacts on these resources from each of the alternatives. While potential  
11 adverse and beneficial effects on all of the chosen resource areas could occur, effects on marine  
12 mammals and human health and safety would be considered the most important. Mitigation measures  
13 have been developed to avoid, minimize, or eliminate the potential adverse effects on the affected  
14 resources from the proposed alternatives.

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Table ES-2. Summary Matrix of Impacts

| Alternatives  | Impact Area   |   |  |  |  |
|---|---|---|--|--|--|
|   | Biological Resources  | Water & Sediment Quality  | Cultural Resources   | Human Health & Safety  | Socioeconomics   |
| <b>Stranding Agreements &amp; Response</b>  |   |   |  |  |  |
| <p><b>Alternative A1- No Action</b><br/>No Action- SA's expire, stranding response would end.</p>   | <p>Moderate, adverse effects on marine mammals, as stranded animals would be removed from the population. Valuable information on marine mammal health would not be collected.</p> <p>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.</p>                                       | <p>No effects on water and sediment quality.</p>  | <p>No effects on cultural resources.</p>   | <p>Minor, short-term adverse effects as the public interact with stranded animals. Beneficial effects as response personnel no longer needed.</p>  | <p>Moderate, long-term beneficial direct effects on stranding network members, as there would be reduction, if not an elimination, of costs.</p> <p>Minor to moderate indirect adverse effects to SA holders whose activities attract external funding.</p> <p>Potential adverse effects if stranded animals reduce the visual and aesthetic such that other beach uses decrease while the stranded animal is decomposing. Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding event.</p> |
| <p><b>Alternative A2- Status Quo</b><br/>Status Quo- Current SAs would be renewed, current stranding response activities continue. Final SA criteria would not be issued.</p>                     | <p>Minor, short-term adverse effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, shellfish, and birds from equipment use or leaks on beaches/nearshore waters and the presence of responders.</p> <p>Minor to moderate, adverse effects on marine mammals would be expected from response activities and if new SAs are not issued.</p> | <p>Minor, short-term adverse effects on surrounding sand and nearshore waters could occur from equipment leaks and euthanasia solution or other environmental contaminants in tissue, blood, and other body fluids.</p> | <p>Potential minor, adverse effects on submerged cultural resources or resources buried in sand from equipment and vehicle use on beaches and nearshore waters. There would not be any effects on Alaska Natives, Native American tribes, or other aboriginal people's cultural uses of coastal resources.</p> | <p>Minor, short-term adverse effects on the public (interacting with a stranded animal) and stranding responders (e.g., physical injury and zoonotic diseases).</p>                      | <p>Minor to moderate, long-term adverse effects to stranding network members from operating costs associated with these activities.</p> <p>Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding event.</p>   |
| <p><b>Alternative A3</b><br/>SAs issued to any applicants after review, new SA template would not be utilized. Final SA criteria would not be issued. Current and future activities included.</p> | <p>Same effects on biological resources as Alternative A2. Some beneficial impacts could come from allowing new SA holders to be added, given that they have the proper experience with marine mammal response, as geographic coverage would increase and new rehabilitation facilities may be added.</p>   | <p>Same effects as Alternative A2.</p>  | <p>Same effects as Alternative A2.</p>   | <p>Same effects as Alternative A2.</p>   | <p>Minor to moderate, long-term adverse effects on network members from operating expenses. New involvement with response activities would help offset expense of these activities. Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding.</p>  |
| <p><b>Alternative A4 (Preferred)</b><br/>Final SA criteria would be implemented, new SA template would be utilized, current and future activities included.</p>                                   | <p>Same effects on biological resources as Alternative A2. Beneficial impacts from use of new techniques and tools during response activities and ability to add new SA holders.</p> <p>Long-term beneficial effects on marine mammals would be expected to occur with the implementation of SA criteria.</p>   | <p>Same effects as Alternative A2.</p>  | <p>Same effects as Alternative A2.</p>   | <p>Same effects as Alternative A2, with one exception. SA criteria would ensure that responders are experienced and have the knowledge to avoid or minimize health and safety risks.</p> | <p>Alternative A4 is similar to Alternative A3, but under Alternative A4 the Final SA criteria would be implemented. Moderate to major, adverse effects to the current SA holders would be expected to occur, as existing SA holders may need more training or may need to alter existing practices in order to meet the new criteria.</p> <p>Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding event.</p>  |

Table ES-2. Summary Matrix of Impacts (continued)

| Alternatives   | Impact Area  |  |   |  |  |
|--|--|--|---|--|--|
|  | Biological Resources   | Water & Sediment Quality   | Cultural Resources  | Human Health & Safety  | Socioeconomics   |
| <b>Stranding Agreements &amp; Response</b>   |  |  |   |  |  |
| <b>Alternative A5</b><br>Final SA criteria would be implemented, new SA template would be utilized, and response to threatened endangered or rare animals would be required. | Same effects from stranding response activities as Alternative A2, with two exceptions. Beneficial effect on threatened endangered or rare animals and an adverse effect on other species. Same effects from the implementation of SA criteria as Alternative A4.  | Same effects as Alternative A2.  | Same effects as Alternative A2.   | Same effects as Alternative A4.  | Minor to major, long-term adverse effects to SA holders similar to those described in Alternatives A3 and A4, but they would also depend on the proportion of stranded marine mammals that are not rare, threatened, or endangered and whether or not the network member chooses to continue responding to those animals.<br><br>Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding event. |
| <b>Carcass Disposal</b>  |  |  |   |  |  |
| <b>Alternative B1- No Action</b><br>No Action- SA's expire, no carcass disposal would occur, carcasses would be left where stranded.   | Potential adverse effects could occur from leaving carcasses on the beach to naturally decompose. Animal carcasses may contain contaminants, which could negatively impact the surrounding environment.<br><br>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.   | Potential adverse effects could occur from leaving carcasses on the beach to naturally decompose. Animal carcasses may contain contaminants, which could negatively impact the surrounding water and sediment quality.   | No effects on cultural resources.   | Minor, short-term adverse effects as the public interact with stranded animals. Contaminated or chemically euthanized carcasses could potentially contaminate the groundwater and/or nearshore water. Beneficial effect on personnel involved in carcass disposal as they would no longer be exposed to risks.   | Negligible adverse impacts in terms of lost revenues, restaurants, and parks in the immediate vicinity of the carcass(es), if the public chose to avoid the area. Potential beneficial effects if people come to see stranding event   |
| <b>Alternative B2- Status Quo</b><br>Status Quo- Current methods of carcass disposal continue.   | Minor to moderate, short- and long-term adverse effects, as animal carcasses may contain persistent environmental contaminants or euthanasia solution, which could negatively impact the surrounding environment. Other adverse effects from burial, equipment use, spills of hazardous materials or wastes from equipment or vessels.<br><br>Disposal at sea might allow contaminants to re-enter the marine environment, but would provide a benefit by serving as a food source for marine organisms. | Minor, short-term adverse effects on water and sediment quality could occur from equipment leaks; euthanasia solution or other contaminants in tissue, blood, and other body fluids; spills of hazardous materials or wastes from vessels. Burial and equipment use may have a negligible impact on erosion. | Potential minor, long-term, adverse effects on submerged cultural resources or resources buried in sand from beach burial and equipment and vehicle use on beaches and nearshore waters. There would not be any effects on Alaska Natives, Native American tribes, or other aboriginal people's cultural uses of coastal resources. | Minor and major, short- and long-term adverse effects as the public interacts with a stranded animal. Contaminated or chemically euthanized carcasses left on the beach or buried could potentially contaminate the groundwater and/or nearshore water, making it unhealthy for humans to swim near the carcass site. Workers involved in disposal could be exposed to zoonotic diseases, contaminants, and euthanasia solution. | Negligible adverse impacts in terms of lost revenues, restaurants, and parks in the immediate vicinity of the carcass(es), if the public chose to avoid the area. Potential beneficial effects if people come to see stranding event   |
| <b>Alternative B3 (Preferred)</b><br>Status Quo with the recommendation to transport chemically euthanized animal carcasses off-site.  | Same effects as Alternative B2, with one exception. Chemically euthanized carcasses would not be buried on-site, minimizing some of the adverse effects.   | Same effects as Alternative B2.  | Same effects as Alternative B2.   | Same effects as Alternative B2 with one exception. Recommended that chemically euthanized animal carcasses not be buried on the beach, which would remove the health and safety risks associated with beach burial   | Effects would be the same as those described under Alternative B2, except that chemically euthanized carcasses would be moved off-site and the cost would be incurred by the stranding network member. Adverse effects would be negligible, minor, or major, depending on the number of carcasses.   |

Table ES-2. Summary Matrix of Impacts (continued)

| Alternatives   | Impact Area   |  |   |   |   |
|--|---|--|---|---|---|
|  | Biological Resources  | Water & Sediment Quality   | Cultural Resources  | Human Health & Safety   | Socioeconomics  |
| <b>Rehabilitation Activities</b>   |   |  |   |   |   |
| <p><b>Alternative C1- No Action</b><br/>No Action- Current SAs would expire, stranding response would cease, and animals would not be rehabilitated.</p>   | <p>Moderate, long-term, adverse effects as marine mammals would not be taken into rehabilitation and most would likely die from injuries or disease.</p> <p>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.</p>   | No effects on water and sediment quality.  | No effects on cultural resources.   | Beneficial effects would be expected as risks to rehabilitation personnel would end.  | Potential major, long-term, adverse effects on facilities that focus primarily on rehabilitation activities. Facilities may cease operation, unless their activities could be shifted. Larger facilities that engage in other activities may experience a minor, long-term positive effect in terms of the reduced operating costs from the elimination of rehabilitation activities. |
| <p><b>Alternative C2- Status Quo</b><br/>Status Quo- Current rehabilitation activities would continue. Final Rehabilitation Facility Standards would not be implemented.</p>   | <p>Minor to major, short- and long-term, beneficial and adverse effects on marine mammals. Potential adverse effects from sampling, anesthesia, disease, euthanasia, and not implementing the Rehabilitation Facility Standards</p> <p>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.</p>  | Minor adverse effects due to use of open ocean/bay net pens and temporary pools and contamination from wastes, pathogens, etc. Rehabilitation facilities would have necessary permits for wastewater discharges. | Potential minor to major adverse effects on from the use of temporary pools and net pens, depending on where they are sited. Net pens may disturb or damage submerged cultural resources. | Minor, short-term, direct adverse effects on rehabilitation personnel, including physical injuries, exposure to chemicals, and exposure to zoonotic diseases. | Current rehabilitation facilities would continue to bear minor to major, long-term adverse effects. Rehabilitation facilities would operate as they currently do and therefore continue to incur supply, equipment, personnel, and maintenance expenses.  |
| <p><b>Alternative C3 (Preferred)</b><br/>New SAs would be issued, rehabilitation activities continue. Final Rehabilitation Facility Standards would be implemented.</p>  | Same effects as Alternative C2, with one exception. Rehabilitation Facility Standards would decrease the risk of disease transmission ensure a healthy environment, maximize the success of rehabilitation, and increase the potential for release to the wild. Would reduce animal pain and suffering.   | Same effects as Alternative C2.  | Same effects as Alternative C2.   | Same effects as Alternative C2, with one exception. Health and safety standards in the rehabilitation facility standards would have a beneficial effect.      | Minor to major, adverse effects on rehabilitation facilities. Facilities would need to upgrade to comply with the minimum facility standards. Level of impact would depend on each facility, if they need to upgrade, and how much they would need to upgrade to meet the minimum standards.  |
| <p><b>Alternative C4</b><br/>New SAs would be issued, rehabilitation activities would continue. Rehabilitation of threatened endangered and rare animals would be required; response to other animals would be optional. Final Rehabilitation Facility Standards would be implemented.</p> | Same effects as Alternative C3, with a few exceptions. Adverse effects on animals that are not rare, threatened or endangered. These animals often serve as models for other species and this would be an indirect adverse affect on rare, threatened, and endangered species.  | Same effects as Alternative C2.  | Same effects as Alternative C2.   | Same effects as Alternative C3.   | Alternative C4 would adversely affect rehabilitation facilities in the same manner as Alternative C3. Alternative C4 could adversely affect facilities to a lesser extent, however, since under the rehabilitation of non-rare and non-ESA species would only be optional.  |
| <b>Release of Rehabilitated Animals</b>  |   |  |   |   |   |
| <p><b>Alternative D1- No Action</b><br/>No Action- Current SAs would expire, stranding response and rehabilitation would cease, and therefore there would be no animals to release.</p>  | <p>Adverse effects as marine mammals would not be released back to the wild, which negatively impacts all species, but especially threatened or endangered species. Beneficial effect on wild populations, as there would not be the risk of introducing a diseased animal that could potentially infect other marine mammals.</p> <p>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.</p> | No effects on water and sediment quality.  | No effects on cultural resources.   | Beneficial effects would be expected as risks to release personnel would end.   | Beneficial effects as the end of release activities would eliminate the expenses related to these activities.   |

Table ES-2. Summary Matrix of Impacts (continued)

| Alternatives  | Impact Area   |  |   |   |   |
|---|---|--|---|---|---|
|   | Biological Resources  | Water & Sediment Quality   | Cultural Resources  | Human Health & Safety   | Socioeconomics  |
| <b>Release of Rehabilitated Animals</b>   |   |  |   |   |   |
| <b>Alternative D2- Status Quo</b><br>Status Quo- Current release activities would continue. Adaptive changes to release activities would not be permitted. Final release criteria would not be implemented. | Minor, short- and long-term, adverse and beneficial effects on marine mammals. Release activities (tagging, marking, and transport) may have adverse effects. Released animal could carry a zoonotic disease and infect wild population. Adverse effects on all biological resources from equipment use, spills of hazardous materials or wastes from equipment or vessels.   | Minor, short-term, direct adverse effects could occur from spills of hazardous materials or wastes from release vessels or leaks from equipment into sand or surrounding waters. | Minor, long-term, adverse effects on cultural resources buried in sand from equipment and vehicle use on beaches. | Minor, short-term, direct adverse effects on release personnel, including physical injuries and exposure to chemicals.  | Minor to moderate, adverse effects as continued expenses would be incurred from release activities. Facilities that release more animals, larger species of marine mammals, or those that need to travel greater distance to release animals would incur a greater share of expenses. |
| <b>Alternative D3 (Preferred)</b><br>New SAs would be issued, release activities continue. Final release criteria would be implemented and would include adaptive management of release activities.         | Same effects as Alternative D2, with one exception. Release criteria would be implemented and may reduce the effects on marine mammals.   | Same effects as Alternative D2.  | Same effects as Alternative D2.   | Same effects as Alternative D2  | Minor to moderate, adverse effects as costs may increase at each facility in order to comply with the release criteria. Possible addition of facilities could help offset the release activities and their costs.   |
| <b>Disentanglement Activities</b>   |   |  |   |   |   |
| <b>Alternative E1- No Action</b><br>No Action- No disentanglement network.  | Major, long-term adverse effects on marine mammals from ending the Disentanglement Network as animals would have increased pain and suffering and would most likely die.<br><br>No significant effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds. Gear on an entangled animal may be shed and become marine debris, which could potentially harm biological resources.  | No effects on water and sediment quality.  | No effects on cultural resources.   | Beneficial effects would be expected as risks to responders would end. Potential adverse impacts on public health if individuals attempt to disentangle an animal.                                | Minor to moderate, beneficial effects on current participants could occur from the elimination of expenses incurred from disentanglement activities.  |
| <b>Alternative E2- Status Quo</b><br>Status Quo- Disentanglement network would continue current activities, no modifications or new members added   | Minor, short-term adverse effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, birds, and marine mammals from spills of hazardous materials or wastes from vessels.<br><br>Minor to major, short- and long-term, beneficial and adverse effects on marine mammals. Disentanglement would continue; new responders could not be added. Animal adverse reactions to close approaches, physical/chemical restraint, or be injured during the process. | Minor, short-term, adverse effects could occur from spills of hazardous materials or wastes from release vessels.  | No effects on cultural resources.   | Adverse effects on responders, including physical injuries, exposure to chemicals, potentially death. Potential adverse impacts on public health if individuals attempt to disentangle an animal. | Minor to moderate, adverse effects would continue to be borne by participants engaged in disentanglement activities.  |

Table ES-2. Summary Matrix of Impacts (continued)

| Alternatives   | Impact Area   |  |   |   |   |
|--|---|--|---|---|---|
|  | Biological Resources  | Water & Sediment Quality   | Cultural Resources  | Human Health & Safety   | Socioeconomics  |
| <b>Disentanglement Activities</b>  |   |  |   |   |   |
| <b>Alternative E3 (Preferred)</b><br>Disentanglement network would continue current activities on East Coast with modifications to West Coast network. The Disentanglement Guidelines and training prerequisites would be implemented. | Same effects as Alternative E2, except that new responders and techniques could be added and Disentanglement Guidelines/training would be in place to reduce adverse effects.   | Same effects as Alternative E2.  | No effects on cultural resources.   | Same effects as Alternative E2. There would be less risk under this alternative, as modifications new tools and techniques and the Disentanglement Guidelines/training could reduce safety risks. | No impacts to East Coast participants. Minor to moderate, adverse effects would be borne by West Coast participants due to modifications of current operations and training expenses. |
| <b>Biomonitoring &amp; Research Activities</b>   |   |  |   |   |   |
| <b>Alternative F1- No Action</b><br>No Action- Biomonitoring and research activities would not occur.  | Adverse effects on marine mammals as important health information would no longer be collected. No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.   | No effects on water and sediment quality.  | No effects on cultural resources.   | Beneficial effects would be expected as risks from research activities would end.   | No effects on socioeconomics.   |
| <b>Alternative F2- Status Quo</b><br>Status Quo- New ESA/MMPA permit would continue current biomonitoring and research activities.   | Minor, short-term adverse effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, birds, and marine mammals from spills of hazardous materials or wastes from vessels or leaks from equipment into sand or surrounding waters.<br><br>Protected and sensitive habitats and SAV and macroalgae could be damaged by vessels/researchers. Sea turtles/birds and their nests could be disturbed/ damaged. Fish may be caught in nets or disturbed.<br><br>Minor to major, short- and long-term, adverse effects on marine mammals from close approach, tagging, marking, restraint, handling, capture, transport, sampling, and other activities. Long-term beneficial effects from collection of health information. | Minor, short-term, direct adverse effects could occur from spills of hazardous materials or wastes from release vessels or leaks from equipment into sand or surrounding waters. | Adverse effects would not likely occur. Potential effects on submerged cultural resources or resources buried in sand from equipment and vehicle use on beaches and vessel use in nearshore waters. | Minor, short-term, direct adverse effects on research personnel, including physical injuries, exposure to chemicals, and exposure to zoonotic diseases.   | Minor to moderate, adverse effects could occur depending on the nature of biomonitoring and research activities and the ongoing personnel and research expenses.                      |
| <b>Alternative F3 (Preferred)</b><br>New ESA/MMPA permit would be issued to include current and future biomonitoring and research activities.  | Same effects as Alternative F2, with other adverse effects from new research activities. The increase in research activities would have a beneficial affect on marine mammals, as more health information would be collected.   | Same effects as Alternative F2.  | Same effects as Alternative F2.   | Same effects as Alternative F2.   | Minor to moderate, adverse effects could occur depending on the nature of new biomonitoring and research activities and the ongoing personnel and research expenses.                  |



**FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT  
FOR THE MARINE MAMMAL HEALTH AND STRANDING RESPONSE PROGRAM**

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# 1. Purpose and Need for the Proposed Actions

## 1.1 Introduction

This final Programmatic Environmental Impact Statement (PEIS) has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality's (CEQ) Regulations for Implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and the National Oceanic and Atmospheric Administration (NOAA) environmental review procedures (NOAA Administrative Order [NAO] 216-6). It describes a reasonable range of alternatives and the existing environmental conditions. The final PEIS contains a detailed analysis of the environmental consequences of the alternatives. This chapter describes the Marine Mammal Health and Stranding Response Program (MMHSRP) and the underlying purpose and need for the proposed actions.

## 1.2 Establishment and Overview of the MMHSRP

### 1.2.1 Establishment of the MMHSRP

Public response to marine mammals in distress, particularly those that are on the beach or "stranded," has occurred in various forms for decades. Historically, private organizations were founded to respond to stranded marine mammals. Many efforts were also conducted by museums to obtain marine mammal specimens for their collections. Aquaria with marine mammals in captivity also responded and provided veterinary care to stranded and injured marine mammals, particularly cetaceans. Prior to the 1970s, response was extremely localized, relatively inconsistent, and occurred with minimal Federal involvement. Communication between different groups responding to strandings was minimal, and accounts of single strandings were not integrated into any sort of meaningful analysis or overall picture that reflected animal stranding patterns or distributions.

With the passage of the Marine Mammal Protection Act (MMPA) in 1972, Congress gave jurisdiction over marine mammals in U.S. waters to the Federal government. All cetaceans and all pinnipeds, except walrus (*Odobenus rosmarus*), were placed under the jurisdiction of the Department of Commerce and is now specifically housed in the National Marine Fisheries Service (NMFS), NOAA. The Department of the Interior, U.S. Fish and Wildlife Service (USFWS) was given authority over walrus, sea otters (*Enhydra lutris*), sirenians (manatees [*Trichechus spp.*] and dugongs [*Dugong dugon*]), and polar bears (*Ursus maritimus*). The MMPA protected marine mammals from capture or harassment, and NMFS implementing regulations prohibited the possession of parts from carcasses

1 except by those specifically authorized to do so. This was a significant driving force in the  
2 development of a formal regional stranding network.

3 The U.S. Marine Mammal Commission (MMC) sponsored a workshop in 1977 which brought  
4 scientists together to discuss marine mammal strandings. One recommendation from that workshop  
5 was to establish a framework for a national marine mammal stranding network with regional centers  
6 and a centralized data file, coordinated by NMFS. The network was formally established, and was  
7 organized, as independent volunteer organizations coordinated through each of the NMFS  
8 jurisdictional regions.

9 Throughout the 1980s, the stranding network continued to grow across the U.S. and worldwide.  
10 Information, mostly from stranded animals, began to accumulate on marine mammal mortalities  
11 caused by human interactions, such as fisheries, and marine mammal mass mortality events. In the  
12 late 1980s, a number of mass mortality events occurred in the U.S. and abroad, gaining significant  
13 public attention. A mass die-off of humpback whales (*Megaptera novaeangliae*) in the Northeast U.S.  
14 was linked to saxitoxin, resulting from a harmful algal bloom (HAB). Hundreds of bottlenose  
15 dolphins (*Tursiops truncatus*) stranded dead in the Southeast U.S. due to *Morbillivirus* infection. The  
16 investigation into these events encountered significant difficulties due to the lack of baseline data on  
17 marine mammal health and NMFS and Congressional efforts began to formalize the health and  
18 stranding program. Mounting evidence from these strandings and others showed high levels of  
19 anthropogenic contaminants, such as persistent organic pollutants (POPs), raising concerns about the  
20 overall health of marine mammal populations. Interest in marine mammal health and strandings  
21 continued to increase as the public raised concerns about deteriorating ocean conditions. Based on  
22 these growing concerns Congress passed the Marine Mammal Health and Stranding Response Act  
23 (MMHSRA) in 1992.

24 Under the MMHSRA, the MMHSRP was formalized with the passage of Title IV, an amendment to  
25 the MMPA. This Act charged the Secretary of Commerce to develop a marine mammal health and  
26 stranding response program with three goals:

- 27 1. Facilitate the collection and dissemination of reference data on the health of marine mammals  
28 and health trends of marine mammal populations in the wild;
- 29 2. Correlate the health of marine mammals and marine mammal populations, in the wild, with  
30 available data on physical, chemical, and biological environmental parameters; and

1           3. Coordinate effective responses to unusual mortality events (UMEs) by establishing a process  
2           in the Department of Commerce in accordance with Section 404 of the MMPA.

3           In this legislation, there is specific language relative to stranding networks. First, a stranding was  
4           defined as “an event in the wild in which (A) a marine mammal is dead and is (i) on a beach or shore  
5           of the United States; or (ii) in waters under the jurisdiction of the United States (including any  
6           navigable waters); or (B) a marine mammal is alive and is (i) on a beach or shore of the United States  
7           and is unable to return to the water; (ii) on a beach or shore of the United States and, although able to  
8           return to the water, is in need of apparent medical attention; or (iii) in the waters under the jurisdiction  
9           of the United States (including any navigable waters), but is unable to return to its natural habitat  
10          under its own power or without assistance” (16 United States Code [U.S.C.] 1421h). Secondly, the  
11          Department of Commerce is authorized by Section 112(c) of the MMPA to enter into agreements  
12          with individuals or groups to “take” marine mammals in response to a stranding event. “Take” means  
13          to “harass, hunt, capture, or kill or attempt to harass, hunt, capture, or kill any marine mammal” (16  
14          U.S.C. 1362). Title IV also mandated the implementation of several other programs under the  
15          umbrella of the MMHSRP. These programs are described below.

### 16          **1.2.2 Overview of the Current MMHSRP**

17          Since the passage of Title IV, the MMHSRP has grown significantly. The current MMHSRP  
18          includes the following components:

- 19           • National Marine Mammal Stranding Network
- 20           • Marine Mammal UME Program
- 21           • National Marine Mammal Tissue Bank (NMMTB) and Quality Assurance Program
- 22           • Marine Mammal Health Biomonitoring, Research, and Development
- 23           • Marine Mammal Disentanglement Network
- 24           • John H. Prescott Marine Mammal Rescue Assistance Grant Program (a.k.a. the Prescott  
25           Grant Program)
- 26           • Information Management and Dissemination.

27          The National Marine Mammal Stranding Network consists of organizations nationwide who respond  
28          to stranded or entangled pinnipeds (except walrus) and all cetaceans within U.S. waters. These  
29          organizations are authorized to respond under the MMPA, utilizing the authority of either Section  
30          112(c) or Section 109(h). Organizations operating under Section 112(c) authority have entered into



1 formal agreements with NMFS for stranding response. These agreements are known as Stranding  
2 Agreements (SAs), previously termed Letters of Agreement (LOAs). Organizations with SAs include  
3 non-profits, for-profits, institutions of higher education, museums, governmental agencies, and  
4 individuals. Section 109(h) of the MMPA allows Federal, state, and local government employees in  
5 the line of duty to take a stranded marine mammal in a humane manner (including euthanasia) if such  
6 taking is for: the protection or welfare of the mammal; the protection of public health and welfare; or  
7 the nonlethal removal of nuisance animals. Appendix F lists the current (2009) members of the  
8 NMFS National Stranding Network. The National Stranding Database was mandated under the  
9 MMPA (16 U.S.C. 1421f) to contain marine mammal health reference data and data on species that  
10 are subject to UMEs. The establishment of a data access policy was also mandated, to allow access to  
11 marine mammal tissues in the NMMTB, any analyses conducted on these tissues, and other marine  
12 mammal data in the database. Standardized datasheets to record stranding information have been  
13 developed and are revised periodically.

14 The Working Group on Marine Mammal Unusual Mortality Events (WGMMUME), mandated under  
15 the MMPA (16 U.S.C. 1421c), is a multidisciplinary panel of experts organized by NMFS to assist in  
16 determining criteria for UMEs. A UME is defined in the MMPA as “a stranding that is unexpected;  
17 involves a significant die-off of any marine mammal population; and demands immediate response.”  
18 The WGMMUME coordinates emergency responses and investigations into causes of mortality and  
19 morbidity. The Group also evaluates the environmental factors associated with UMEs, provides  
20 training and resources (when possible), and oversees the Marine Mammal UME Fund.

21 The development of the NMMTB at the National Institute of Standards and Technology was  
22 mandated by the MMPA (16 U.S.C. 1421f) and initiated by NMFS. Sources of tissues include:  
23 samples from UMEs; samples from marine mammals taken incidental to commercial fishing  
24 operations; samples from marine mammals taken for subsistence purposes; biopsy samples; and any  
25 other samples properly and legally collected. The MMHSRP was mandated to issue guidance “for  
26 analyzing tissue samples (by use of the most effective and advanced diagnostic technologies and tools  
27 practicable) as a means to monitor and measure overall health trends in representative species or  
28 populations of marine mammals...”(16 U.S.C. 1421f). The NMMTB provides a long-term archive  
29 for marine mammal tissue samples, so that future retrospective analyses can be conducted. The  
30 MMHSRP also coordinates and conducts field assessments of wild populations of marine mammals,  
31 particularly in areas where there is a health question or concern, such as a previous mass stranding,  
32 UME, die-off, or outbreak.

1 Analogous to the stranding network, response to entangled marine mammals was conducted at a local  
2 level on an ad hoc basis for several decades. NMFS Headquarters and the NMFS Northeast Region  
3 began the formalization of the Marine Mammal Disentanglement Network in 1997, when a contract  
4 was issued to the Provincetown (Massachusetts) Center for Coastal Studies (PCCS) to respond to  
5 entangled large whales along the East Coast. The Disentanglement Network is a partnership between  
6 NMFS, PCCS, the U.S. Coast Guard (USCG), state agencies, and other entities. The  
7 Disentanglement Network is responsible for monitoring and documenting whales that have become  
8 entangled in fishing gear, as well as conducting rescue operations. PCCS has established protocols  
9 for all aspects of response, including animal care and assessment; vessel and aircraft support; and  
10 media and public information. PCCS has also developed response equipment and currently trains  
11 other members of the stranding and disentanglement networks. Personnel from the Hawaiian Islands  
12 Humpback Whale National Marine Sanctuary also provide disentanglement training. Today, over 500  
13 civilian and governmental volunteers have received training as first responders for entangled whales.  
14 Appendix F lists the current members of the Disentanglement Network.

15 The Prescott Grant Program was established under the Marine Mammal Rescue Assistance Act of  
16 2000. NMFS was authorized to disburse funds to eligible members of the National Stranding  
17 Network for: the recovery or treatment of marine mammals; the collection of data from living or dead  
18 stranded marine mammals for scientific marine mammal health research; and facility operation costs.  
19 Since 2001, Congress has annually appropriated \$4.0 million to the Program, and 187 awards totaling  
20 over \$16.5 million have been disbursed to stranding network members. Projects funded by the  
21 Prescott Grant Program have resulted in an increase in stranding response, data collection, and  
22 scientific analyses. Additional information on the Prescott Grant Program is presented in Section  
23 1.3.2.4.

## 24 **1.3 Purpose and Need for the Actions**

### 25 **1.3.1 Purpose for the Actions**

26 The purposes of the proposed actions are to respond to marine mammals in distress, including those  
27 stranded, entangled, and out of habitat, and to answer research and management questions about  
28 marine mammal health. Stranded and distressed marine mammal response is conducted for many  
29 reasons, including NMFS' legislative mandate and the need to obtain data for management and  
30 scientific purposes. Marine mammals are also sentinels of ecosystem health and may provide

1 valuable links to human health. Response to marine mammals is also conducted out of a concern for  
2 animal welfare and ocean stewardship. Each of these reasons will be discussed below.

3 NMFS is charged under Title IV of the MMPA with collecting, disseminating, and investigating  
4 correlates of data on marine mammal health and investigating UMEs. Due to the scope and nature of  
5 marine mammal strandings in U.S. waters, NMFS has delegated responsibility for stranding response  
6 to local persons, organizations, and institutions through MMPA Section 112(c) agreements. These  
7 groups are required to share basic information from the response with NMFS to fulfill the statutory  
8 mandates. Data collected from stranded animals may be basic (Level A), intermediate (Level B), or  
9 detailed (Level C). Level A data includes information such as location, animal disposition, and  
10 morphological data. Level B data is supplementary on-site information, such as weather and tide  
11 conditions, animal behavior prior to and during stranding, and samples collected for life history and  
12 blood studies. Level C data includes all information collected during a necropsy examination. This  
13 information is used to develop baselines for animal biology and health; recognize trends and their  
14 potential relationships to various environmental factors; and gain knowledge necessary for improved  
15 species and habitat management (Geraci and Lounsbury 2005). NMFS also conducts many research  
16 projects to assess marine mammal health on wild free-ranging animals, including remote sampling  
17 (biopsy, breath, etc.) and captures. These research projects allow the MMHSRP to utilize controlled  
18 experimental designs (*i.e.*, number of samples, age classes, sex, location) and collect samples from  
19 off-shore species that are rarely reported stranded on beaches.

20 NMFS has an interest in collecting data from stranded and wild animals to monitor marine mammal  
21 population status and health. Data from stranding events and health-related research projects are  
22 utilized in marine mammal stock assessment reports. Reports of interactions between fisheries and  
23 marine mammals, particularly if the interaction may have played a role in the mortality of the marine  
24 mammal, are also very important data for fishery management.

25 Information obtained from stranded, sampled, and captured marine mammals is also important in  
26 expanding a basic biological understanding of many species. Geographic locality of strandings and  
27 rates of occurrence can reflect species distribution and abundance; seasonal patterns may also be  
28 interpreted. For some species that are cryptic and difficult to observe at sea (*e.g.*, *Kogia sp.*),  
29 population distribution information from surveys may be incomplete or underestimated. Records of  
30 stranded animals may help fill in some of the gaps. By placing tracking devices on rehabilitated and  
31 captured marine mammals, movement and diving behavior can also be studied in species that have  
32 never otherwise been tagged, in addition to assessing the fate of the released animal. Recently

1 rehabilitated and tracked rare marine mammal species include Risso's dolphins (*Grampus griseus*)  
2 and rough-toothed dolphins (*Steno bredanensis*).

3 Samples collected from stranded marine mammals are used in a variety of scientific research projects.  
4 Life history studies utilizing tissues from stranded marine mammals can determine age (growth layer  
5 groups in teeth or bones), sexual maturity (dissection of ova or testes), and reproductive history (scars  
6 in the ovaries of females documenting ovulation and pregnancy). Other studies can determine food  
7 habits (through prey remains in stomachs and digestive tracts) and the relationship between traits and  
8 other variables (age at sexual maturity, length at sexual maturity, differences in food habits with  
9 geographic range, etc.). Field studies investigating similar attributes may require years or decades of  
10 dedicated survey or remote sensing efforts, and can only be performed on certain populations of  
11 individually identifiable marine mammal species. Scientific studies of stranded marine mammals  
12 have improved the understanding of genetic diversity and relatedness, contaminants and toxins in  
13 marine mammals, marine mammal diseases, and parasites. Most of the samples used in these studies  
14 are impossible to collect from free-ranging marine mammals, particularly offshore species which can  
15 be logistically difficult to locate and study. However, the MMHSRP is involved in several health  
16 research projects, and samples collected remotely via biopsies and other methods, or collected via  
17 health assessment captures may provide basic information about populations including genetic  
18 identification of individuals or stocks, feeding behavior, disease prevalence, toxicological  
19 information, and general population health.

20 Marine mammals are sentinels of ocean health. As top predators in the ocean ecosystem, marine  
21 mammals reflect their prey and their environment. Many environmental contaminants and biotoxins  
22 accumulate upwards in the food web, and can be detected at high levels in predators. Changes in the  
23 temporal and geographic distribution in pathogens, prey, and toxins may be detected in stranded  
24 marine mammals. These differences reflect changes in the severity, transport, concentration, and  
25 dispersion of these elements in the environment, creating a picture of environmental variability and  
26 change over space and time.

27 The health of marine mammals has also been linked to human health, both directly and as models.  
28 By examining strandings, threats that are shared by humans who utilize the marine ecosystem may be  
29 investigated. Marine mammals serve as models to examine the effects of biotoxins and disease on a  
30 mammalian system. Directly, many of the diseases that marine mammals have are considered  
31 "zoonotic," which means that they have the potential to spread between animals and humans. Some  
32 zoonotic diseases that have been detected in marine mammals include brucellosis, leptospirosis, *West*

1 *Nile virus, Erysipelothrix rhusiopathiae, rabies, Herpes virus, and Morbillivirus.* Marine mammals  
2 can directly serve as warning signals that these disease organisms are present in the marine  
3 environment, even if they have not been detected in other sampling or monitoring programs. Marine  
4 mammals also have a direct link with human health in those areas and cultures in which consumptive  
5 uses (*i.e.* harvest and eating) of marine mammals are practiced. In the U.S., this occurs primarily in  
6 Alaska Native communities.

7 A final rationale for stranding response is out of a greater concern for the ocean or the environment in  
8 general. Humans perceive themselves as caretakers of ocean resources, including marine mammals.  
9 There is a desire to responsibly manage these resources for the use and enjoyment of current and  
10 future generations. Those involved in stranding response derive a sense of accomplishment from  
11 helping marine mammals return to the wild, either immediately or after rehabilitation.

### 12 **1.3.2 Need for the Actions**

13 NMFS is charged with the national oversight and collaboration of the MMHSRP, and creating  
14 policies that will work for the majority of participants. The MMHSRP has identified several needs  
15 for effectively carrying out the mandates of Title IV:

- 16 1. Operational efficiency - To operate the MMHSRP effectively and efficiently, maximizing the  
17 benefits from opportunistic events while making the best use of limited resources;
- 18 2. Quality data - To collect data on marine mammal health and health trends in an organized and  
19 consistent manner to meet current and future information needs for appropriate conservation  
20 and management; and
- 21 3. Safety –To implement policies to ensure that MMHSRP activities are conducted humanely  
22 and in a manner that protects the safety of volunteers and the public to the maximum extent  
23 possible.

24 To meet the purpose and need, the MMHSRP developed the following four proposed actions:

- 25 1. Issuance of the Policies and Best Practices for Marine Mammal Stranding Response,  
26 Rehabilitation, and Release (a.k.a. Policies and Best Practices) as final guidance.
- 27 2. Issuance of a new Endangered Species Act (ESA)/MMPA permit to the MMHSRP. The new  
28 permit would include current and future response activities for endangered species,  
29 disentanglement activities, biomonitoring projects, and import and export of marine mammal  
30 tissue samples.

- 1        3. Continuation of current MMHSRP operations, including response, rehabilitation, release, and
- 2            research activities, with renewal and authorization of SAs and Scientific Research
- 3            Authorizations and other NMFS activities referenced in Section 1.3.1.
- 4        4. Continuation of the Prescott Grant Program.

### 5    **1.3.2.1 Policies and Best Practices Manual**

6    The Policies and Best Practices manual is a collection of protocols and guidance for stranding  
7    response, rehabilitation, and release activities. These documents, developed by NMFS (and USFWS  
8    for release activities), would be used to standardize practices of the National Stranding Network  
9    members, while allowing for regional flexibility. The manual is currently released as an interim draft  
10   and would be issued as final guidance after the NEPA analysis has been completed. Future  
11   development of these protocols and guidance may involve the issuance of regulations and subsequent  
12   NEPA analyses, but none are currently proposed. The five draft documents included in the manual  
13   are the:

- 14        • Evaluation Criteria for a Marine Mammal SA (New Applicants and Renewals) (a.k.a. SA
- 15            criteria)
- 16        • National Template for Marine Mammal SAs
- 17        • Standards for Marine Mammal Rehabilitation Facilities (a.k.a. Rehabilitation Facility
- 18            Standards)
- 19        • Standards for the Release of Rehabilitated Marine Mammals (a.k.a. release criteria)
- 20        • Marine Mammal Disentanglement Guidelines

21   These documents are summarized in Section 2 and their full text is located in Appendix C.

### 22   **1.3.2.2 ESA/MMPA Permit**

23   The NMFS Office of Protected Resources, Permits, Conservation and Education Division (PR1)  
24   issues the ESA/MMPA permit to authorize takes of marine mammals, including threatened and  
25   endangered species. The permit covers some of the MMHSRP's activities including emergency  
26   response activities for threatened and endangered species, health assessment studies, and other  
27   research projects.

28   The NMFS Permit No. 932-1489-10 (Appendix G), will expire on June 30, 2009 or with the issuance  
29   of the new permit, which is proposed to include new research and enhancement activities.

1 The current permit allows the MMHSRP Coordinator to:

- 2 • Collect, receive, preserve, label, and transport marine mammal cadavers, hard parts, tissue,  
3 and fluid samples for physical, chemical, or biological analyses, import, and export;
- 4 • Take stranded or distressed marine mammals and endangered or threatened species;
- 5 • Salvage specimens from dead marine mammals and endangered or threatened species;
- 6 • Conduct aerial surveys to locate imperiled marine mammals or survey the extent of disease  
7 outbreaks or die-offs;
- 8 • Harass marine mammals on land incidental to other MMHSRP activities authorized by the  
9 permit; and
- 10 • Develop and maintain cell lines from species under NMFS jurisdiction.

11 Takes of live marine mammals include those that are stranded, entangled, disentangled, injured,  
12 trapped out of habitat, extra-limital, in peril (*e.g.*, in vicinity of an oil spill), or are a nuisance. Takes  
13 of live animals also include those that are part of a population that is experiencing or has experienced  
14 a die-off, UME, or a repeat morbidity/mortality event. The permit does not authorize takes of  
15 USFWS marine mammal species, but fluid and tissue samples of USFWS species may be received if  
16 they were collected legally. Sources of legally obtained samples for research activities are listed in  
17 Appendix G.

18 As the Principal Investigator (PI), the MMHSRP Coordinator may add Co-Investigators (CIs) to  
19 conduct research and enhancement activities under this permit at their discretion. Addition of CIs  
20 typically occurs following a review of the proposed activities (including protocols and statistical  
21 analyses) and curriculum vitae of the investigator. Under the current ESA/MMPA permit, animals  
22 may be taken during close approach, capture, tagging, marking, biopsy sampling, collection of  
23 sloughed skin and feces, breath sampling, blood sampling, administration of drugs, euthanasia, and  
24 incidental harassment. General descriptions of these research methodologies are in Appendix H. Live  
25 threatened and endangered species may be taken during emergency response. This includes returning  
26 the animal back to the wild; treating a distressed condition; disentangling an animal on the beach or at  
27 sea; transporting the animal for return to the wild or a treatment/rehabilitation facility; or humanely  
28 euthanizing the animal.

29 For import and export of marine mammal specimens, the MMHSRP may be required to have import  
30 and export permits, if the species is listed on the Convention on International Trade in Endangered  
31 Species of Wild Fauna and Flora (CITES) Appendix I, II, or III. The CITES permits for import and

1 export are issued by the USFWS and are required to import and export samples, parts, carcasses, or  
2 live animal species (for treatment or release) listed in CITES Appendices. Species listed on CITES  
3 Appendix I require both an import permit and an export permit be issued for international shipments.  
4 Species listed on CITES Appendix II only require an export permit, unless the importing country has  
5 stricter measures than CITES. The only marine mammal listed under CITES Appendix III is the  
6 walrus. Either an export permit or a certificate of origin is required for each international shipment of  
7 walrus specimens.

8 Under the preferred alternative (Section 2.1.6.2), the new permit would be issued on or before July 1,  
9 2009 and activities would be authorized for five years (the length allowed for a permit).  
10 ESA/MMPA permit activities beyond five years (in the event an extension is granted) would be  
11 covered under this PEIS and no further environmental review would be necessary, unless activities  
12 are beyond the scope of this document. Takes of live marine mammals under the new permit would  
13 also include animals that are: exhibiting abnormal behavior; in need of medical treatment; a potential  
14 harm or a health risk to a wild population or to human health; released from public display,  
15 rehabilitation facilities, research facilities, or capture/release projects. Live marine mammals may  
16 also be taken from rehabilitation facilities if they are neglected, abused, or have other humane issues.  
17 Samples legally obtained for research activities would be expanded to include samples from: live  
18 animals during surveillance; imported samples; confiscated animals (*e.g.* as part of enforcement  
19 action); or animals legally taken in other permitted research activities in the U.S. or abroad. New  
20 activities that would be listed under the new permit include, but would not be limited to, passive  
21 acoustic recording, active acoustic playbacks, and health assessment studies on cetaceans. The new  
22 permit would also allow USFWS species to be received, transferred, imported, exported, analyzed,  
23 and archived. The permit would be issued in conjunction with the USFWS Division of Management  
24 Authority in order to cover these activities. General descriptions of these research methodologies are  
25 in Appendix H.

### 26 **1.3.2.3 MMHSRP Operations**

27 The day-to-day operations of the MMHSRP include coordination and oversight of the National  
28 Marine Mammal Stranding Network and the Disentanglement Network. The MMHSRP authorizes  
29 response and rehabilitation activities through SAs, issued under Section 112(c) of the MMPA. SA  
30 authorizations have been delegated to the NMFS Regional Administrators. Issuance and periodic  
31 review of these SAs is undertaken by the MMHSRP through the Regional Stranding Coordinators,  
32 located in each NMFS jurisdictional region. Through SAs, NMFS authorizes persons, organizations,



1 or institutions to respond to reports of marine mammals that are stranded or in distress. Stranding  
2 data are collected and maintained in the National Database. The MMHSRP also coordinates UME  
3 investigations with the WGMMUME. The MMHSRP reviews the evaluation and decision to release  
4 rehabilitated animals. If rehabilitated animals are deemed non-releasable, the MMHSRP will oversee  
5 the transfer of these animals to public display or scientific research facilities.

6 The MMHSRP authorizes marine mammal disentanglement efforts under its ESA/MMPA permit (see  
7 Section 2.1.5). The MMHSRP also funds some of the disentanglement activities through contracts.  
8 The ESA/MMPA permit also authorizes stranding response to ESA-listed marine mammal species  
9 and a variety of marine mammal research projects (see Section 2.1.6 and Appendix H). The  
10 MMHSRP issues Authorization Letters to qualified researchers to allow the use of stranded marine  
11 mammal parts in scientific research projects. The MMHSRP oversees the collection and maintenance  
12 of marine mammal tissue samples in the NMMTB. The MMHSRP also issues grants and cooperative  
13 agreements through the Prescott Grant Program to stranding network participants and researchers  
14 utilizing samples from stranded marine mammals. All activities conducted utilizing federal funds are  
15 under the authority of the SA or Authorization Letter.

#### 16 **1.3.2.4 Prescott Grant Program**

17 The MMHSRP partially funds some of the activities of the National Marine Mammal Stranding  
18 Network through the competitive Prescott Grant Program, which disburses up to \$4 million per year  
19 to stranding network members and researchers. Some of this grant money is used to fund response  
20 and rehabilitation activities (transportation, equipment, supplies, and salary) and research activities  
21 utilizing samples or data from stranded marine mammals. These activities are authorized either by  
22 the recipient's SA, Regional Authorization letter to possess marine mammal parts from stranded  
23 animals, or separately issued ESA/MMPA scientific research permit.

24 The awarding of competitive grants is a multi-step process which addresses compliance with NEPA  
25 and other applicable laws and regulations several times. A complete application must contain enough  
26 information on the potential environmental impacts of the project for NOAA to make a NEPA  
27 compliance determination. These applications are evaluated through technical peer-review and  
28 internal NMFS merit review panels, who take into consideration the environmental information that  
29 was provided. After the funding decision has been made regarding which projects have been  
30 selected, the Prescott program will assess the activities contained within each proposal to ensure that  
31 they have been addressed in this PEIS. These activities may include stranding response,

1 rehabilitation, release, and scientific research activities that are authorized under the MMHSRP's  
2 ESA/MMPA permit. If the project falls entirely within the scope of the PEIS, no further  
3 environmental review will be conducted. If projects are selected for funding that include activities  
4 that are not assessed in this document (e.g., facility construction or renovation), a separate  
5 environmental analysis will be prepared for that award. In addition, each award may have Special  
6 Award Conditions imposed upon it with respect to environmental compliance, if necessary.

7 A list of all projects previously funded by Prescott Grant funds, with recipient and title, is given in  
8 Appendix K. This grant program is subject to annual Congressional appropriation, which may be  
9 reduced or eliminated in any fiscal year, and recipients should consider Prescott Grant funds as  
10 supplemental to their operating budgets.

## 11 **1.4 Action Area**

12 The action area for the alternatives includes all areas where MMHSRP activities may occur. The  
13 action area encompasses the coastal waters and Exclusive Economic Zone (EEZ) of the U.S., its  
14 territories, and possessions, and adjacent marine waters. The coastal zone includes coastal waters,  
15 adjacent shorelands, intertidal areas, salt marshes, wetlands, and beaches. The action area also  
16 includes the marine mammal rehabilitation facilities of the stranding network (described in Section  
17 2.1.3). In Section 3.2, Biological Resources, the discussion on marine mammals has been divided  
18 according to the six NMFS regions. This has been done to address the differences in marine mammal  
19 species and strandings within each region. The states and territories included in the NMFS Northeast,  
20 Southeast, Southwest, Northwest, Alaska, and Pacific Islands regions are listed in Table 1-1.

21 **Table 1-1. Description of NMFS Regions**

| <b>NMFS Regions</b> | <b>States/Territories</b>  |
|---------------------|--|
| Northeast           | ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, VA                             |
| Southeast           | NC, SC, GA, FL, AL, MS, LA, TX, PR, VI                                 |
| Southwest           | CA   |
| Northwest           | OR, WA   |
| Alaska              | AK   |
| Pacific Islands     | HI, Guam, American Samoa, Commonwealth of the Northern Mariana Islands |

22

## 1 **1.5 Public Involvement Process**

2 Public involvement is an integral part of the NEPA process. This section describes the public  
3 involvement activities conducted in connection with the draft and final versions of this PEIS.

### 4 **1.5.1 Notice of Intent**

5 The Notice of Intent (NOI) was published in the *Federal Register* (FR) on December 28, 2005 (70 FR  
6 76777-76780). The NOI announced NMFS' decision to prepare a PEIS and conduct public scoping  
7 meetings. Scoping meetings were held in January and February of 2006 in each NMFS region.  
8 Comments on the scope of the PEIS and the Policies and Best Practices were received. The scoping  
9 process and a summary of public comments received can be found in the Scoping Report (Appendix  
10 D). Scoping comments were fully considered in the development of the draft PEIS.

### 11 **1.5.2 Notice of Availability for the Draft PEIS**

12 NMFS published the Notice of Availability (NOA) for the Draft PEIS on March 16, 2007 (72 FR  
13 12610). NMFS held five public hearings (in San Francisco, CA; Seattle, WA; Boston, MA; St.  
14 Petersburg, FL; and Silver Spring, MD) to solicit and receive comments. NMFS advertised these  
15 meetings via a notice in the FR. Interested parties could also send written comments to mailing and  
16 e-mail addressed printed on the title page of the draft PEIS and in the NOA.

### 17 **1.5.3 Summary of Major Comments on the Draft PEIS**

18 NMFS originally provided 45 days (from March 16 to April 30, 2007) for interested parties to  
19 comment on the draft PEIS. This review period was subsequently extended by 30 days to May 30,  
20 2007 (72 FR 21005). NMFS received 30 comments on the Draft PEIS, submitted by agencies,  
21 organizations, and members of the public. These comments are available online at  
22 [www.nmfs.noaa.gov/pr/health/eis.htm](http://www.nmfs.noaa.gov/pr/health/eis.htm). A complete table of these comments with NMFS' responses is  
23 provided in Appendix N. A summary follows:

- 24 • **Comments on the Alternatives.** Few comments were received on the alternatives. Those  
25 that were received supported the six preferred alternatives: Alternatives A4, B3, C3, D3, E3,  
26 and F3.
- 27 • **Comments on the Release of Rehabilitated Ice Seals.** Several comments expressed  
28 opposition to the release of rehabilitated ice seals into arctic and sub-arctic waters, due to the  
29 perceived risk to wild populations of pinnipeds and potential human health impacts.

- 1       • **Comments on the Policies and Best Practices.** The majority of comments received on the  
2 Policies and Best Practices were in regards to the Rehabilitation Facility Standards, with  
3 suggestions for altering the minimum standards. Comments on the SA Template, the SA  
4 criteria, the release criteria, and the Marine Mammal Disentanglement Guidelines were also  
5 received.
- 6       • **Comments on Appendix H- Research Methodologies under the ESA/MMPA Permit.**  
7 Most of the comments were suggestions for changes or additions to the research  
8 methodologies described in Appendix H.

#### 9       **1.5.4 Review of the Final PEIS**

10 An NOA for the Final PEIS will be published in the FR. The public may comment on the document  
11 for 30 days after the NOA is published. After that time, a Record of Decision (ROD) will be  
12 prepared, detailing NMFS' decision regarding the MMHSRP and the alternatives.

#### 13       **1.6 Agency Cooperation and Consultation**

14 NMFS invited the MMC, USFWS, U.S. Geological Survey (USGS), and the U.S. Department of  
15 Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) to be cooperating  
16 agencies in the PEIS process. The USFWS and USGS declined to be cooperating agencies. The  
17 USFWS and the MMC provided comments on the Draft PEIS during the public comment period.  
18 APHIS is a cooperating agency for this PEIS. Cooperating agency responsibilities are outlined in 40  
19 CFR 1501.6. At a minimum, a cooperating agency would provide reviews of preliminary documents.  
20 Cooperating agency correspondence is included in Appendix B.

21 Section 7 of the ESA requires that all Federal agencies consult with NMFS or USFWS, as applicable,  
22 before initiating any action that may affect a listed species. The NMFS MMSHRP initiated  
23 consultation with the NMFS Office of Protected Resources, Endangered Species Division. The draft  
24 final Biological Opinion (February 2009) concluded that the MMHSRP is not likely to jeopardize the  
25 continued existence of Guadalupe fur seal (*Arctocephalus townsendi*), Steller sea lion (*Eumetopias*  
26 *jubatus*) (western and eastern populations), Hawaiian monk seal (*Monachus schauinslandi*), blue  
27 whale (*Balaenoptera musculus*), bowhead whale (*Balaena mysticetus*), fin whale (*Balaenoptera*  
28 *physalus*), humpback whale (*Megaptera novaeangliae*), killer whale (*Orca Orcinus*) (southern  
29 resident population), North Atlantic right whale (*Eubalaena glacialis*), North Pacific right whale  
30 (*Eubalaena japonica*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter*  
31 *macrocephalus*). The proposed actions are not expected to incidentally take threatened or endangered

1 species. Prior to proceeding with the actions proposed in this PEIS, the Biological Opinion would be  
2 completed and considered by NMFS before issuing a ROD for these actions. NMFS would abide by  
3 any reasonable and prudent measures or terms and conditions that may be required under the  
4 Biological Opinion and would sum up these requirements as part of the consideration for any ROD  
5 taken on the proposed actions analyzed in this PEIS.

6 NMFS did not initiate formal consultation with the USFWS. Consultation for the MMHSRP actions  
7 will be conducted by regional USFWS offices. A consultation plan will be provided to NMFS and  
8 will include USFWS regional points of contact and procedures for when a consultation is required for  
9 these actions. Prior to proceeding with the actions proposed in this PEIS, the consultation plan would  
10 be completed and considered by NMFS before issuing a ROD for these actions. NMFS would abide  
11 by any reasonable and prudent measures or terms and conditions that may be required under the  
12 consultation plan and would include these in the ROD.

13 Consultation with NMFS is also required if a proposed action permitted, funded, or undertaken by a  
14 Federal agency could adversely affect Essential Fish Habitat (EFH). The MMHSRP has consulted  
15 with the NMFS Office of Habitat Conservation regarding EFH. The Office of Habitat Conservation  
16 concurred with the determination that the MMHSRP's activities would not adversely affect EFH.

17 The Coastal Zone Management Act requires Federal agency activities to be consistent, to the  
18 maximum extent practicable, with states' federally approved coastal management programs. NMFS  
19 has determined that the alternatives are consistent with the coastal management programs in the  
20 affected area. NMFS sent consistency determinations to the appropriate state coastal program  
21 administrators regarding its conclusion. NMFS received concurrence on its determinations from the  
22 following states: New Hampshire, Rhode Island, Connecticut, New York, Pennsylvania, Delaware,  
23 Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and  
24 Hawaii. Concurrence was assumed for the following coastal management programs that did not  
25 provide a response to NMFS: Alaska, Washington, Oregon, California, Maine, Massachusetts,  
26 Maryland, New Jersey, Texas, and the Commonwealth of the Northern Mariana Islands (CNMI).  
27 Correspondence regarding coastal zone management consultation is included in Appendix B.

28 NMFS received comments from Connecticut, Florida, and Puerto Rico State Historic Preservation  
29 Officers (SHPO). All three of the SHPOs concurred with the findings in the PEIS regarding impacts  
30 to cultural resources from MMHSRP activities.

1 As stated previously, this PEIS will serve as the NEPA analyses for the MMHSRP's ESA/MMPA  
2 permit application. The final permit application was submitted to NMFS PR1 for review in  
3 December 2007. NMFS PR1 distributed the application to other NMFS scientists, the MMC, NMFS  
4 Office of Law Enforcement, and other appropriate Federal agencies. NMFS PR1 published a Notice  
5 of Receipt in the FR on March 17, 2008, which initiated a mandatory 30-day public comment period.  
6 NMFS PR1 will address any comments received on the application. NMFS PR1 will also comment  
7 on the PEIS to address any concerns relating to permit activities. Before issuance of the permit,  
8 NMFS PR1 will formally accept the Final PEIS, including the NMFS Biological Opinion, as the  
9 NEPA analysis for the permit application. A Notice of Issuance of the permit will then be published  
10 in the FR.

## 11 **1.7 Organization of the PEIS**

12 The principal sections of this PEIS are as follows:

13 **Section 1:** Purpose of and Need for the Proposed Actions. This section briefly discusses the  
14 MMHSRP, describes the proposed actions, defines the project scope, explains the public involvement  
15 process, and identifies the organization of the document.

16 **Section 2:** Alternatives. This section describes the alternatives and alternatives considered but  
17 eliminated from further consideration.

18 **Section 3:** Affected Environment. This section describes the existing environmental conditions of  
19 select resources in the area in which the alternatives would occur.

20 **Section 4:** Environmental Consequences. Using information from Section 3, this section identifies  
21 the potential environmental impacts on each resource area under the alternatives. Direct and indirect  
22 impacts that may result from the alternatives are identified on a broad scale as is appropriate for a  
23 PEIS.

24 **Section 5:** Mitigation. This section identifies mitigation measures developed to address the potential  
25 environmental impacts identified in Section 4.

26 **Section 6:** Cumulative and Other Impacts. This section discusses the potential cumulative impacts  
27 that could result from the impacts of the alternatives, combined with past, other present and  
28 reasonably foreseeable future actions. Unavoidable impacts, irreversible and irretrievable

1 commitment of resources, and the relationship between short-term uses and long-term productivity  
2 are also discussed.

3 **Sections 7 and 8:** These sections provide a list of this document's preparers and references.

4 **Sections 9 and 10:** These sections provide a glossary and index.

5 **Appendices:** This PEIS includes 14 appendices (Volumes II and III) that provide additional  
6 information.

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## 2. Alternatives

### 2.1 Introduction

This section discusses the alternatives to implement the proposed actions. As described in Section 1.3.2 (Need for the Actions), NMFS is considering four proposed actions and alternatives to implement the proposed actions. The alternatives are grouped into the following six topics: SAs and response; carcass disposal; rehabilitation activities; release activities; disentanglement; and biomonitoring and research activities. The description of each topic includes the proposed action(s) that those alternatives would affect. Activities and Policies and Best Practices documents are described under each issue, where appropriate, to clarify the actions taken under each alternative. A No Action Alternative, Status Quo Alternative, and Preferred Alternative are designated under each issue.

The No Action Alternative for each issue is based upon NMFS not undertaking the coordination and operation of the MMHSRP. Current SAs would not be renewed and new SAs would not be issued. The Policies and Best Practices manual and the ESA/MMPA permit would not be issued. The stranding and disentanglement networks would continue their current activities. As current SAs expired, the current National Stranding Network would cease to exist. Once the current ESA/MMPA permit expires on June 30, 2009, the current disentanglement network would no longer function.

#### 2.1.1 Stranding Agreements and Response Activities

##### 2.1.1.1 Response Activities

Response activities analyzed in this PEIS are only those that are conducted by groups operating under the authority of a SA, MMPA Section 109(h) (state and local governments), or another legal means. Response to a dead stranded marine mammal may include beach assessment, collection of the carcass, field or laboratory necropsy, carcass disposal, and/or retention of parts and specimens. This may include the use of heavy machinery on or close to the beach in order to retrieve or move animals.

Response to a live stranded marine mammal may include beach assessment, capture, relocation, transport to a rehabilitation facility, euthanasia, and/or release back to the wild. Pinnipeds on beaches are typically monitored for 24-48 hours before any response is taken to ensure that the animal truly is stranded and to avoid overcrowding at rehabilitation facilities. Solitary stranded animals are generally not refloated (*i.e.*, released from the beach). It is assumed that a solitary animal stranded because it is unhealthy and if the animal is refloated, it is likely to strand again. For mass strandings,

1 most of the animals are likely to be healthy and may be refloated from the stranding site. These  
2 animals would be marked with some form of identification, in case they restrand.

3 Live animal response may also include the administration of chemical agents (sedatives, antibiotics,  
4 euthanasia solution) or other veterinary intervention on the beach. All euthanasia procedures would  
5 follow the American Veterinary Medical Association (AVMA) guidelines (AVMA 2001) and/or the  
6 American Association of Zoo Veterinarians (AAZV) guidelines (AAZV 2006). While conducting a  
7 beach response, the stranding network member may cordon off or close areas of the beach to public  
8 access. All dead and live stranded animals are assessed for signs of human interaction. Human  
9 interactions include vessel interactions (*e.g.*, propeller lacerations and blunt trauma), entanglements in  
10 fishing gear or marine debris, ingestion of gear and debris, and gun shots. Training is provided to the  
11 National Stranding Network on human interaction documentation to ensure consistency in reporting  
12 and aid in management decisions.

13 Hazing of marine mammals may occur if an animal is in the vicinity of an oil or hazardous material  
14 spill, HABS, or sonar. Animals may also be hazed to deter a potential mass stranding. For all marine  
15 mammals, including threatened and endangered species, hazing is authorized under the MMHSRP's  
16 ESA/MMPA permit. Hazing methods include, but are not limited to, the use of acoustic and visual  
17 deterrents, vessels, exclusion devices, and capture and relocation. Active and passive acoustic  
18 deterrents may be used to deter cetaceans. Pingers, which are typically used in the commercial  
19 fishing industry, produce high-frequency pulses of sound to deter animals. Passive deterrents include  
20 devices that provide a reflection of echolocation signals. Pinniped acoustic deterrents include bells,  
21 firecrackers, or starter pistols. Visual deterrents for pinnipeds include flags, streamers, and flashing  
22 lights. Vessels can be used to herd animals back out to open water or away from a hazardous  
23 situation. Exclusion devices for pinnipeds may include nets or fencing. Please see Appendix H for  
24 more detailed information on hazing methods.

### 25 **2.1.1.2 Stranding Agreement Template and Criteria**

26 While NMFS has issued SAs for many years, they have been in a variety of formats with a large  
27 amount of variability between regions. They have also differed significantly in the level of detail  
28 regarding the authorized activities of the agreement holder. The National Template for Marine  
29 Mammal SAs (see Appendix C) was developed to standardize the SA nationwide, while maintaining  
30 flexibility in certain areas to address differences in the NMFS regions. All sections that are in black  
31 are proposed to be implemented nationwide; the shaded sections are flexible and may be implemented

1 on a region-by-region basis. Flexible areas include reporting timelines for Level A data and  
2 additional reporting requirements (Level B and C data). The Template codifies the rights and  
3 responsibilities of both NMFS and the Stranding Network Participant. Different sections apply to  
4 different roles of stranding responders, and may be used independently or in conjunction with each  
5 other. For instance, a network member that only conducted dead animal response and necropsy  
6 activities would have Article III in their SA but not Article IV, V or VI, whereas a network member  
7 that responded to live and dead animals, and transported and rehabilitated live animals would have all  
8 Articles but VI, which corresponds to Designee organizations. One of the main differences between  
9 this template and previous versions utilized is Article IX, Section B, which sets out a procedure for  
10 probation, suspension, and eventual termination following repeated violations of the terms and  
11 conditions of the SA.

12 The SA criteria are for new and renewal SA applicants (see Appendix C). The qualifications were  
13 designed to standardize SAs across the U.S., but allow for regional flexibility when necessary. For  
14 example, in areas that are geographically remote or have low stranding coverage, the evaluation  
15 criteria may be waived based on the discretion of the NMFS Regional Administrator. Qualifications  
16 are listed for response to dead stranded marine mammals/first response; response, triage, and  
17 transport of live stranded marine mammals; and rehabilitation and release of live stranded marine  
18 mammals.

19 Stranding network participants must comply with the terms and responsibilities of their SAs through:  
20 (1) timely reporting of strandings to NMFS; (2) timely submission of complete reports on basic Level  
21 A data; (3) collection and timely reporting of additional information when feasible and requested by  
22 NMFS; and (4) cooperation with other network members as well as local, state, and Federal officials.

### 23 **2.1.1.3 Stranding Agreement and Response Alternatives**

24 The following alternatives address the stranding response activities of the stranding network and the  
25 SA criteria in the Policies and Best Practices manual. These alternatives would impact Proposed  
26 Actions 1, 2, 3, and 4.

27 **Alternative A1.** No Action Alternative- SAs are not issued or renewed. No stranding  
28 response activities.

29 Under Alternative A1, NMFS would not issue new SAs or renew current SAs. The SAs would expire  
30 and authorized stranding response activities would end. The current stranding network would cease

1 to exist. Federal (not including NMFS), state, and local agencies authorized under MMPA Section  
2 109(h) would still be able to conduct emergency response to non-ESA listed species, and ESA-listed  
3 species under regulations at 50 CFR 17.21(c)(3) and 17.31(a), where applicable. However, response  
4 activities would likely be limited and localized, and would consist mostly of carcass disposal for the  
5 protection of public health and safety.

6 **Alternative A2.** Status Quo Alternative- Current SAs are renewed and current stranding  
7 response activities continue. Final SA criteria are not issued.

8 Under Alternative A2, NMFS would renew the current SAs but would not issue new SAs. Current  
9 stranding response activities would continue but new activities would not be included. New SA  
10 holders could not be added to the network and other changes to the network would not occur. The  
11 final SA criteria would not be issued. SAs would continue to be issued regionally with national  
12 programmatic oversight. Standardization would not occur or proceed slowly with resultant  
13 inefficiencies which may impact accomplishment of agency mandates.

14 **Alternative A3.** SAs are issued to any applicants after review. Final SA criteria are not  
15 issued. SAs include current and future stranding response activities.

16 Under Alternative A3, NMFS would issue SAs to any applicants after they were reviewed by the  
17 NMFS Regional Office (including renewals). The final SA Criteria would not be implemented, and  
18 the new SA template would not be utilized. SAs would include current and future stranding response  
19 activities.

20 **Alternative A4.** Preferred Alternative- Final SA criteria are implemented. SAs would be  
21 issued on a case-by-case basis. SAs include current and future stranding  
22 response activities.

23 Under Alternative A4, NMFS would implement the final SA criteria and issue SAs on a case-by-case  
24 basis to those entities meeting the SA criteria (including renewals and new applicants), utilizing the  
25 new SA template. SAs would include current and future stranding response activities. This  
26 alternative would also allow modifications to stranding activities, including response procedures,  
27 tools and equipment, and euthanasia techniques.

1 **Alternative A5.** Final SA criteria are implemented. SAs would be issued on a case-by-case  
2 basis. Stranding response to threatened, endangered, and rare animals is  
3 **required**; response to other animals is optional.

4 Under Alternative A5, NMFS would implement the final SA criteria and issue SAs on a case-by-case  
5 basis to those entities meeting the SA criteria (including renewals and new applicants), utilizing the  
6 new SA template. SAs include current and future stranding response activities, however this  
7 alternative would require response to threatened, endangered and rare animals as part of the terms and  
8 conditions of the SA. Response to all other animals would be optional, but highly encouraged.  
9 Stranding participants could respond to these non-listed animals when feasible, based upon the  
10 availability of resources.

## 11 **2.1.2 Carcass Disposal**

### 12 **2.1.2.1 Carcass Disposal Methods**

13 During stranding response activities, carcass disposal methods depend on the species, the number and  
14 size of animals, location and logistics. Location includes coastal geography, currents, and state  
15 and/or local laws and regulations. Logistics refers to the availability of equipment, resources, and  
16 manpower. The method of carcass disposal will also be based upon the chemicals used on the animal,  
17 including antibiotics, sedatives, and/or euthanasia solution.

18 One method of disposal is to leave the carcass where the stranding occurred. Natural decomposition,  
19 scavengers, and the tide will eventually dispose of the remains. Leaving the carcass on-site is  
20 possible in uninhabited areas. However it is less feasible in populated areas where the carcass may be  
21 a public health or aesthetic concern, or if chemicals were used to euthanize the animal. Another  
22 method of disposal is to move a carcass from an unsuitable area (public beach) to a more appropriate  
23 location (a remote beach or a landfill) and let it decompose. Carcasses may also be buried onsite or  
24 transported and buried in a more suitable location. A carcass can be towed out to sea and released,  
25 but the release site must be far enough from shore so the carcass will not wash up again. If a carcass  
26 returns to shore, it necessitates further response and disposal activities. A carcass can also be sunk by  
27 attaching materials, such as cement barriers or chains, to weigh the carcass down.

28 Other industrial disposal methods include incinerating, rendering, and composting. The ability of the  
29 local stranding network to utilize these methods depends greatly on the resources available in their  
30 area and cost. Composting is an alternative method of carcass disposal involving transporting

1 carcasses to a composting facility. Composting is not commonly used at the present time, but it is  
2 being explored in an experiment conducted by the University of New England utilizing funding from  
3 a recent Prescott grant. This study will look at the efficiency of composting, as well as the retention  
4 rate of euthanasia solution, bacteria and viruses, and possibly contaminants, by comparing readings  
5 from the pre-composted carcasses and the resulting compost.

#### 6 **2.1.2.2 Carcass Disposal Alternatives**

7 The following alternatives define different options for marine mammal carcass disposal. These  
8 alternatives would impact Proposed Actions 1 and 3.

9 **Alternative B1.** No Action Alternative- No carcass disposal.

10 Under Alternative B1, NMFS would terminate carcass disposal. Current SAs would expire and  
11 stranding response would cease; any disposal activities conducted by stranding network members  
12 would also cease. Carcasses of stranded animals would be left on-site to decompose or wash back out  
13 into the ocean. Federal (not including NMFS), state, and local agencies authorized under MMPA  
14 Section 109(h) would still be able to conduct carcass disposal of non-ESA listed species, and ESA-  
15 listed species under regulations at 50 CFR 17.21(c)(3) and 17.31(a), where applicable for the  
16 protection of public health and safety. Their methods of carcass disposal and their impacts would not  
17 be covered under the MMHSRP.

18 **Alternative B2.** Status Quo Alternative- Current methods of carcass disposal continue.

19 Alternative B2 would continue the current carcass disposal methods used by stranding network  
20 members.

21 **Alternative B3.** Preferred Alternative- Status Quo with the recommendation to transport  
22 chemically euthanized animal carcasses off-site.

23 Under Alternative B3, NMFS would recommend the removal of chemically euthanized animal  
24 carcasses off-site for disposal by incineration, landfill, or other methods. Animals that die naturally  
25 or euthanized by other means may be disposed of by whatever means feasible and allowed, including  
26 those methods described in Section 2.1.2.1. Alternative B3 would allow the modification of carcass  
27 disposal activities as new information is obtained regarding persistent contaminants or as disposal  
28 methods are improved or developed, including composting.

1 **2.1.3 Rehabilitation Activities**

2 **2.1.3.1 Rehabilitation Facilities and Activities**

3 Twenty-nine facilities are currently authorized under SAs, the National Contingency Plan, or as  
4 NMFS designees to conduct marine mammal rehabilitation on species under NMFS jurisdiction (see  
5 Appendix F). These facilities are highly variable in terms of species treated, capacity, and facility  
6 amenities. Some rehabilitation is conducted in the open ocean, by using nets to fence off a bay or  
7 lagoon, or by using floating platforms with nets attached. Some facilities have elaborate structures  
8 including inground pools and underwater observation windows, while other groups have only  
9 aboveground or temporary pools, which are assembled only when needed. The length of time that a  
10 facility can rehabilitate an animal may depend on the species, medical needs, or the available  
11 equipment. Most rehabilitation activities conducted in temporary (“pop-up”) pools with or without  
12 external filtration units must be short-term (days or possibly weeks), and efforts focus primarily on  
13 stabilization and assessment. Other organizations are capable of long-term rehabilitation efforts of  
14 weeks or months, although usually at considerable cost (in both money and effort). Carcass disposal  
15 methods at rehabilitation facilities include rendering, incinerating, or burial in a landfill.

16 Rehabilitation activities conducted by state or local government official in the normal course of their  
17 duties are covered by regulation at 50 CFR 216.22 (a)(3): “Where the marine mammal in question is  
18 injured or sick, it shall be permissible to place it in temporary captivity until such time as it is able to  
19 be returned to its natural habitat.” The governmental official is required to report to the Secretary of  
20 Commerce the activities under this section every six months details on the marine mammal take,  
21 including “the description of the place and means of confinement and the measures taken for its  
22 maintenance and care” when the animal has been retained in rehabilitation (50 CFR 216.22(b)(5)).

23 **2.1.3.2 Rehabilitation Facility Standards**

24 The Rehabilitation Facility Standards set minimum facility, husbandry, and veterinary standards for  
25 rehabilitating marine mammals to optimize the success of releasing the animals back to the wild (see  
26 Appendix C). The standards also address personnel health and safety issues and contingency  
27 planning. Some standards are based on the Animal Welfare Act regulations, which define minimum  
28 standards for captive marine mammals. Standards are also based on expert input from a 1998 NMFS  
29 workshop in Miami, Florida. Recommended standards (above the minimum) are included for facility  
30 design and operation and are suggestions for optimizing the rehabilitation success rate. Meeting or

1 exceeding the recommended standards may be considered a goal to strive towards when upgrading  
2 existing or designing new facilities or protocols.

### 3 **2.1.3.3 Rehabilitation Activities Alternatives**

4 The following alternatives address the rehabilitation activities of the stranding network and the  
5 Rehabilitation Facility Standards in the Policies and Best Practices manual. These alternatives would  
6 impact Proposed Actions 1, 2, 3, and 4.

7 **Alternative C1.** No Action Alternative- No rehabilitation of stranded animals.

8 Under Alternative C1, NMFS would terminate the rehabilitation of stranded animals. Current SAs  
9 would expire, stranding response would cease, and therefore animals would not be rehabilitated. Sick  
10 and injured animals would be left on the beach.

11 **Alternative C2.** Status Quo Alternative- Current rehabilitation activities continue.

12 Under Alternative C2, NMFS would continue the current rehabilitation activities of the stranding  
13 network. New rehabilitation facilities could not be added to the stranding network. Adaptive changes  
14 to rehabilitation activities would not be permitted. The final Rehabilitation Facility Standards would  
15 not be implemented.

16 **Alternative C3.** Preferred Alternative- NMFS issues new SAs and response and rehabilitation  
17 activities continue. Final Rehabilitation Facility Standards are implemented.

18 Under Alternative C3, NMFS would continue the current rehabilitation activities of the stranding  
19 network, with the ability to designate new rehabilitation facilities and modify rehabilitation activities  
20 if necessary. The final Rehabilitation Facility Standards would be implemented.

21 **Alternative C4.** New SAs are issued and response and rehabilitation activities continue.  
22 Rehabilitation of threatened, endangered, and rare animals is **required**;  
23 response to other animals is optional. Final Rehabilitation Facility Standards  
24 are implemented.

25 Under Alternative C4, NMFS would require the rehabilitation of stranded threatened, endangered,  
26 and rare animals. Rehabilitation of all other animals would be optional, but highly encouraged.  
27 Stranding participants could rehabilitate these animals when feasible, based upon the availability of  
28 resources. The final Rehabilitation Facility Standards would be implemented.



1 **2.1.4 Release of Rehabilitated Animals**

2 **2.1.4.1 Release Activities**

3 Release of a rehabilitated animal occurs when an attending veterinarian, after consultation with  
4 NMFS, determines the animal is releasable. The presumption and goals for rehabilitated animals are  
5 to release them back to the wild. In some cases, releasing a rehabilitated animal may not be the best  
6 solution for either the individual animal or its conspecifics (members of the same species). The  
7 minimum protocols for the release of a rehabilitated marine mammal are covered under regulation at  
8 50 CFR 216.27. Every six months, the marine mammal must be evaluated for releasability by the  
9 attending veterinarian. The release determination recommendation and a release plan are made by the  
10 attending veterinarian of the rehabilitation facility, in consultation with their assessment and/or  
11 husbandry team. This plan includes: 1) a description of the marine mammal, including its physical  
12 condition and estimated age; 2) the date and location of the proposed release; and 3) the method and  
13 duration of transport prior to release, per 50 CFR 216.67 (a)(2)(ii). The recommendation and release  
14 plan are reviewed and approved or changed, if necessary, by NMFS prior to a release. The release  
15 recommendation and plan are provided to NMFS at least 15 days in advance of a proposed release  
16 date. The NMFS Regional Administrator may allow for pre-approved waivers for routine pinniped  
17 cases as stated in 50 CFR 216.27(a)(2)(i)(A). This allows for the release of animals without the  
18 required 15-day advanced notice or detailed release plan for an individual case. Typically these  
19 waivers apply to cases involving routine diagnosis (*i.e.*, known cause of stranding), treatment, and  
20 rehabilitation. Such waivers require the rehabilitation facility to submit a treatment and release  
21 protocol for approval. Waivers are not considered for cetacean cases. Non-releasable animals may,  
22 with NMFS approval, be permanently placed in a public display or scientific research facility, or may  
23 be euthanized.

24 Prior to release, NMFS requires that animals be tagged or marked for individual identification, and  
25 the tag number or description of the marking reported to NMFS. Current commonly used forms of  
26 identification for cetaceans include photo identification, freeze branding, and/or a dorsal fin tag.  
27 Photo identification should include the body, face, dorsal fin, flukes, and pectoral flippers, as well as  
28 any identifying characteristics such as scars or color pattern markings. A numerical freeze brand (if  
29 applicable) would be placed on both sides of the dorsal fin or just below the dorsal fin. Roto-tags  
30 would be attached on the trailing edge of the dorsal fin. Identification of non-delphinid cetaceans is  
31 determined in consultation with NMFS. NMFS must also approve any additional forms of  
32 identification to be attached, such as VHF or satellite tags. All pinnipeds must be flipper tagged for

1 identification. Tags and placement instructions would be obtained from NMFS as appropriate for the  
2 pinniped species. Other identification methods, such as freeze branding or glue tags, may be used in  
3 addition to flipper tags. The identification method is detailed in the release plan, and will be  
4 approved by NMFS prior to being implemented, especially if unique or atypical methods are utilized.

5 Cetaceans are transported to release sites by vessel. Pinnipeds are transported via vehicle or vessel to  
6 beach or ocean release sites. Post-release monitoring is conducted for all released animals. Post-  
7 release monitoring may be conducted using mark-resight methodology, radio telemetry, or satellite  
8 tags. Monitoring should continue on a regular basis for at least one full year or, at a minimum, the  
9 battery duration of the tag.

#### 10 **2.1.4.2 Release Criteria**

11 The release criteria provide guidance for determining the release of rehabilitated marine mammals to  
12 the wild (see Appendix C). The guidance includes marine mammal species under NMFS and  
13 USFWS jurisdiction. It is a joint document developed by NMFS and USFWS in consultation with  
14 marine mammal experts. Standards are also based upon review and public comment of the 1997 draft  
15 NOAA Technical Memorandum “Release of Stranded Marine Mammals to the Wild: Background,  
16 Preparation, and Release Criteria.” The standards provide recommendations for the medical,  
17 behavioral, and developmental assessment of rehabilitated animals prior to release.  
18 Recommendations on release site selection and post-release monitoring are also included. The  
19 release criteria also require a health screen and certification before an animal is released.

#### 20 **2.1.4.3 Release Alternatives**

21 The following alternatives address the release activities of the stranding network and the release  
22 criteria in the Policies and Practices manual. These alternatives would impact Proposed Actions 1, 2,  
23 3, and 4.

24 **Alternative D1.** No Action Alternative- No animals to be released.

25 Under Alternative D1, NMFS would end the release of stranded animals. Current SAs would expire,  
26 stranding response and rehabilitation would cease, and therefore there would be no animals to release.

27 **Alternative D2.** Status Quo Alternative- Current release activities continue.

1 Under Alternative D2, NMFS would continue the current release activities of the stranding network.  
2 Adaptive changes to release activities would not be permitted. The final release criteria would not be  
3 implemented.

4 **Alternative D3.** Preferred Alternative- New SAs are issued and response, rehabilitation, and  
5 release activities continue. Final release criteria would be implemented and  
6 would include adaptive management of release activities.

7 Under Alternative D3, NMFS would continue the current release activities of the stranding network,  
8 with the ability to modify release activities (adaptive changes) when necessary. The final release  
9 criteria would be implemented.

## 10 **2.1.5 Disentanglement Network**

### 11 **2.1.5.1 Disentanglement Activities**

12 Disentanglement efforts are conducted for many marine mammals. For large whales,  
13 disentanglement efforts may include vessel and aerial searches for the affected animal and incidental  
14 harassment of non-entangled animals during these searches. Close approaches, tagging, use of buoys  
15 or sea anchors to slow an animal's movement, cutting of lines and possibly flesh (when the line is  
16 embedded), and remote sedation may occur during disentanglement. For pinnipeds and small  
17 cetaceans, disentanglement efforts may include capture with incidental disturbance of non-entangled  
18 animals, restraint, surgery, rehabilitation, administration of chemical agents (sedatives and/or  
19 antibiotics), and release. Biopsy sampling may occur, either through the use of a remote dart or the  
20 collection of tissues from the removed fishing gear. Appendix H contains the general methodologies  
21 used during disentanglement activities. All disentanglement activities of ESA-listed species are  
22 authorized under the ESA/MMPA permit; disentanglement of non-listed species are conducted under  
23 the authority of the SA.

### 24 **2.1.5.2 Disentanglement Guidelines**

25 The Marine Mammal Disentanglement Guidelines provide the definitions and roles for First  
26 Responders, Primary First Responders, and Primary Disentanglers for large whale disentanglements  
27 (see Appendix C). The five levels of responders are described, including the targeted individuals,  
28 responsibilities, and the criteria to be certified for each level. A First Responder is anyone in the  
29 disentanglement network with any level of training who may respond to an entanglement report under  
30 network protocols and authorization. A Primary First Responder is an individual with a higher

1 network classification (Levels 3-5) that may direct efforts locally and, under certain conditions and  
2 authorization, may attempt disentanglements during first response. A Primary Disentangler is an  
3 individual who can perform all the duties of a First Responder, but also meets the NMFS criteria to  
4 undertake the actual disentangling. Primary Disentanglers have a classification of Level 4 or 5 in the  
5 network. Under the direction of the NMFS Disentanglement Coordinator, these Guidelines are  
6 currently in use for the Disentanglement Network on the East Coast (both NMFS Northeast and  
7 Southeast Regions). There are approximately 165 trained members of the disentanglement network  
8 with response levels ranging from 2-5. There are several hundred more members that have been  
9 trained at response level 1.

10 There are no standardized protocols for disentanglement of small cetaceans and pinnipeds. Currently,  
11 these animals are approached on a case-by-case basis by members of the stranding network,  
12 responding to them as they would to any other stranded animal. Response to entangled small  
13 cetaceans typically requires in-water capture of free-swimming animals. Some animals may have  
14 impaired locomotion if the gear is heavy or anchored. Entangled pinnipeds are typically captured on  
15 land when they are hauled out. Animals may be freed of gear and immediately released, or brought  
16 into a rehabilitation facility for a period of time prior to release.

### 17 **2.1.5.3 Disentanglement Alternatives**

18 The following alternatives address the disentanglement network and the Disentanglement Guidelines  
19 in the Policies and Practices manual. These alternatives would impact Proposed Actions 1, 2, 3, and  
20 4.

21 **Alternative E1.** No Action Alternative- No disentanglement network.

22 Under Alternative E1, NMFS would terminate the disentanglement network. The current SAs would  
23 expire and pinniped and small cetacean disentanglement would end. The current ESA/MMPA permit  
24 would expire and disentanglement activities of ESA-listed species would not be authorized.  
25 Entangled animals may be monitored, (as long as they were not harassed during the monitoring  
26 activities), but no action would be taken to disentangle them.

27 **Alternative E2.** Status Quo Alternative- Disentanglement network continues current  
28 activities, no modifications or new members added.

1 Under Alternative E2, NMFS would continue the current activities of the disentanglement network.  
2 Current SAs would continue to allow disentanglement of pinnipeds and small cetaceans. The new  
3 ESA/MMPA permit would be issued and would authorize the current disentanglement activities for  
4 ESA-listed species. New members could not be added to the disentanglement network. Adaptive  
5 changes to disentanglement activities, including the use of newly developed equipment, would not be  
6 permitted.

7 **Alternative E3.** Preferred Alternative- Disentanglement network continues current activities  
8 on East Coast with modifications to West Coast network. The  
9 Disentanglement Guidelines and training prerequisites would be  
10 implemented.

11 Under Alternative E3, NMFS would continue the current activities of the disentanglement network,  
12 with the ability to add new participants and modify disentanglement activities and technologies when  
13 necessary. Current and future SAs would continue to allow disentanglement of pinnipeds and small  
14 cetaceans. The new ESA/MMPA permit would be issued and would authorize the current and future  
15 disentanglement activities of ESA-listed species. The East Coast network would continue their  
16 current activities. Modifications would be made to the West Coast network to coordinate the  
17 structure and training with the East Coast network. The Disentanglement Guidelines and training  
18 prerequisites for network participants would be implemented nationwide.

## 19 **2.1.6 Biomonitoring and Research**

### 20 **2.1.6.1 Biomonitoring and Research Activities**

21 The MMHSRP conducts and sponsors a variety of prospective health assessments and research  
22 projects relating to marine mammal health. The prospective health assessment research activities of  
23 the MMHSRP are conducted on stranded animals and free-ranging animals that occur in areas with  
24 known health concerns or in areas of previous health concerns. Marine mammals that are captured  
25 for these health assessments may have visible health problems (for example, skin lesions), they may  
26 have been exposed to known toxins, or they may have been exposed to other physical, chemical, or  
27 biotic stressors that are known to produce adverse health outcomes in marine mammals. The areas  
28 targeted for prospective health assessments often include areas of previous and current die-offs.

29 Many different diagnostic and research labs are under permit and/or contract with the MMSHRP to  
30 provide analyses. Services provided include histopathology, virology, bacteriology, toxicology

1 (contaminant and biotoxin analyses), and acoustic diagnostics. General research methodologies are  
2 described in Appendix H.

### 3 **2.1.6.2 Biomonitoring and Research Alternatives**

4 The following alternatives address the biomonitoring and research activities of the MMHSRP. These  
5 alternatives would impact Proposed Actions 2 and 3.

6 **Alternative F1.** No Action Alternative- Biomonitoring and research activities would not  
7 occur.

8 Under Alternative F1, NMFS would terminate the current biomonitoring and research activities of the  
9 MMHSRP. This would include the NMMTB, health assessment captures, and other various research  
10 projects.

11 **Alternative F2.** Status Quo Alternative- Continuation of current biomonitoring and research  
12 activities.

13 Under Alternative F2, NMFS PR1 would issue the MMHSRP a new ESA/MMPA permit that would  
14 include the current biomonitoring and research activities. New biomonitoring and research activities  
15 would not be added under the permit.

16 **Alternative F3.** Preferred Alternative- New ESA/MMPA permit issued to include current and  
17 future biomonitoring and research activities.

18 Under Alternative F3, NMFS PR1 would issue the MMHSRP a new ESA/MMPA permit that would  
19 include current and new biomonitoring and research activities.

## 20 **2.2 Alternatives Considered but Eliminated from Further Analysis**

### 21 **2.2.1 Stranding Response Alternatives**

22 *Stranding Response Curtailed Immediately.* This alternative would immediately stop the response  
23 to stranded animals and the current stranding network would cease to exist. Public comments  
24 supported the continuation of stranding response activities and stated that this alternative was not  
25 feasible. Under this alternative, NMFS would not be fulfilling its mandate under the MMPA, and  
26 there would be a high level of public controversy. Therefore, NMFS eliminated this alternative.

1 ***Stranding Response to Some Animals is Authorized, Other Animals are Prohibited.*** Public  
2 comments did not support prohibiting stranding response to certain animals. By denying  
3 organizations the ability to respond to some animals, these animals would have to be left on the  
4 beach. This would create public controversy, and would eliminate valuable information on marine  
5 mammal health and populations that is gained from the examination of stranded animals. Therefore,  
6 NMFS eliminated this alternative.

## 7 **2.2.2 Carcass Disposal Alternatives**

8 ***All Animals are Buried On-site.*** Burial is not an option in all geographic areas due to substrate  
9 issues (rocks or dense soil, shallow water table, inaccessibility by necessary machinery, etc.) or local  
10 restrictions. Burial of animal carcasses may be prohibited in some areas where animals strand. In  
11 addition, marine mammal carcasses have the potential to be highly toxic. Chemically euthanized  
12 animal carcasses may contain high concentrations of lethal chemicals. Other carcasses may have high  
13 toxin levels from biotoxins or other contaminants. Burying these carcasses would create a risk to  
14 scavengers, water quality, and soils. The option to transport carcasses off-site must be available.  
15 Therefore, NMFS eliminated this alternative.

16 ***All Animals are Transported Off-site for Disposal.*** Public comments did not support the alternative  
17 to transport all carcasses off-site for disposal. Transporting all carcasses off-site would place a  
18 financial burden on stranding network participants. In addition, some carcasses may not be  
19 transportable for logistical reasons: the animal is too large or too heavy to lift; equipment is  
20 unavailable or cost prohibitive; equipment is not permitted; or has no available beach access. Other  
21 disposal methods (burial, disposal at sea, natural decomposition) for non-toxic carcasses are more  
22 cost-effective and feasible. Therefore, NMFS eliminated this alternative.

23 ***No Animals are Chemically Euthanized.*** Chemical injection is currently the most common humane  
24 method of euthanasia for pinnipeds and small cetaceans. Other methods of euthanasia, such as  
25 ballistics (shooting) or explosives, may be dangerous to personnel assisting with the process as well  
26 as the public. Prohibiting the use of chemical euthanasia would require stranding personnel to either  
27 use these methods or not perform euthanasia. The use of other methods would increase the risks to  
28 human health and safety. Additional numbers of animals would be killed using other means or left on  
29 the beach to die, which could increase the suffering of the animal and potentially create public  
30 controversy. Therefore, NMFS eliminated this alternative.

### 1 **2.2.3 Rehabilitation Activities Alternatives**

2 ***Rehabilitation Activities Curtailed Immediately.*** This alternative would immediately stop the  
3 rehabilitation of stranded animals. Public comments supported the continuation of rehabilitation  
4 activities and stated that this alternative was not feasible. Under this alternative, NMFS would not be  
5 fulfilling its mandate under the MMPA. Therefore, NMFS eliminated this alternative.

6 ***Rehabilitation of Some Animals is Authorized, Other Animals are Prohibited.*** Public comments did  
7 not support prohibiting the rehabilitation of certain animals. By denying organizations the ability to  
8 respond to some animals, these animals would have to be left on the beach. This would create public  
9 controversy, and would eliminate valuable information on marine mammal health and populations.  
10 Rehabilitation of common species also gives rehabilitation facilities additional opportunities to  
11 perfect their rehabilitation practices, increasing the chance of successful rehabilitation and release of  
12 threatened, endangered and rare species. Therefore, NMFS eliminated this alternative.

### 13 **2.2.4 Release of Rehabilitated Animals Alternatives**

14 ***All Animals are Released (After Rehabilitation).*** Currently, nonreleasable animals may be placed in  
15 permanent captivity in a public display or at a research facility if they hold an APHIS exhibitor's or  
16 research license. During rehabilitation, problems may be detected that would prevent the animal from  
17 being deemed releaseable (*e.g.*, the animal has a medical issue requiring regular veterinary care and  
18 medications, or it develops behavioral problems). Requiring the facility to release this animal despite  
19 this condition would be detrimental to the welfare of the animal and possibly to the wild population  
20 and human safety. Therefore, NMFS eliminated this alternative.

21 ***Release of Some Animals is Required, Other Animals are Optional.*** Under this alternative, release  
22 of some species of rehabilitated animals would be required to occur under any circumstance, or the  
23 animal would be euthanized. Currently, these animals may be deemed nonreleaseable and placed in  
24 permanent captivity at a public display or at a research facility, where they contribute to the education  
25 of the general public or to the scientific body of knowledge. Requiring the release of animals would  
26 result in the release of inappropriate animals (those suffering from medical or behavioral conditions).  
27 This would be detrimental to the welfare of the animals and possibly to the wild population and  
28 human safety. Therefore, NMFS eliminated this alternative.

29 ***Release of Some Animals is Authorized, Other Animals are Prohibited.*** Under this alternative,  
30 release of some species of rehabilitated animals would be prohibited, regardless of the circumstances.



1 Therefore, the animal would be placed in permanent captivity at a public display or at a research  
2 facility or euthanized, even if it was “releaseable” or appropriate to be released back into the wild.  
3 This would be a detriment to the wild population and would result in overcrowding at facilities, or  
4 needless euthanasia. Therefore, NMFS eliminated this alternative.

### 5 **2.2.5 Disentanglement Alternative**

6 *Disentanglement of Some Animals is Authorized, Other Animals are Prohibited.* Under this  
7 alternative, disentanglement of some species would be prohibited, regardless of the circumstances.  
8 Therefore, the animal would remain entangled and potentially unable to feed, swim, or reproduce,  
9 even if the entanglement could be dealt with at minimum risk to the animal and the response team  
10 This would be a detriment to the wild population and would result in needless death and suffering of  
11 marine mammals. Therefore, NMFS eliminated this alternative.

### 12 **2.2.6 Biomonitoring and Research Activities Alternatives**

13 *Health Assessment Captures Would Not Occur.* Under Title IV of the MMPA, one of the purposes  
14 of the MMHSRP is to collect and disseminate reference data on the health and health trends of marine  
15 mammal populations in the wild. Health assessment captures are an integral part of collecting this  
16 health reference data. Captures are also used to provide information on animals in areas where UMEs  
17 have occurred or are occurring, and significantly contribute to UME investigations. Therefore,  
18 NMFS eliminated this alternative.

19 *Tissue Banking Would Not Occur.* The NMMTB was established under Title IV of the MMPA to  
20 store, analyze, and archive marine mammal tissues. Without the NMMTB, reference data on the  
21 health of marine mammals and populations of marine mammals would not be collected and  
22 maintained. Under this alternative, NMFS would not be fulfilling its statutory mandate to maintain  
23 the NMMTB. Therefore, NMFS eliminated this alternative.

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### 3. Affected Environment

#### 3.1 Introduction

This chapter describes the environmental and socioeconomic conditions most likely to be affected by the alternatives. The information serves as a baseline from which to identify and evaluate potential impacts from implementation of the alternatives. In compliance with NEPA, CEQ, and NOAA regulations and guidelines, the description of the affected environment focuses on those resource areas that are potentially subject to impacts from the anticipated actions. These resources include:

- Biological resources: protected and sensitive habitats, submerged aquatic vegetation (SAV) and macroalgae, sea turtles, marine mammals, threatened and endangered species, fish, birds, and other wildlife;
- Water and sediment quality;
- Human health and safety;
- Cultural resources; and
- Socioeconomics.

Some environmental resources and conditions that are often analyzed in an EIS have been omitted from this analysis. Effects in the following categories are considered insignificant or irrelevant to the anticipated actions, or impacts from the alternatives are not anticipated:

- **Air quality:** Air quality impacts from any individual activity would either be non-existent or minor (such as limited dust or emissions from a vehicle or boat engine). The impacts would be insignificant contributions when compared to impacts from other motor vehicle emissions on highways and roads where MMHSRP activity is occurring, and would not represent a significant contribution to regional air quality. Pathogen spread through treatment or necropsy of sick animals would not be considered air pollution, but is analyzed under human health and safety.
- **Noise:** Most MMHSRP activities would not result in the production of noise. One exception would be the use of heavy machinery in response or disposal activities. However, this equipment would produce noise similar to or below levels that are allowed under local ordinances governing normal construction activities, and would be of short duration and extremely localized, and therefore resulting in insignificant impacts.

- 1       • **Land use:** The activities of the MMHSRP would not involve significant changes in land use  
2       or be inconsistent with existing local and regional plans and policies on land use. The land  
3       where response activities would occur is not considered suitable for agricultural use or  
4       housing development.
- 5       • **Public services and utilities:** Public services include transportation, police, fire, and other  
6       emergency services. Utilities include electric power, gas/steam/oil, telecommunications,  
7       water facilities, storm drainage, and sanitary sewer systems. The MMHSRP's activities  
8       would not disrupt, damage, or incur any other impact to these areas.
- 9       • **Coastal zone management:** NMFS has determined that the alternatives for the MMHSRP's  
10      activities are consistent with the coastal management programs in the affected area. No  
11      significant impacts would be expected from these activities.

## 12   **3.2 Biological Resources**

### 13   **3.2.1 Definition of the Resource**

14   Biological resources include native or naturalized plants and animals, and the habitats in which they  
15   exist. Sensitive and protected biological resources include plant and animal species listed as  
16   threatened or endangered by NMFS, USFWS, or that are otherwise protected under Federal or state  
17   laws. Resources evaluated include protected and sensitive habitats; SAV and macroalgae; sea turtles;  
18   fish and shellfish; coastal and marine birds; and marine mammals.

### 19   **Protected and Sensitive Habitats**

20   Protected and sensitive habitats are usually defined as those areas that are identified as marine  
21   sanctuaries, national seashores, critical habitats, coral reefs, national parks, wildlife refuges, national  
22   forests, national monuments, estuarine research reserve sites, and fisheries management areas. These  
23   particular areas are under Federal jurisdiction and are managed by NMFS, USFWS, the National Park  
24   Service (NPS), the National Ocean Service, the Bureau of Land Management (BLM), and the U.S.  
25   Forest Service (USFS). Wilderness areas are typically designated within current national parks,  
26   national wildlife refuges (NWR), national forests, and national monuments. Jurisdiction over  
27   wilderness areas is divided between USFWS, NPS, BLM, and USFS. Sensitive habitats may also be  
28   protected under State and local jurisdictions, including protected reserves, parks, beaches, and  
29   seashores. Executive Order (EO) 13089, *Coral Reef Protection* requires federal agencies, whose  
30   actions may affect U.S. coral reef systems, to identify those actions and ensure that they will not  
31   degrade the conditions of such ecosystems. Coral reefs are colonial invertebrates that excrete a

1 calcium carbonate skeleton. Coral reefs provide habitat to a reef fish and invertebrates, increase  
2 biodiversity, and protect shorelines from coastal erosion. Coral reefs support commercial and  
3 recreational fishing, boating, scuba diving, and pharmaceutical research.

#### 4 **SAV and Macroalgae**

5 The term SAV refers to rooted, vascular, flowering plants that live and grow below the water surface  
6 (Stephan *et al.* 2000). SAV includes seagrasses and macrophytes (aquatic plants not rooted to a  
7 substrate). Macroalgae, such as seaweed and kelp, are multicellular algae large enough to be visible  
8 to the eye. SAV and macroalgae are among the most productive ecosystems in the world. Both occur  
9 in all U.S. coastal waters, with the exception of South Carolina and Georgia, where turbidity and tidal  
10 amplitude inhibit SAV growth (Stephan *et al.* 2000). SAV and macroalgae provide food and habitat  
11 for a variety of organisms, including important commercial and recreational fisheries species. SAV  
12 improves water quality, filters nutrients and contaminants, provides sediment stabilization, and  
13 reduces coastal erosion (GMP 2004).

#### 14 **Marine Mammals and Sea Turtles**

15 The mission of NMFS is to manage, conserve, and protect all living marine resources within the U.S.  
16 EEZ, including marine mammals and sea turtles. Threatened and endangered marine mammals and  
17 sea turtles are protected under the ESA. Fifteen marine mammal species (or stocks of species) within  
18 the U.S. are listed under the ESA, and 7 foreign species are listed. Six sea turtle species within the  
19 U.S. are listed under the ESA, and 2 foreign species are listed. All marine mammals are protected  
20 under the MMPA. Some populations of marine mammals are designated as depleted under the  
21 MMPA. Twenty-six species, or stocks of species, have been listed as depleted.

22 The ESA (16 U.S.C. 1531–1534), administered by NMFS and USFWS, mandates the protection and  
23 conservation of threatened and endangered species and the ecosystems on which they depend. Under  
24 the ESA, an “endangered species” is defined as any species in danger of extinction throughout all or a  
25 significant portion of its range. A “threatened species” is defined as any species likely to become an  
26 endangered species in the foreseeable future. “ESA Candidate species” are those that have been  
27 petitioned to be listed as threatened or endangered. Critical habitat may also be designated for  
28 threatened and endangered species. Critical habitat is defined as specific areas within the  
29 geographical area occupied by a species at the time of listing, if the areas contain physical or  
30 biological features essential to conservation, and those features may require special management  
31 considerations or protection. Specific areas outside the geographical area occupied by the species

1 may also be designated as critical habitat, if it is determined that the area is essential for conservation.  
2 Section 7 of the ESA requires that all Federal agencies consult with NMFS or USFWS, as applicable,  
3 before initiating any action that could affect a listed species. Under Section 7, a Federal agency must  
4 ensure that any project authorized, funded, or conducted by that agency is "...not likely to jeopardize  
5 the continued existence of any endangered species or threatened species or result in the destruction or  
6 adverse modification of habitat of such species which is determined to be critical." All six species of  
7 sea turtles occurring in the U.S. are protected under the ESA. Federal protection of sea turtles is split  
8 between NMFS and USFWS. NMFS has the lead responsibility for the conservation and recovery of  
9 sea turtles in the marine environment. USFWS has the lead responsibility for sea turtles on nesting  
10 beaches.

11 The MMPA (16 U.S.C. 1361 et seq.) protects all marine mammals, regardless of whether or not they  
12 are listed under the ESA. The Secretary of Commerce is responsible for the protection of all  
13 cetaceans (whales, porpoises, and dolphins) and pinnipeds (seals and sea lions), except walruses, and  
14 has delegated authority for implementing the MMPA to NMFS. The Secretary of the Interior is  
15 responsible for the protection of walruses, polar bears, sea otters, manatees, and dugongs, and has  
16 delegated this responsibility to the USFWS. These responsibilities include providing oversight and  
17 advice to regulatory agencies on all Federal actions that might affect these species. Marine mammals  
18 may be designated as "depleted" under the MMPA if the Secretary of Commerce, after consultation  
19 with the MMC, determines that the species or population stock is below its optimum sustainable  
20 population. Marine mammals that are listed as threatened or endangered under the ESA are also  
21 designated as depleted under the MMPA.

22 The ESA prohibits the "take" of threatened and endangered species, with certain exceptions, within  
23 the U.S, in waters under U.S. jurisdiction, and by U.S. citizens on the high seas. Under Section 3 of  
24 the ESA, "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or  
25 collect, or to attempt to engage in any such conduct." Exceptions are permitted for activities that are  
26 for scientific purposes or to enhance the propagation or survival of the affected species [Section  
27 10(a)(1)(A)] or for activities where the take would be incidental to an otherwise lawful activity  
28 [Section 10(a)(1)(B)]. Permits may be issued after submission, review, and a public comment period  
29 of an application and conservation plan, provided that the impacts of the take will be minimized to the  
30 maximum extent practicable. The taking must not appreciably reduce the likelihood of the survival  
31 and recovery of the species in the wild. Since 1999, the MMSHRP has obtained a 10(a)(1)(A) permit

1 for directed research and enhancement (including response and rehabilitation) of endangered species  
2 (Appendix G).

3 The MMPA prohibits the “take” of marine mammals, with certain exceptions, in waters under U.S.  
4 jurisdiction and by U.S. citizens on the high seas. Under Section 3 of the MMPA, “take” of marine  
5 mammals is defined as “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any  
6 marine mammal.” “Harassment” is defined as any act of pursuit, torment, or annoyance that has the  
7 potential to injure marine mammal stock in the wild, or that has the potential to disturb a marine  
8 mammal or marine mammal stock in the wild by disrupting behavioral patterns, including migration,  
9 breathing, nursing, breeding, feeding, and sheltering. The Secretary of Commerce may issue permits  
10 which authorize the direct taking of marine mammals for scientific research, importation for public  
11 display, and the enhancement of the survival or recovery of a species or stock under Section 104 of  
12 the MMPA. Permits may also be issued for photography of marine mammals for educational or  
13 commercial purposes. Since 1999, the MMHSRP has obtained an MMPA permit for directed take of  
14 marine mammals (Appendix G).

### 15 **Fish, Shellfish, and EFH**

16 The ESA provides protection for threatened and endangered fish and shellfish species. The ESA  
17 allows the listing of distinct population segments (DPS) of threatened and endangered species.  
18 NMFS policy stipulates that a salmon population will be considered “distinct” for purposes of the  
19 ESA if it represents an Evolutionarily Significant Unit (ESU) of the biological species. To qualify as  
20 an ESU, a population (or group of populations) must be (a) reproductively isolated from populations  
21 of the same species, and (b) represent an important component in the evolutionary legacy of the  
22 species.

23 Pursuant to Section 303(a) (7) of the Magnuson-Stevens Fishery Conservation and Management Act,  
24 regional fishery management councils must identify EFH used by all life history stages of each  
25 managed species. EFH is defined as waters and substrate that are necessary to the species for  
26 spawning, breeding, feeding, or growth to maturity. EFH that provides extremely important  
27 ecological functions or are particularly vulnerable to degradation should be identified as habitat areas  
28 of particular concern in order to prioritize conservation efforts. Activities that have been shown to  
29 affect EFH include disturbance or destruction of habitat from stationary fishing gear, dredging and  
30 filling, agricultural and urban runoff, direct discharge, and the introduction of exotic species.  
31 Consultation with NMFS is required if a proposed action permitted, funded, or undertaken by a

1 Federal agency could adversely affect EFH. When a Federal agency determines that an action may  
2 adversely affect EFH, the agency must initiate consultation with NMFS. The Federal agency must  
3 submit to NMFS an EFH assessment containing “a description of the action; an analysis of the  
4 potential adverse effects of the action on EFH and the managed species; the federal agency’s  
5 conclusions regarding the effects of the action on EFH; and proposed mitigation, if applicable.” For  
6 this PEIS, consultation with NMFS was initiated on June 22, 2006. An EFH Assessment was  
7 completed in March 2008. The consultation determined that impacts to EFH would not be expected  
8 to occur, with mitigation, as a result of the Proposed Actions and alternatives; therefore EFH will not  
9 be discussed further.

## 10 **Coastal and Marine Birds**

11 The ESA provides protection for threatened and endangered bird species. The Migratory Bird Treaty  
12 Act and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, provide  
13 protection for all migrating bird populations. Under these regulations, NMFS is required to analyze  
14 the potential impacts its actions may have on threatened, endangered, and migratory birds.

## 15 **3.2.2 Affected Environment**

### 16 **3.2.2.1 Protected and Sensitive Habitats**

17 Atlantic Coast federally protected and sensitive habitats include 14 National Estuarine Research  
18 Reserves (NERRs), 69 National Wildlife Refuges (NWRs), 5 National Marine Sanctuaries (NMSs), 5  
19 national parks, 8 national seashores, 10 wilderness areas, and 1 ecological preserve (DOC/NOAA and  
20 DOI 2006, Wilderness.net 2006). Critical habitat has been designated for the North Atlantic right  
21 whale (*Eubalaena glacialis*), West Indian manatee, piping plover (*Charadrius melodus*), yellow-  
22 shouldered blackbird (*Agelaius xanthomus*), green sea turtle (*Chelonia mydas*), leatherback sea turtle  
23 (*Dermochelys coriacea*), hawksbill sea turtle (*Eretmochelys imbricata*), and Johnson’s seagrass  
24 (*Halophila johnsonii*) (Appendix E, Table E-1).

25 There are 39 designated coral reefs ranging from the southern tip of South Carolina to the Upper  
26 Florida Keys. Gray’s Reef, located off of Sapelo Island, GA, is one of the largest nearshore live-  
27 bottom reefs in the southeastern U.S. Fifty-four coral reefs are located within Puerto Rico and the  
28 U.S. Virgin Islands. The staghorn coral (*Acropora cervicornis*) and elkhorn coral (*Acropora*  
29 *palmata*) are the first coral species to be listed as threatened under the ESA (Appendix E, Table E-5).  
30 These corals are the dominant reef building species and occur through out Florida, the Bahamas, and  
31 the Caribbean. Elkhorn and staghorn coral are found in shallow water reefs in high energy zones. In

1 the action area, the corals occur in the Florida Keys, Puerto Rico, and the U.S. Virgin Islands.  
2 Current threats to the species are pollution, excess nutrients, pathogens, climate change, and  
3 overfishing (NMFS 2006a).

4 Gulf of Mexico federally protected and sensitive habitats include 5 NERRs, 32 NWRs, 1 NMS, 1  
5 national park, 2 national seashores, and 7 wilderness areas (DOC/NOAA and DOI 2006,  
6 Wilderness.net 2006). Critical habitat has been designated for the West Indian manatee, Gulf  
7 sturgeon (*Acipenser oxyrinchus desotoi*), and whooping crane (*Grus americana*). Thirty-two coral  
8 reefs are located in the Gulf of Mexico, including the Florida Middle Grounds and the Flower Garden  
9 Banks, the northernmost coral reefs in North America (Appendix E, Table E-2).

10 Pacific Coast federally protected and sensitive habitats include 6 NERRs, 34 NWRs, 5 NMSs, 1  
11 national seashore, 2 national parks, 5 national monuments, 5 national forests, 34 wilderness areas, and  
12 1 Steller sea lion conservation area (DOC/NOAA and DOI 2006, Wilderness.net 2006). Critical  
13 habitat has been designated for the following species: Steller sea lion, North Pacific right whale,  
14 Southern Resident killer whale DPS, tidewater goby (*Eucyclogobius newberryi*), Western snowy  
15 plover (*Charadrius alexandrinus nivosus*), Coastal California gnatcatcher (*Polioptila californica*  
16 *californica*), spectacled eider (*Somateria fischeri*), Steller's eider (*Polysticta stelleri*), marbled  
17 murrelet (*Brachyramphus marmoratus marmoratus*), three coho salmon (*Oncorhynchus kisutch*)  
18 ESUs, five chinook salmon (*Oncorhynchus tshawytscha*) ESUs, two chum salmon (*Oncorhynchus*  
19 *keta*) ESUs, and four steelhead (*Oncorhynchus mykiss*) ESUs (Appendix E, Table E-3).

20 Pacific Islands federally protected and sensitive habitats include Hawaiian monk seal critical habitat,  
21 four NWRs, two NMSs, one national park, and one wilderness area (DOC/NOAA and DOI 2006,  
22 Wilderness.net 2006). The Northwestern Hawaiian Islands Marine National Monument was  
23 established in June 2006. The monument encompasses the healthiest and most undisturbed coral reef  
24 ecosystem in the U.S. and contains many rare, threatened, and endangered species. Three new marine  
25 national monuments will be established in 2009 in the Pacific Islands: the Marianas Trench, Pacific  
26 Remote Islands, and Rose Atoll Marine National Monuments. Two territorially protected marine  
27 sanctuaries are located in CNMI (Appendix E, Table E-4).

### 28 **3.2.2.2 SAV and Macroalgae**

29 From Maine to Virginia, eelgrass (*Zostera marina*) is the dominant SAV species, and co-occurs with  
30 widgeon grass (*Ruppia maritima*). In North Carolina, Cuban shoalgrass (*Halodule wrightii*) and  
31 eelgrass are the dominant SAV species. No SAV occurs in South Carolina and Georgia. In Florida,



1 dominant species of SAV include Cuban shoalgrass, turtlegrass (*Thalassia testudinum*), manatee  
2 grass (*Syringodium filiforme*), and several species of *Halophila* (Stephan *et al.* 2000). Johnson's  
3 seagrass is a threatened species found along the east coast of Florida, from central Biscayne Bay to  
4 Sebastian Inlet. Critical habitat for Johnson's seagrass has been designated in the Indian River  
5 Lagoon and Biscayne Bay, FL (Appendix E, Table E-5). Macroalgae species on the Atlantic Coast  
6 include sea lettuce (*Ulva lactuca*) and rockweed (*Fucus spp.*). On the Atlantic coast, SAV loss was  
7 reported in 23 of the 62 estuaries surveyed in NOAA's National Estuarine Eutrophication  
8 Assessment. Severe SAV loss is occurring in the main stem of the Chesapeake Bay,  
9 Tangier/Pocomoke Sounds (MD), Patuxent River (MD), Choptank River (MD), and Gardiners Bay  
10 (NY). No severe SAV loss was found in the South Atlantic (North Carolina to Florida) (Bricker *et al.*  
11 1999).

12 In the Gulf of Mexico, six common SAV species include Cuban shoalgrass, turtlegrass, manatee  
13 grass, widgeon grass, paddle grass (*Halophila decipensi*), and star grass (*Halophila engelmannii*)  
14 (GMP 2004). Macroalgae species include Sargassum (*Sargassum fluitans*), forked sea tumbleweed  
15 (*Dictyota bartaryresii*), and watercress alga (*Halimeda opuntia*) (NMS 2005). SAV loss was reported  
16 in 18 of the 38 estuaries surveyed in NOAA's National Estuarine Eutrophication Assessment. Severe  
17 SAV loss is occurring in Lake Pontchartrain, LA and Galveston Bay, TX (Bricker *et al.* 1999).

18 Common SAV species on the Pacific Coast include eelgrass, surfgrass (*Phyllospadix serrulatus*), and  
19 pickelweed (*Salicornia virginica*) (NOAA CSC 2001). Macroalgae species include giant kelp  
20 (*Macrocystis pyrifera*), golden rockweed (*Silvetia compressa*), bull kelp (*Nereocystis leutkeana*),  
21 rockweed (*Fucus sp.*), and sea lettuce (NMS 2005, OCNMS 2004). An invasive alga, *Caulerpa*  
22 *taxifolia*, has been found in California coastal waters. SAV loss was reported in 8 of the 39 estuaries  
23 surveyed in NOAA's National Estuarine Eutrophication Assessment. Severe SAV loss is occurring  
24 in Morro Bay and San Francisco Bay, CA (Bricker *et al.* 1999).

25 In the Pacific Islands, common SAV species include paddle grass, Hawaiian paddle grass (*Halophila*  
26 *hawaiiiana*), *Halophila minor*, and *Halophila ovalis* (NOAA CSC 2001). Macroalgae species include  
27 *Styopodium flabelliforme*, *Halitheda opuntia*, *Caulerpa webbiana*, and *Padina australis* (NMS  
28 2005). Seagrass beds provide important foraging grounds for green, olive ridley, and loggerhead sea  
29 turtles. Six invasive species of macroalgae occur in Hawaii: *Acanthophora spicifera*, *Hypnea*  
30 *musciformis*, *Kappaphycus spp.*, *Eucaema denticulatum*, *Avrainvillea amadelpa*, and *Gracilaria*  
31 *salicornia*. These species are spreading and competing with native marine flora and fauna (Puttock *et*  
32 *al.* undated).

1 **3.2.2.3 Sea Turtles**

2 Six species of sea turtles have the potential to occur on the Atlantic Coast. Threatened species  
3 include the loggerhead (*Caretta caretta*), green, and olive ridley (*Lepidochelys olivacea*) sea turtles.  
4 Olive ridley sea turtle occurrences are rare but have been recorded in Puerto Rico, southern Florida,  
5 and the Grand Banks. Endangered species include Kemp’s ridley (*Lepidochelys kempii*), leatherback,  
6 and hawksbill sea turtles. Hawksbill sea turtles commonly occur in southern Florida, Puerto Rico, the  
7 Virgin Islands, and the northern Gulf of Mexico, and have also been documented as far north as  
8 Massachusetts. The Florida breeding population of green sea turtles is also listed as endangered  
9 (Appendix E, Table E-6). Critical habitat for the green sea turtle is designated in waters extending  
10 seaward 3 nautical miles from the mean high water line of the Culebra Islands in Puerto Rico (50  
11 CFR 226.208). Critical habitat for the hawksbill sea turtle is designated in waters extending seaward  
12 3 nautical miles from the mean high water line of Isla Mona and Monito Island, Puerto Rico (50 CFR  
13 226.209). Critical habitat for the leatherback is designated off Sandy Point on St. Croix Island in the  
14 Caribbean and around southwest Cape Point.

15 Four species of sea turtles have the potential to occur on the Pacific Coast. Threatened species  
16 include the green, olive ridley, and loggerhead sea turtles. Endangered species include the  
17 leatherback sea turtle and the green sea turtle breeding population found on the Pacific coast of  
18 Mexico. The East Pacific green turtle, or “black turtle,” may be referred to as *Chelonia mydas*  
19 *agassizii*. No sea turtles nest on the Pacific Coast of the U.S.; the closest nesting beaches are in Baja  
20 California, Mexico. However, all five species have been recorded in U.S. waters and have been  
21 found stranded on the coast. Foraging and short-term inter-breeding residency has been recorded for  
22 green turtles in San Diego and leatherbacks in central and northern California. Green sea turtles  
23 occasionally occur in Alaska and have been found in southern Alaskan waters. Olive ridley sea  
24 turtles occurrences are rare in Oregon, Washington, and Alaska, but have been recorded (Hodge  
25 2001). Loggerheads in Alaska are a rare occurrence and leatherbacks have been found in the Bering  
26 Sea (Appendix E, Table E-6).

27 Five species of sea turtles have the potential to occur in the Pacific Islands. Threatened species  
28 include the green, loggerhead, and olive ridley sea turtles. Endangered species include the  
29 leatherback and hawksbill sea turtles (Appendix E, Table E-6).

1 **3.2.2.4 Fish and Shellfish**

2 Three species of endangered fish occur on the Atlantic Coast: the Atlantic salmon (*Salmo salar*), the  
3 shortnose sturgeon (*Acipenser brevirostrum*), and the smalltooth sawfish (*Pristis pectinata*)  
4 (Appendix E, Table E-7). Atlantic salmon are a DPS located in the Gulf of Maine. Atlantic salmon in  
5 Maine outside of the range of the Gulf of Maine DPS have been proposed for listing as endangered.  
6 The shortnose sturgeon occurs throughout the Atlantic Coast and the smalltooth sawfish occurs from  
7 North Carolina to Florida. There is no critical habitat designated for these species on the Atlantic  
8 Coast, but critical habitat has been proposed for the Gulf of Maine Atlantic salmon DPS. Commercial  
9 and recreational fisheries are managed by the states; the New England, Mid-Atlantic, South Atlantic,  
10 and Caribbean Fishery Management Councils; and NMFS. Important commercial, recreational,  
11 and/or ecological species include sand lance (*Ammodytes hexapterus*), bay anchovy (*Anchoa*  
12 *mitchilli*), Atlantic croaker (*Micropongonia undulatus*), Atlantic menhaden (*Brevoortia tyrannus*),  
13 American shad (*Alosa sapidissima*), and striped bass (*Morone saxatilis*). Shellfish species include  
14 blue crab (*Calinectes sapidus*), Atlantic oyster (*Crassostrea virginica*), and hard clams (*Mercenaria*  
15 *mercenaria*) (CIMS 2006).

16 In the Gulf of Mexico, Gulf sturgeon is threatened and the smalltooth sawfish is endangered  
17 (Appendix E, Table E-8). Critical habitat has been designated for Gulf sturgeon in the Pensacola Bay  
18 system, Santa Rosa Sound, Mississippi Sound/Pascagoula Bay system, Choctawhatchee Bay system,  
19 Apalachicola Bay system, and Suwanee Sound (USFWS 2003). Critical habitat has been proposed for  
20 smalltooth sawfish along the southwestern coast of Florida. Commercial and recreational fisheries in  
21 the Gulf of Mexico are managed by the states, the Gulf of Mexico Fishery Management Council, and  
22 NMFS. Important commercial, recreational, and/or ecological species include Gulf menhaden  
23 (*Brevoortia patronis*), red drum (*Sciaenops ocellatus*), striped mullet (*Mugil cephalus*), and anchovy.  
24 Shellfish species include blue crab, stone crab (*Menippe mercenaria*), and penaeid shrimp.

25 Protected shellfish and fish species that occur throughout the West Coast (excluding Alaska) include  
26 coho salmon (threatened and endangered), chinook salmon (threatened and endangered), sockeye  
27 salmon (*Oncorhynchus nerka*) (threatened and endangered), chum salmon (*Oncorhynchus keta*)  
28 (threatened), and steelhead (threatened, endangered, and candidate). The southern DPS of green  
29 sturgeon (*Acipenser medirostris*) is listed as threatened in California. Two endangered species that  
30 only occur in California are the white abalone (*Haliostis sorenseni*) and the tidewater goby. Critical  
31 habitat has been designated for the tidewater goby and includes 10 coastal stream segments in Orange  
32 and San Diego counties, California (Appendix E, Table E-9). Critical habitat includes the stream

1 channels and their associated wetlands, floodplains, and estuaries (65 FR 69693–69717). There are  
2 no threatened or endangered fish species in Alaska.

3 On the Pacific coast, the Southern Oregon/Northern California Coasts coho ESU and the Oregon  
4 Coast coho ESU are threatened. The Central California Coast coho ESU is endangered. Critical  
5 habitat has been designated for each of these coho ESUs. Four ESUs of chinook salmon are  
6 threatened and have critical habitat: the California Coastal ESU, the Central Valley spring-run ESU,  
7 the Lower Columbia River ESU, and the Puget Sound ESU. The Sacramento River winter-run ESU  
8 of chinook salmon is endangered and critical habitat has been designated for this ESU. Two ESUs of  
9 chum salmon are threatened and have critical habitat: Hood Canal summer-run ESU and the  
10 Columbia River ESU. Three ESUs of steelhead are threatened and have critical habitat: the Northern  
11 California ESU, the Central California ESU, and the South-Central California Coast ESU. The  
12 Southern California ESU of steelhead is endangered and has designated critical habitat. Threatened  
13 chinook salmon ESUs that could be incidentally harvested in Alaska include the Snake River fall-run  
14 ESU, Upper Willamette River ESU, Puget Sound ESU, and the Lower Columbia River ESU (NMFS  
15 2005).

16 Commercial and recreational fisheries on the West Coast are managed by the states, the Pacific  
17 Fishery Management Council, the North Pacific Fishery Management Council, and NMFS.  
18 Important commercial, recreational, ecological, and/or subsistence species include salmon, California  
19 halibut (*Paralichthys californicus*), white croaker (*Genyonemus lineatus*), Pacific herring (*Clupea*  
20 *harengus pallasi*), Atka mackerel (*Pleurogrammus monopterygius*) and Pacific cod (*Gadus*  
21 *macrocephalus*) (CDFG 2001, WDFW 1997, WDFW 2006). Important shellfish species include  
22 Dungeness crab (*Cancer magister*), Pacific razor clam (*Siliqua patula*), geoduck clam (*Panopea*  
23 *abrupta*), king crab (*Paralithodes spp.*), and Tanner crab (*Chionoecetes bairdi*) (ADFG 2006).

24 No threatened or endangered species of fish occur in the Pacific Islands. Commercial and  
25 recreational fisheries are managed by the State of Hawaii, U.S. Territories, the Western Pacific  
26 Fishery Management Council, and NMFS. Important commercial, recreational, and/or ecological  
27 species include albacore tuna (*Thunnus alalunga*), skipjack tuna (*Katsuwonus pelamis*), wahoo  
28 (*Acanthocybium solanchi*), wrasses (*Labridae*), jacks (*Carangidae*), and blue marlin (*Makaira*  
29 *nigricans*) (NMFS 2005).

1 **3.2.2.5 Coastal and Marine Birds**

2 Threatened species on the U.S. Atlantic Coast include the bald eagle (*Haliaeetus leucocephalus*) and  
3 piping plover. Critical habitat for wintering populations of piping plovers has been designated along  
4 the coastal shoreline of North Carolina and south along the eastern coast of the U.S. to the Gulf of  
5 Mexico. The wood stork (*Mycteria americana*) is endangered from South Carolina to Florida. The  
6 yellow-shouldered blackbird is listed as endangered only in Puerto Rico. Critical habitat for the  
7 yellow-shouldered blackbird has been designated on the main island of Puerto Rico and on Isla Mona.  
8 The roseate tern (*Sterna dougallii dougallii*) is endangered from Maine to North Carolina. The  
9 Caribbean population of the roseate tern is threatened in Florida, Puerto Rico, and the Virgin Islands.  
10 A non-essential population of whooping cranes is located from Virginia to Florida. Individuals of the  
11 population are treated as threatened if they occur in a NWR or national park. (Appendix E, Table E-  
12 10). Seabirds, shorebirds, wading birds, and waterfowl using the Atlantic Flyway migrate through or  
13 nest on the Atlantic coast. Species include the great blue heron (*Ardea herodias*), snowy egret  
14 (*Egretta thula*), osprey (*Pandion haliaetus*), great cormorant (*Phalacrocorax carbo*), red knot  
15 (*Calidris canutus*), and whimbrel (*Numenius phaeopus*) (Clark and Niles 2000).

16 Threatened species in the Gulf of Mexico include the bald eagle and piping plover. Piping plover  
17 critical habitat has been designated along the coastal shoreline of the Gulf Coast, from Texas to  
18 Florida. The whooping crane is only listed as endangered in Texas and critical habitat has been  
19 designated along the Texas Gulf Coast. The brown pelican (*Pelecanus occidentalis*) is endangered in  
20 Texas, Louisiana, and Mississippi. The wood stork is only endangered in Alabama (Appendix E,  
21 Table E-11). The Mississippi and Central Flyways pass through the Gulf of Mexico. Species that  
22 migrate through or nest on the coast include the snowy egret, great blue heron, gull-billed tern (*Sterna*  
23 *nilotica*), sanderling (*Calidris alba*), and American oystercatcher (*Haematopus palliatus*) (Hunter *et*  
24 *al.* 2002, Elliott and McKnight 2000).

25 Threatened species found from California to Alaska include the bald eagle, marbled murrelet, and the  
26 western snowy plover (Appendix E, Table E-12). Critical habitat for the western snowy plover has  
27 been designated in California, Oregon, and Washington. Critical habitat for the marbled murrelet has  
28 been designated in Alaska. Other threatened species found in California include the Coastal  
29 California gnatcatcher and the San Clemente sage sparrow (*Amphispiza belli clementae*). Critical  
30 habitat for the Coastal California gnatcatcher has been designated in along the southern California  
31 coast.

1 Endangered species on the entire West Coast include the short-tailed albatross (*Phoebastria albatrus*)  
2 and Alaska breeding population of Steller's eider (Appendix E, Table E-12). Occurrences of Steller's  
3 eider in California, Oregon, and Washington are rare or accidental. Critical habitat for the Steller's  
4 eider has been designated in Alaska. The endangered brown pelican is found in California, Oregon,  
5 and Washington. Endangered species only found in California include the California clapper rail  
6 (*Rallus longirostris obsoletus*), light-footed clapper rail (*Rallus longirostris levipes*), San Clemente  
7 loggerhead shrike (*Lanius ludovicianus mearnsi*), and California least tern (*Sterna antillarum*  
8 *browni*). The California condor (*Gymnogyps californianus*) is an endangered species that has  
9 recently been reintroduced in Southern California and may be found along the coast. In Alaska, the  
10 spectacled eider is endangered and critical habitat has been designated.

11 The Pacific Flyway passes through the U.S. Pacific Coast. Species include the royal tern (*Sterna*  
12 *maxima*), common murre (*Uria aalge*), snowy egret, Caspian tern (*Sterna caspia*), black-crowned  
13 night heron (*Nycticorax nycticorax*), and the sooty shearwater (*Puffinus griseus*) (Hickey *et al.* 2003,  
14 USFWS 2005, ADFG 2005).

15 Eleven endangered coastal and marine bird species are found in the Pacific Islands area: the short-  
16 tailed albatross, Hawaiian coot (*Fulica Americana alai*), Hawaiian duck (*Anas wyvilliana*), laysan  
17 duck (*Anas laysanensis*), laysan finch (*Telespyza cantans*), nihoa finch (*Telespyza ultima*), Hawaiian  
18 dark-rumped petrel (*Pterodroma phaeopygia sandwichensis*), Newell's Townsend's shearwater  
19 (*Puffinus auricularis newelli*), Hawaiian stilt (*Himantopus mexicanus knudseni*), Guam bridled white-  
20 eye (*Zosterops conspicillatus conspicillatus*), and Mariana crow (*Corvus kubaryii*) (Appendix E,  
21 Table E-13). No critical habitat has been designated for these bird species.

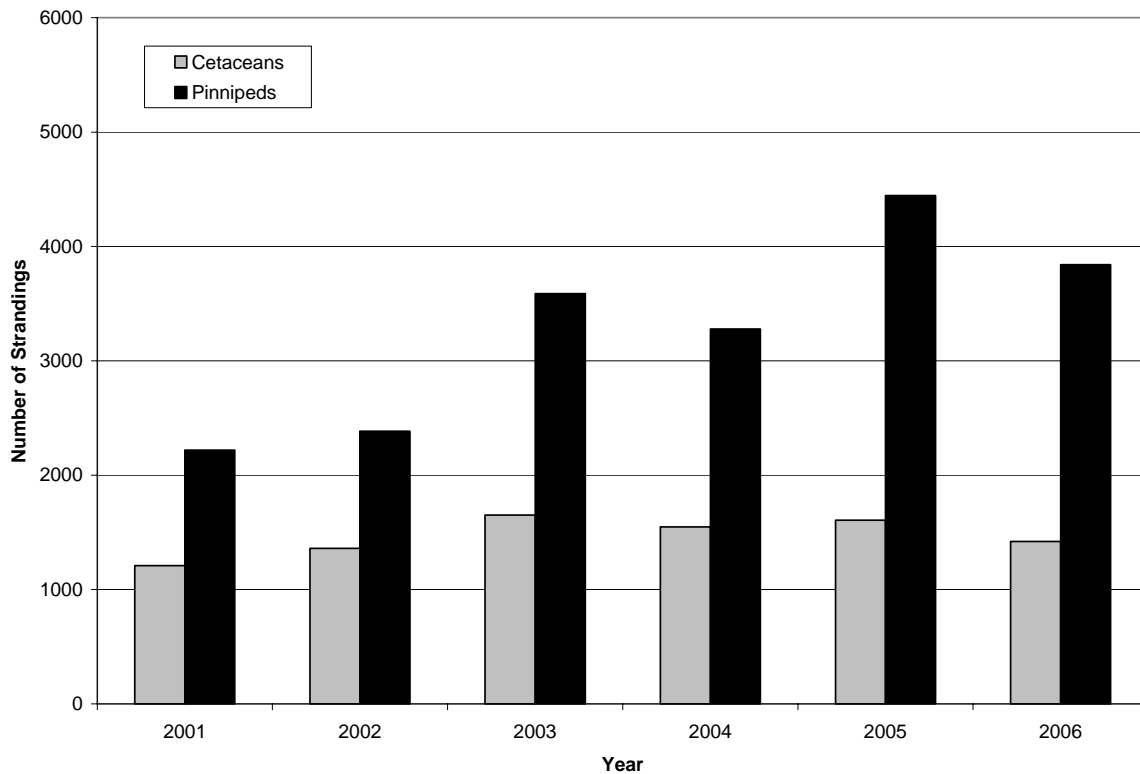
22 A variety of birds inhabit the region including geese, ducks, coots, rails, waders, and gulls. Species  
23 include the Hawaiian goose (*Branta sandvicensis*), Tahiti petrel (*Pterodroma rostrata*), black-  
24 crowned night-heron, pacific-golden plover (*Pluvialis fulva*), and red-footed booby (*Sula sula*) (HAS  
25 2002, USFWS 2005).

### 26 **3.2.2.6 Marine Mammals**

27 Most marine mammal species are wide-ranging and have been reported stranded in all NMFS regions.  
28 Populations of some species such as large whales, pinnipeds, and some small cetaceans routinely  
29 cross regional boundaries. Other marine mammals are considered resident, staying to a relatively  
30 localized area.

1 Animals that strand live may be immediately released, transferred to a rehabilitation facility,  
2 euthanized, or die naturally. Animals in rehabilitation may be released, sent to a public display or  
3 research facility (if deemed nonreleasable), euthanized, or they may die naturally. Significantly more  
4 pinnipeds strand each year than cetaceans. Figure 3-1 shows the total number of strandings (dead and  
5 live) nationwide from 2001-2006. The majority of stranded pinnipeds are alive when first reported,  
6 and up to 50 percent of the rehabilitated seals and sea lions are released back into the environment.  
7 The majority of cetaceans strand dead. Of the live-stranded small cetaceans, few are taken into a  
8 rehabilitation facility and very few are released. Only one mysticete has ever been rehabilitated in the  
9 U.S. – a juvenile gray whale (*Eschrichtius robustus*) in the Southwest Region. Figures 3-2 and 3-3  
10 summarize nationwide pinniped and cetacean strandings, respectively, from 2001-2006. Released  
11 animals are those that were taken into a rehabilitation facility and released after treatment.

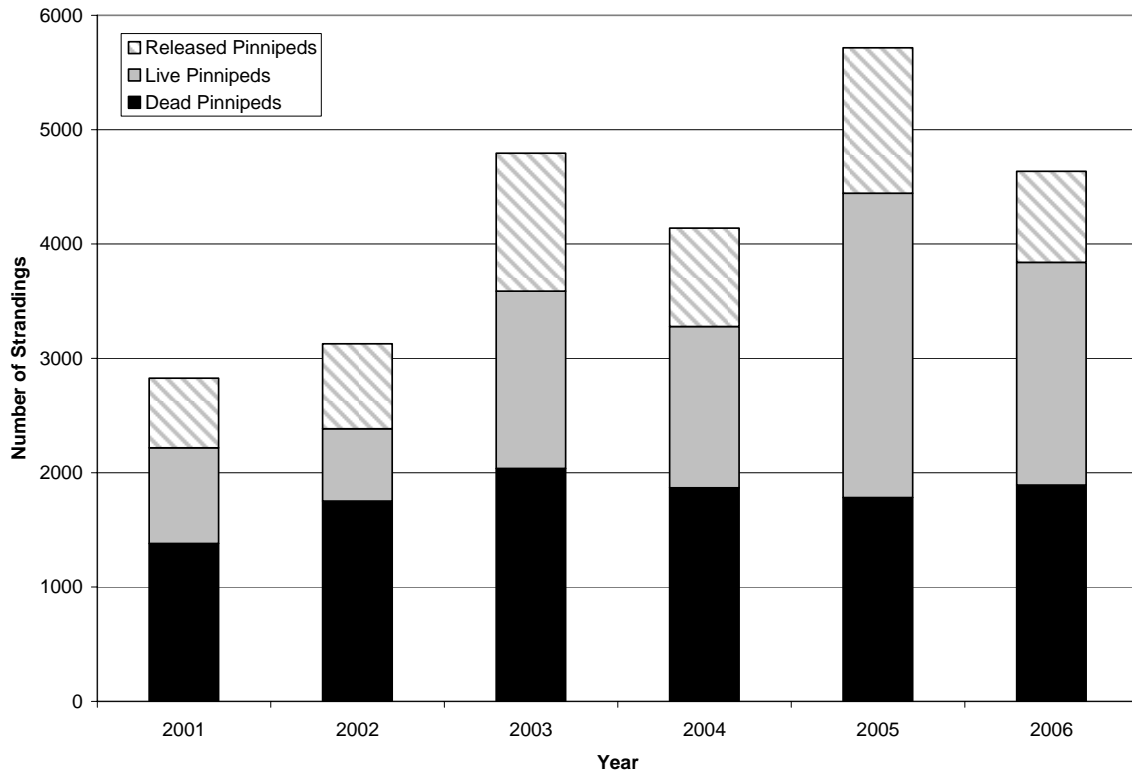
12 In this section, descriptions of the marine mammals that may occur in each NMFS region are  
13 presented, along with an overview of stranding information, including trends in strandings by  
14 numbers, species and seasonality, mass strandings, and UMEs.



15

16

**Figure 3-1. Nationwide Stranding Summary 2001-2006**



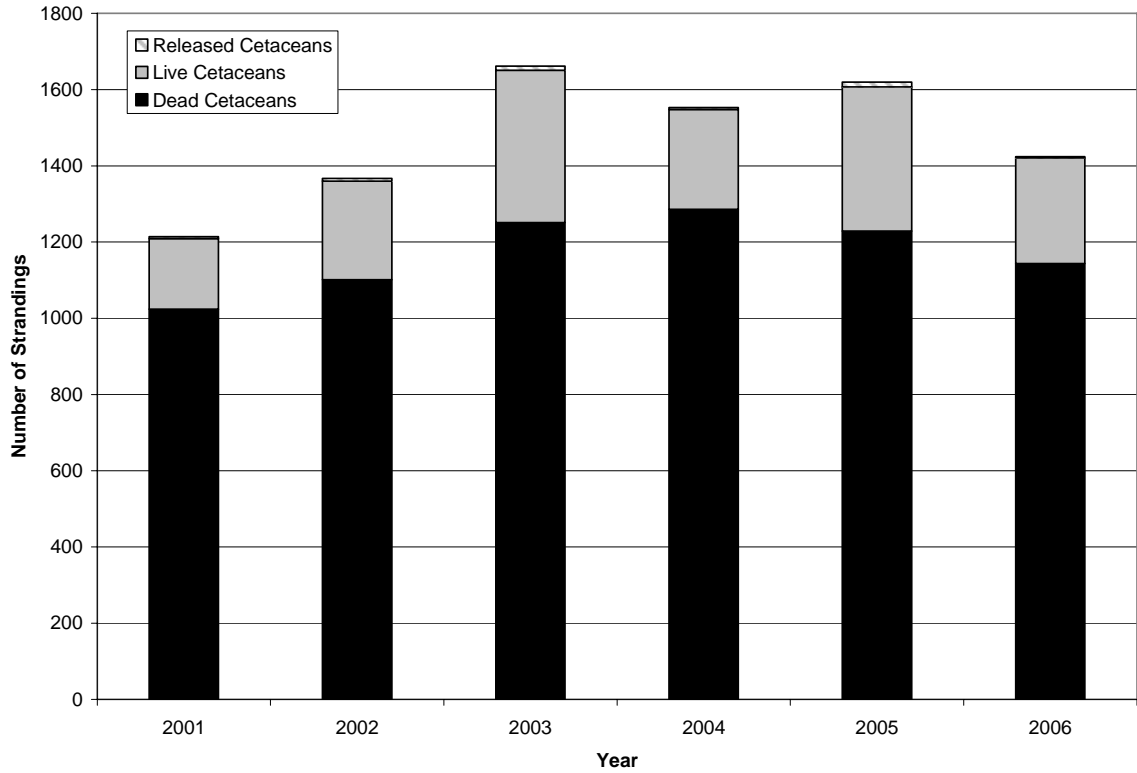
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**Figure 3-2. Pinniped Strandings Nationwide 2001-2006**





1

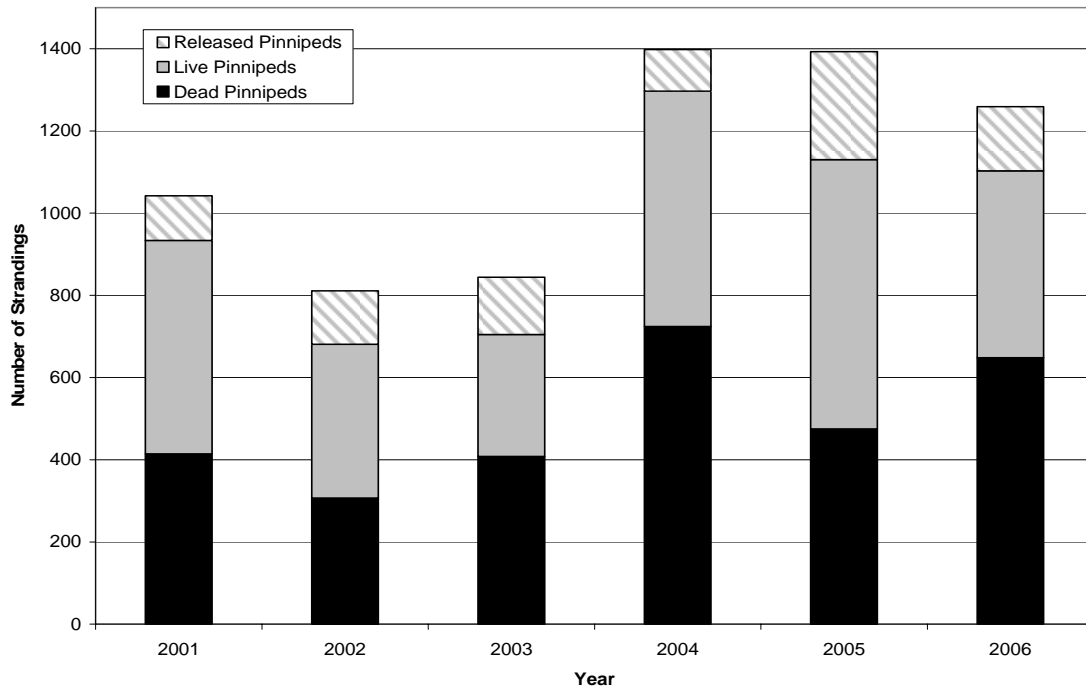
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**Figure 3-3. Cetacean Strandings Nationwide 2001-2006**

1 **NMFS Northeast Region.** Thirty-eight species of marine mammals have the potential to occur in the  
2 Northeast Region (Appendix E, Table E-14) (Geraci and Lounsbury 2005). Six of these species are  
3 listed as endangered: the North Atlantic right whale, humpback whale, fin whale, blue whale, sei  
4 whale, and sperm whale. All threatened and endangered marine mammal species are listed as  
5 depleted under the MMPA. The Western North Atlantic coastal migratory stock of bottlenose  
6 dolphins, which range from New Jersey to Florida, are also listed as depleted under the MMPA.  
7 Critical habitat for the right whale is designated within this region in portions of Cape Cod Bay,  
8 Stellwagen Bank, and the Great South Channel off the coast of Massachusetts (59 FR 28793-28834).

9 The most commonly stranded pinniped species in the Northeast Region are harbor seals (*Phoca*  
10 *vitulina*), harp seals (*Phoca groenlandica*), hooded seals (*Cystophora cristata*), and gray seals  
11 (*Halichoerys grypus*). The number of stranded pinnipeds and particularly the ice seals (harp, hooded  
12 and gray seals) has been increasing in recent years. This is believed to be due to growth in the overall  
13 Northeast pinniped populations. Figure 3-4 depicts the number of reported pinniped strandings in the  
14 Northeast Region from 2001-2006. Twelve pinnipeds were placed in public display facilities from  
15 2001-2006.

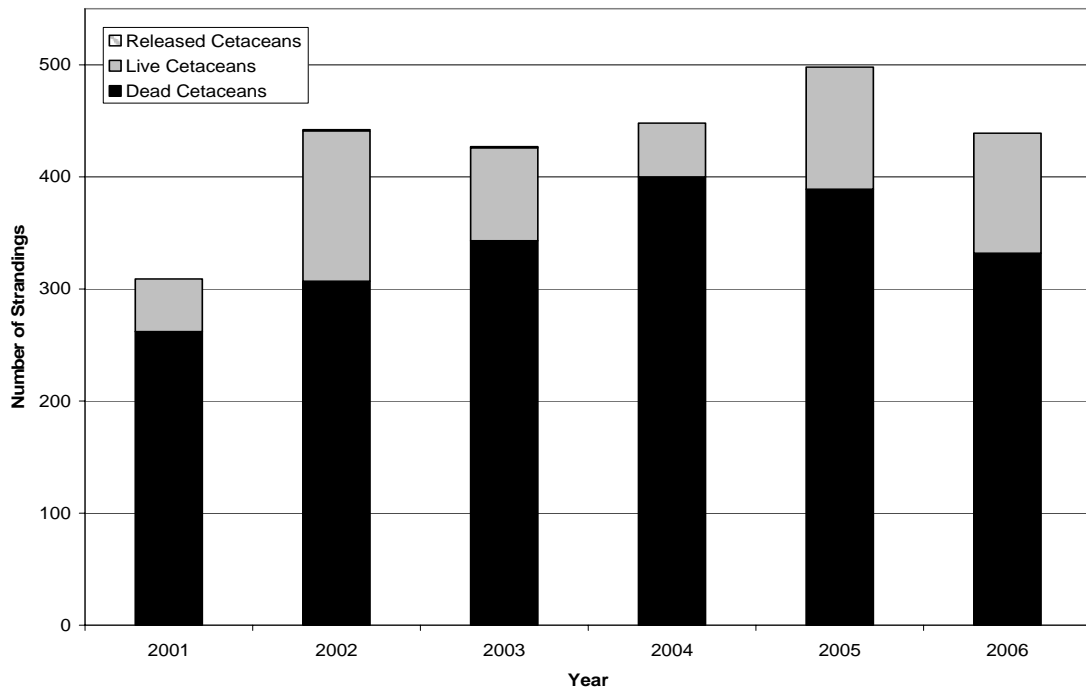
16 The most commonly stranded cetacean species in the Northeast Region are bottlenose dolphins,  
17 harbor porpoises (*Phocoena phocoena*), Atlantic white-sided dolphins (*Lagenorhynchus acutus*),  
18 common dolphins (*Delphinus delphis*), pilot whales (*Globicephala melas* and *G. macrorhynchus*),  
19 and minke whales. Other less common strandings include striped dolphins (*Stenella coeruleoalba*),  
20 Risso's dolphins, pygmy sperm whales (*Kogia breviceps*), dwarf sperm whales (*Kogia sima*), sperm  
21 whales, killer whales, humpback whales, right whales, and fin whales. Many of the large whale  
22 carcasses are discovered floating many miles offshore by aerial survey and fishery spotter planes, and  
23 never land on the beach unless towed in by the stranding network for sampling. Figure 3-5 shows  
24 cetacean strandings in the Northeast Region from 2001-2006. Two cetaceans were placed in public  
25 display facilities from 2001-2006.



1

2

**Figure 3-4. Northeast Region Pinniped Strandings 2001-2006**



3

4

**Figure 3-5. Northeast Region Cetacean Strandings 2001-2006**

1 Mass Strandings. The Northeast Region, particularly Cape Cod, MA, has one of the highest  
2 incidences of live single and mass strandings of small cetaceans in the U.S. Mass strandings occur an  
3 average of once per year on Cape Cod and 6 to 10 live cetacean stranding events (single or mass  
4 strandings) occur annually in the Northeast Region, most often in the winter. Each event may involve  
5 single or multiple animals, resulting in the large proportion of live strandings in Figure 3-5.

6 Human Interactions. Approximately 25 fisheries interactions are documented annually. Bottlenose  
7 dolphins and harbor porpoise are the small cetaceans most frequently impacted by human  
8 interactions, primarily fishery interactions. Large whales also show evidence of fishery and other  
9 human interactions. Approximately 61.6 percent of the overall right whale population shows physical  
10 evidence of entanglements (such as scars) and between 10 to 28 percent experience entanglement  
11 each year (Hamilton *et al.* 1998, Knowlton *et al.* 2001). According to the 2003 Stock Assessment, 60  
12 percent of right whale mortalities and serious injuries reported from 1997 to 2001 resulted from  
13 entanglements or fishery interactions (NMFS 2003). This number increased to approximately 69  
14 percent from 1999 to 2003 (NMFS 2005b). Disentanglement activity reports to the MMHSRP have  
15 verified entanglements of right, humpback, fin, and minke whales. Ship strikes of right whales have  
16 also been documented in the region. More than half (56 percent) of the recorded right whale ship  
17 strikes from 1975 to 2002 occurred off the coasts of the Northeast U.S. and Canada, and the mid-  
18 Atlantic area accounted for 22 percent (Jensen and Silber 2003). Six confirmed ship strikes of Gulf  
19 of Maine humpback whales and eight confirmed ship strikes of Western North Atlantic fin whales  
20 occurred from 2001 to 2005 in the Northeast Region (Nelson *et al.* 2007). Ship strikes have also been  
21 documented for sperm, sei, blue, and minke whales (Jensen and Silber 2003).

22 Temporal Changes. Stranding patterns vary temporally as marine mammal distribution changes with  
23 the seasons. In the spring, strandings of gray seal pups and harbor porpoise are common, as well as  
24 mass strandings of small cetaceans. Harbor seal pups, bottlenose dolphins, and large whale  
25 strandings are common in summer. Ship strikes and entanglements are frequent in summer. Fall  
26 strandings may include marine mammals in out of habitat situations. Common strandings in winter  
27 include juvenile ice seals, as they fail to forage successfully. Ice seal populations have also been  
28 increasing in Canada, leading to increasing numbers of animals in U.S. waters.

29 Marine Mammal Population Changes. The North Atlantic right whale population continues to be  
30 depleted and has not shown any signs of recovery. The best estimate of the size of the North Atlantic  
31 right whale population is a range of 300 to 350. Although other population size estimates are  
32 available, the most recent Stock Assessment Report (Waring *et al.* 2007) indicates that the best

1 estimate minimum population size for the species is 313 individually-recognized whales known to be  
 2 alive in 2002. Recent models indicate that this population is likely declining, rather than remaining  
 3 static or increasing (Caswell *et al.* 1999). Recent abundance estimates of the humpback whale Gulf  
 4 of Maine stock indicated a continued increase in population growth. However, the size of the  
 5 humpback whale stock may be below the Optimum Sustainable Population (OSP) in the U.S. EEZ.  
 6 Populations of gray, harp, hooded, and harbor seals are likely increasing in the U.S. EEZ (Waring *et*  
 7 *al.* 2007).

8 UMEs. Table 3-1 describes the UMEs that have occurred in the Northeast Region from 1991 to April  
 9 2008. The 2006-2007 pinniped UME was declared after morbillivirus was found in several pinnipeds  
 10 in rehabilitation, and later detected from carcasses. *Morbillivirus* is the highly contagious and lethal  
 11 genus of virus (Family Paramyxoviridae) that has been responsible for more significant marine  
 12 mammal die-offs due to infectious disease than any other pathogen to date. These *Morbillivirus* die-  
 13 offs include several seal epizootics in Northern Europe and Russia involving tens of thousands of  
 14 seals, and dolphin mortalities in the Mediterranean Sea and along the U.S. Atlantic and Gulf of  
 15 Mexico coasts. In April 2008, a UME was declared in for offshore delphinids in the Mid-Atlantic.

16 **Table 3-1. UMEs in the Northeast Region, 1991-2008**

| Year      | Species  | Location       | Cause                                 | Numbers of Animals                           |
|-----------|--|----------------|---------------------------------------|--|
| 1991      | Harbor seals   | New York       | possible erysipelas                   | 24   |
| 1992      | Phocids  | New England    | infectious disease                    | 24   |
| 2003      | Large whales (primarily humpback whales)                                 | Gulf of Maine  | domoic acid (suspected)               | 21   |
| 2003      | Harbor seals and minke whales  | Maine          | undetermined (results pending)        | 21 minke whales, 42 harbor seals             |
| 2004      | Small cetaceans  | Virginia       | undetermined                          | 67   |
| 2005      | Large whales   | North Atlantic | undetermined                          | ~34  |
| 2006-2007 | Humpback whales  | North Atlantic | undetermined, UME has not been closed | 48   |
| 2006-2007 | Pinnipeds  | North Atlantic | morbillivirus                         | >1000 (harbor, gray, harp, and hooded seals) |
| 2008      | Offshore delphinids (primarily common and Atlantic white-sided dolphins) | Mid-Atlantic   | undetermined                          | 35   |

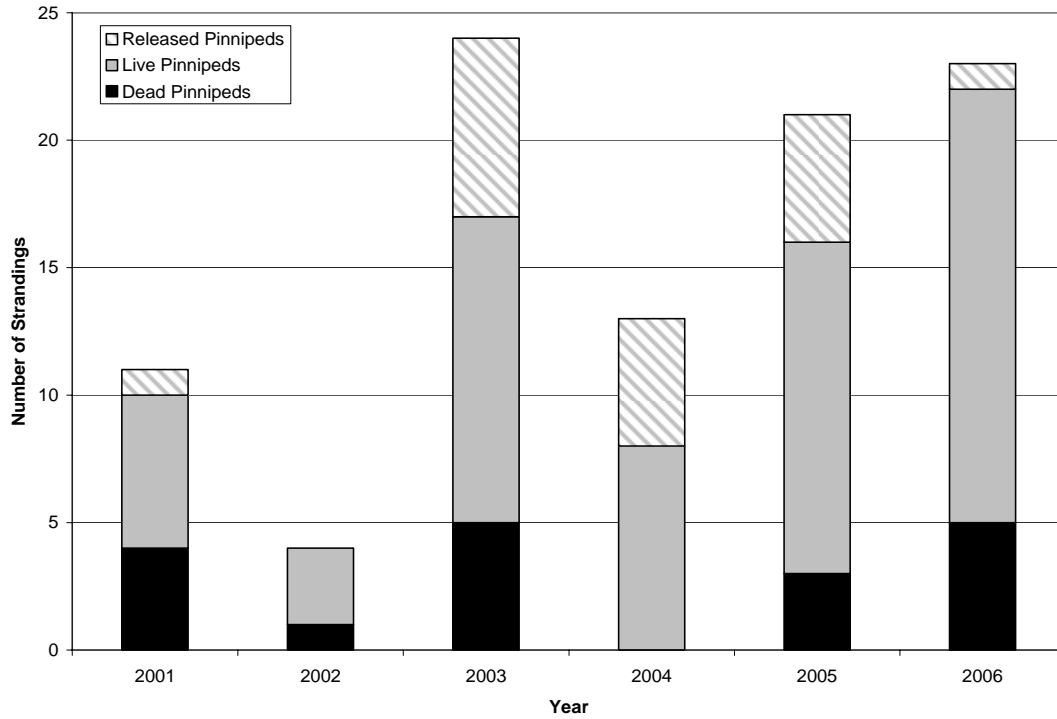
Reference: NMFS 2008b

1

2 **NMFS Southeast Region.** Thirty-two species of marine mammals have been reported in the  
3 Southeast Region (Appendix E, Table E-15) (Geraci and Lounsbury 2005). Six of these species are  
4 listed as endangered: the West Indian manatee, North Atlantic right whale, humpback whale, blue  
5 whale, sei whale, and sperm whale. All threatened and endangered marine mammal species are also  
6 listed as depleted under the MMPA. The Western North Atlantic coastal migratory stock of  
7 bottlenose dolphins are also listed as depleted under the MMPA. Critical habitat for the right whale is  
8 designated from the shoreline between the mouth of the Altamaha River, Georgia, to the Sebastian  
9 River Inlet, Florida, seaward to 15 nautical miles (59 FR 28793-28834). Critical habitat for the West  
10 Indian manatee is designated within several watersheds along the east and west coast of Florida (42  
11 FR 47840–47845).

12 The most commonly stranded pinniped species in the Southeast Region are harbor seals, representing  
13 over 90 percent of stranded pinnipeds. The majority (80 percent) of these strandings are immediately  
14 released back into the water. Other pinnipeds that strand in the Southeast Region include small  
15 numbers of hooded, harp, and gray seals. Recently there has been an increase in strandings of these  
16 seal species, many of them in the Caribbean. Figure 3-6 depicts the number of reported pinniped  
17 strandings in the Southeast Region from 2001-2004. Ten pinnipeds were placed in public display  
18 facilities from 2001-2006.

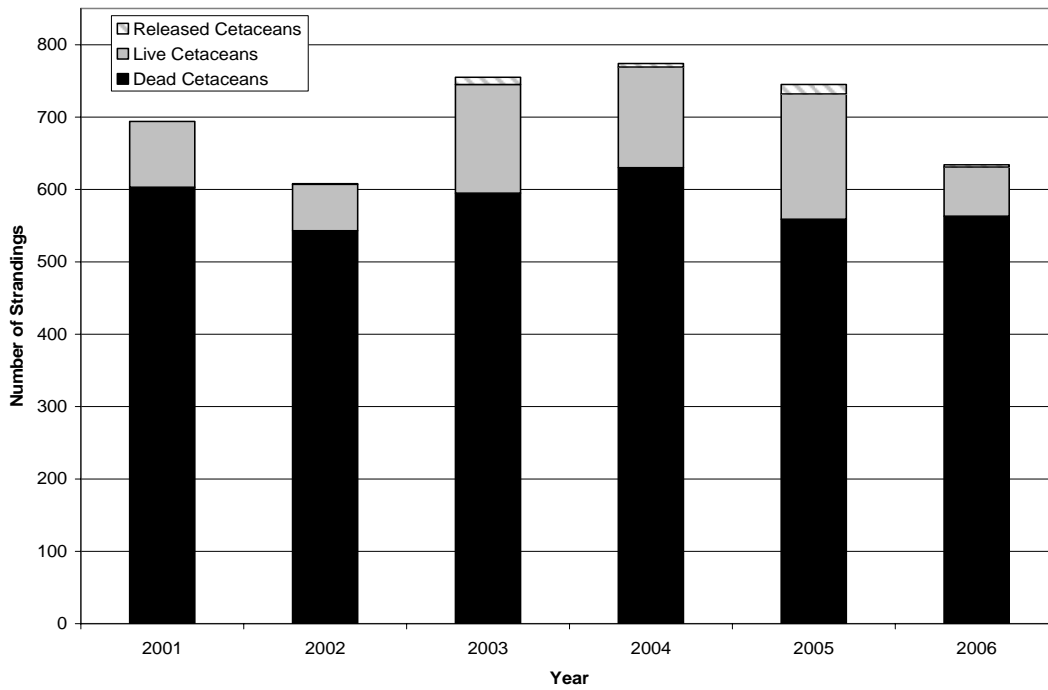
19 The Southeast region currently has the most stranded cetaceans of any region, and a variety of taxa  
20 are represented (an average of 17 species of odontocetes annually). The most commonly stranded  
21 species in the Southeast region are bottlenose dolphins, pygmy sperm whales, dwarf sperm whales,  
22 and harbor porpoise. Other cetaceans that strand regularly, but in smaller numbers overall include:  
23 striped dolphins, spinner dolphins (*Stenella longirostris*), Atlantic spotted dolphins (*Stenella*  
24 *frontalis*), pantropical spotted dolphins (*Stenella attenuata*), Fraser's dolphin (*Lagenodelphis hosei*),  
25 Risso's dolphin, rough-toothed dolphin, melon-headed whales (*Peponocephala electra*), pilot whales,  
26 and several beaked whale species. Of mysticetes, the North Atlantic right whale is the most common  
27 mysticete to strand. On average, approximately three stranded right whales are reported each year in  
28 the Southeast Region. Other mysticetes that strand in the Southeast Region include humpback whales,  
29 minke whales, and rarely Bryde's whales (*Balaenoptera edeni*) and sei whales. Figure 3-7 depicts the  
30 number of reported cetacean strandings in the Southeast Region from 2001-2006. Nineteen cetaceans  
31 were placed in public display facilities from 2001-2006.



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2

**Figure 3-6. Southeast Region Pinniped Strandings 2001-2006**



3

4

**Figure 3-7. Southeast Region Cetacean Strandings 2001-2006**

1 Mass Strandings. Mass strandings occur frequently in the Southeast Region. The majority of mass  
2 strandings are either pilot whales or rough-toothed dolphins. Other species that have mass stranded  
3 include bottlenose dolphins, Fraser's dolphins, striped dolphins, and pantropical spotted dolphins.

4 Human Interactions. Human interactions accounted for 12 percent of the total number of strandings  
5 from 2001-2004. Of these, seven percent are fishery interactions including crab pot and recreational  
6 hook and line, and the remaining five percent of human-related mortality included boat strikes, gun  
7 shot wounds, and plastic ingestion. Documented human interactions with odontocetes are primarily  
8 fisheries interactions, although ship strikes do occur. Documented human interactions with  
9 mysticetes include entanglements and ship strikes. Reported right whale strandings have been  
10 associated with entanglements and boat strikes more often than other causes. Right whale  
11 entanglements are described above under the NMFS Northeast Region section. Three humpback  
12 whales, one fin whale, and one Bryde's whale were confirmed entangled in the Southeast Region  
13 from 2001 to 2005 (Nelson *et al.* 2007). Twenty-two percent of the recorded right whale ship strikes  
14 from 1975 to 2002 occurred off the coast of the Southeast area (Jensen and Silber 2003). Two  
15 confirmed ship strikes of Gulf of Maine humpback whales have also occurred in the Southeast Region  
16 from 2001 to 2005 (Nelson *et al.* 2007).

17 Temporal Changes. Seasonal peaks are seen in many species in the Southeast Region, and are  
18 generally related to migratory patterns, calving seasons, environmental conditions (including water  
19 temperature and harmful algal blooms) and fishery activities. For example, bottlenose dolphin  
20 strandings generally occur in the spring and summer in the more southern parts of the region, and in  
21 the spring and fall towards the north. Right whale and humpback whale strandings are most common  
22 in the southern component of their home range from November through April.

23 Marine Mammal Population Changes. Population changes to North Atlantic right whales and Gulf of  
24 Maine humpbacks are the same as those listed for the Northeast Region. The West Indian manatee  
25 population trends are poorly known. However, based upon a carcass recovery program in Florida,  
26 manatee deaths have increased by an average of 5.9 percent per year from 1976 through 1992.

27 UMEs. Table 3-2 describes the UMEs that have occurred in the Southeast Region as from 1991 to  
28 April 2008.



1

**Table 3-2. UMEs in the Southeast Region, 1991-2008**

| Year      | Species                                      | Location               | Cause                               | Numbers of Animals                    |
|-----------|--|------------------------|-------------------------------------|---------------------------------------|
| 1991      | Bottlenose dolphins                          | Florida (Sarasota)     | undetermined                        | 30                                    |
| 1992      | Bottlenose dolphins                          | Texas                  | undetermined                        | 220                                   |
| 1994      | Bottlenose dolphins                          | Texas                  | morbillivirus                       | 72                                    |
| 1996      | Right whales                                 | Florida, Georgia       | human interaction                   | 6                                     |
| 1996      | Manatees                                     | Florida (West Coast)   | brevetoxin                          | 149                                   |
| 1996      | Bottlenose dolphins                          | Mississippi            | undetermined                        | 30                                    |
| 1999-2000 | Bottlenose dolphins                          | Florida (Panhandle)    | brevetoxin                          | 115                                   |
| 2001      | Bottlenose dolphins                          | Florida (Indian River) | undetermined (saxitoxin suspected)  | 35                                    |
| 2002      | Manatees                                     | Florida (West Coast)   | brevetoxin                          | 34                                    |
| 2003      | Manatees                                     | Florida (West Coast)   | brevetoxin (suspected)              | 96                                    |
| 2004      | Bottlenose dolphins                          | Florida (Panhandle)    | undetermined (brevetoxin suspected) | 107                                   |
| 2004      | Small cetaceans                              | North Carolina         | undetermined                        | 100                                   |
| 2005-2006 | Multispecies (manatees, bottlenose dolphins) | Florida (West Coast)   | brevetoxin (suspected)              | 204 bottlenose dolphins, 130 manatees |
| 2005      | Harbor porpoises                             | North Carolina         | undetermined                        | 43                                    |
| 2005-2006 | Bottlenose dolphins                          | Florida (Panhandle)    | brevetoxin (suspected)              | 97                                    |
| 2006      | Manatees                                     | Florida (Everglades)   | brevetoxin (suspected)              | 24                                    |
| 2007      | Bottlenose dolphins                          | Texas and Louisiana    | undetermined                        | 62                                    |
| 2007      | Manatees                                     | Florida (west coast)   | brevetoxin                          | 37                                    |
| 2008      | Bottlenose dolphins (majority are neonates)  | Texas                  | undetermined                        | ~120                                  |
| 2008      | Bottlenose dolphins                          | Florida (Indian River) | undetermined                        | ~48                                   |

Reference: NMFS 2008b

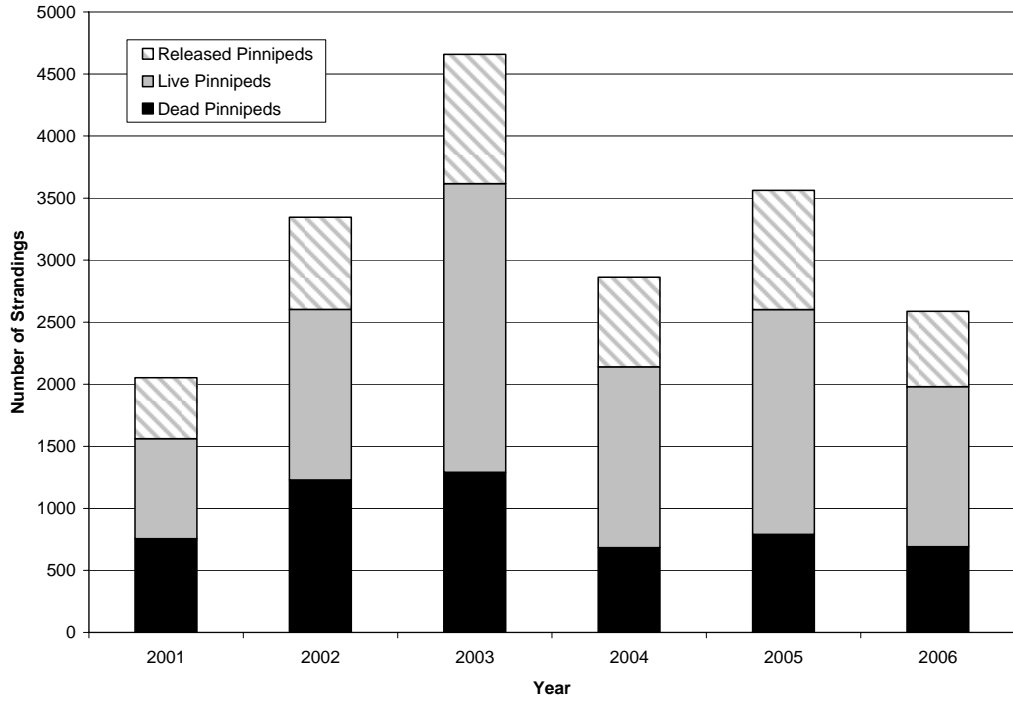
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3 **NMFS Southwest Region.** Thirty-seven species of marine mammals have the potential to occur in  
 4 the Southwest Region (Appendix E, Table E-16) (Geraci and Lounsbury 2005). The Steller sea lion,

1 southern sea otter (*Enhydra lutris nereis*), and Guadalupe fur seal are listed as threatened.  
2 Humpback, blue, sei, sperm, fin, and North Pacific right whales are listed as endangered. All  
3 threatened and endangered marine mammal species are listed as depleted under the MMPA. In  
4 California, Steller sea lion critical habitat is designated as major rookeries and their associated air and  
5 aquatic zones. The air zones extend 3,000 feet above rookery areas historically occupied by sea lions,  
6 and aquatic zones extend 3,000 feet seaward from these areas (58 FR 45269–45285).

7 The most commonly stranded pinniped species in the Southwest region are California sea lions  
8 (*Zalophus californianus*), followed by harbor seals and northern elephant seals (*Mirounga*  
9 *angustirostris*). There are also infrequent strandings of Steller sea lions, Guadalupe fur seals, and  
10 northern fur seals. Over half of all stranded otariids were reported alive when first observed. Figure  
11 3-8 depicts the number of reported pinniped strandings in the Southwest Region from 2001-2006.  
12 Eighteen pinnipeds were placed in public display facilities from 2001-2006.

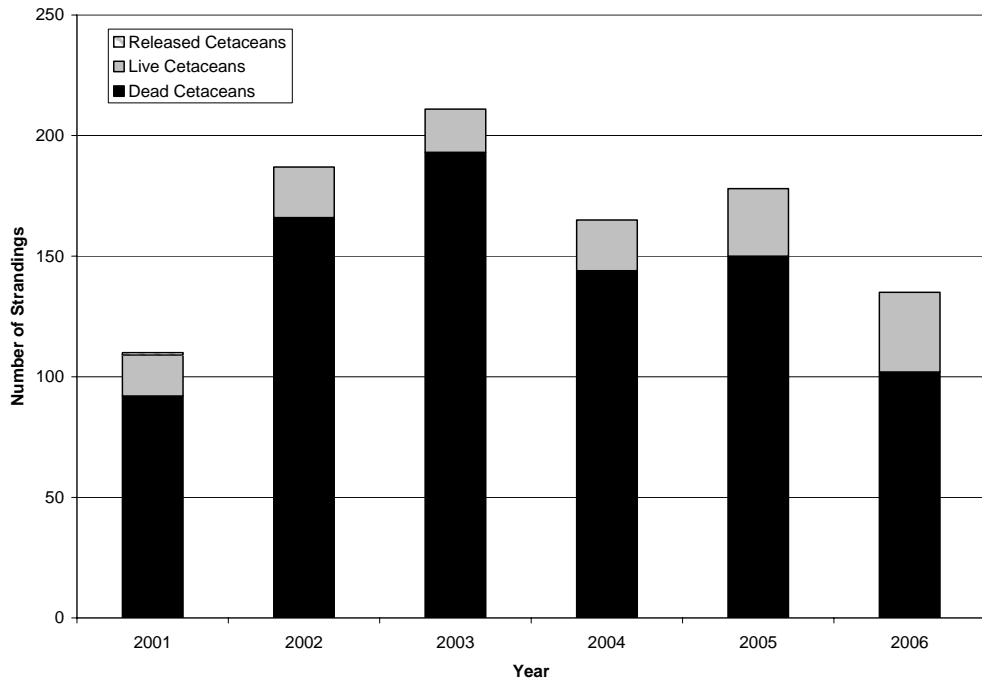
13 The most commonly stranded small cetaceans in the Southwest Region are long- and short-beaked  
14 common dolphins (*Delphinus capensis* and *D. delphis*), harbor porpoise, bottlenose dolphins, Risso's  
15 dolphins, Dall's porpoises (*Phocoides dalli*), and Pacific white-sided dolphins (*Lagenorhynchus*  
16 *obliquidens*). The most commonly stranded large whales are gray whales, which in some years are  
17 the most commonly observed stranded cetacean. Infrequently stranded cetacean species include  
18 Northern right whale dolphins (*Lissodelphis borealis*), rough-toothed dolphins, pygmy and dwarf  
19 sperm whales, sperm whales, short-finned pilot whales, beaked whales, humpback whales, and minke  
20 whales (*Balaenoptera acutorostrata*). Most stranded cetaceans are dead when first observed and  
21 reported. Figure 3-9 depicts the number of reported cetacean strandings in the Southwest Region  
22 from 2001-2006. Two cetaceans were placed in public display facilities from 2001-2006.



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**Figure 3-8. Southwest Region Pinniped Strandings 2001-2006**



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**Figure 3-9. Southwest Region Cetacean Strandings 2001-2006**

1 Mass Strandings. Mass strandings are rarely reported in the Southwest Region.

2 Human Interactions. Documented human interactions in the Southwest region include boat strikes,  
 3 fishery interactions, and deliberate shootings. Seventeen whales (10 gray whales and 7 humpback  
 4 whales) were reported entangled in fishing gear, and other animals were determined to have been hit  
 5 by ships. Each year some pinnipeds are documented to have been shot.

6 Temporal Changes. The majority of gray whale strandings in the Southwest Region occur from  
 7 March through May when the whales are found off the coast of California during their northern  
 8 migration. Several large stranding events, affecting both odontocetes and pinnipeds, have been  
 9 recorded in the spring coincident with the occurrence of large toxic phytoplankton blooms. Most  
 10 elephant seal strandings are pups and most occur from March-May during the fasting period between  
 11 the end of weaning and when the animals enter the open ocean to feed on their own. Most harbor seal  
 12 strandings occur from April-June, coinciding with the peak of pupping season.

13 Marine Mammal Population Changes. Most marine mammal stocks in California waters are stable  
 14 and/or increasing. California sea lions have been increasing recently at 5.4 percent to 6.1 percent per  
 15 year. Short-finned pilot whales have declined in abundance in the Southern California Bight. This  
 16 decline is likely a result of a change in distribution since the 1982-1983 El Niño event. The  
 17 Guadalupe fur seal population has been growing at approximately 13.7 percent per year (Carretta *et*  
 18 *al.* 2007).

19 UMEs. Table 3-3 describes the UMEs that have occurred in the Southwest Region from 1991 to  
 20 April 2008.

21 **Table 3-3. UMEs in the Southwest Region, 1991-2008**

| <b>Year</b> | <b>Species</b>       | <b>Location</b>                | <b>Cause</b>    | <b>Number of Animals</b> |
|-------------|----------------------|--------------------------------|-----------------|--------------------------|
| 1991        | California sea lions | California                     | leptospirosis   | 160                      |
| 1992-1993   | Pinnipeds            | California                     | El Nino         | ~1000                    |
| 1994        | Common dolphins      | California                     | undetermined    | 53                       |
| 1997        | Harbor seals         | California                     | viral pneumonia | 90                       |
| 1998        | California sea lions | California                     | domoic acid     | 70                       |
| 1999-2001   | Gray whales          | California, Oregon, Washington | undetermined    | 651                      |
| 2000        | California sea lions | California                     | domoic acid     | 184                      |

**Table 3-3. UMEs in the Southwest Region, 1991-2008 (continued)**

| Year | Species   | Location   | Cause                           | Number of Animals |
|------|---|------------|---------------------------------|-------------------|
| 2000 | Harbor seals  | California | infectious disease              | 26                |
| 2002 | Multispecies (common dolphins, California sea lion, sea otters) | California | domoic acid                     | ~500              |
| 2003 | Sea otters  | California | ecological factors              | 69                |
| 2007 | Cetaceans (primarily common dolphins)                           | California | domoic acid                     | 63                |
| 2007 | Large whales (primarily blue whales)                            | California | human interaction, undetermined | 8                 |

Reference: NMFS 2008b

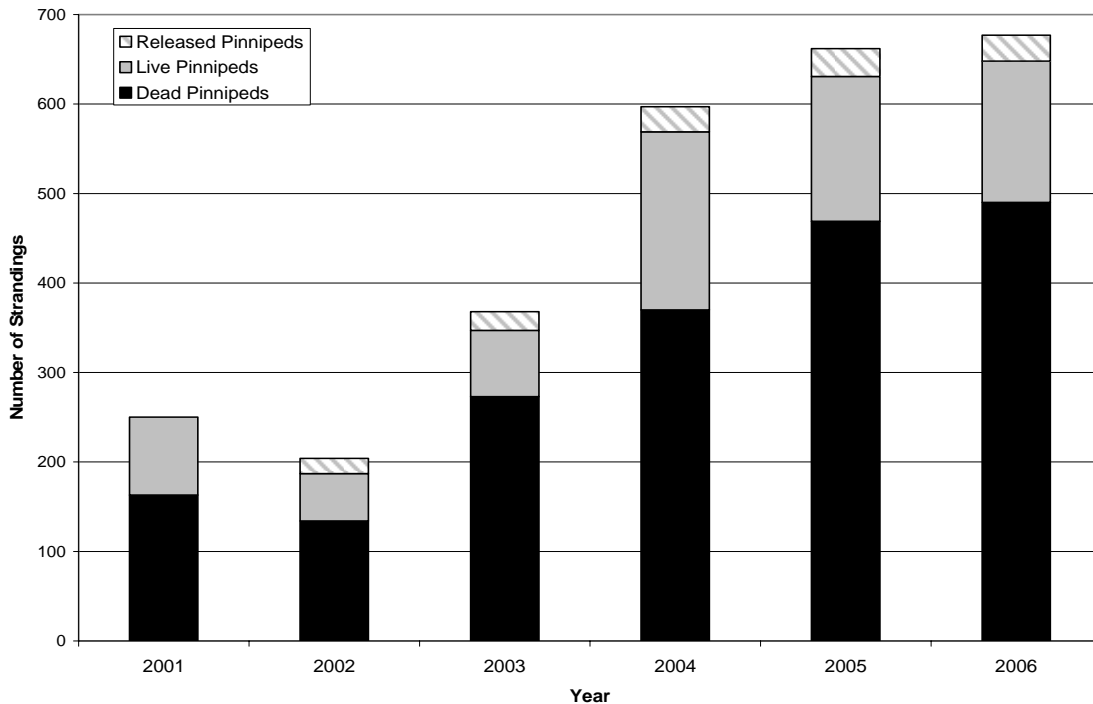
1

2 **NMFS Northwest Region.** Twenty-eight species of marine mammals have the potential to occur in  
3 the Northwest Region (Appendix E, Table E-17) (Geraci and Lounsbury 2005). The Steller sea lion  
4 is the only threatened marine mammal species in the region. Endangered marine mammal species  
5 include the humpback, blue, sei, sperm, fin, and North Pacific right whales. The Southern Resident  
6 DPS of killer whales in Washington is also listed as endangered. Approximately 2,560 square miles  
7 of inland waters of Washington have been designated as critical habitat for the Southern Resident  
8 killer whale DPS (71 FR 69054-69070). All threatened and endangered species are listed as depleted  
9 under the MMPA. The Eastern Pacific stock of the northern fur seal (*Callorhinus ursinus*) is also  
10 listed as depleted under the MMPA. In Oregon, Stellar sea lion critical habitat is designated as major  
11 rookeries and their associated air and aquatic zones. The air zones extend 3,000 feet (0.9 kilometers)  
12 above rookery areas historically occupied by sea lions, and aquatic zones extend 3,000 feet seaward  
13 from these areas (58 FR 45269–45285).

14 The majority of stranded animals in the region are harbor seals. Approximately 50 percent of  
15 stranded harbor seals are live when first observed and are predominantly pups. Other commonly  
16 stranded pinnipeds include California sea lions, Steller sea lions, and Northern fur seals. These  
17 animals are usually dead when first reported. The number of elephant seals reported to the network  
18 has recently been increasing, associated with recently colonized haul-out and breeding sites in  
19 southern Oregon and the inland waters of Washington. The majority of elephant seals that are  
20 reported to the network are not stranded, but are hauled out to molt. The network’s response includes  
21 posting signs to alert the public about the life history of the seals and to help prevent harassment of

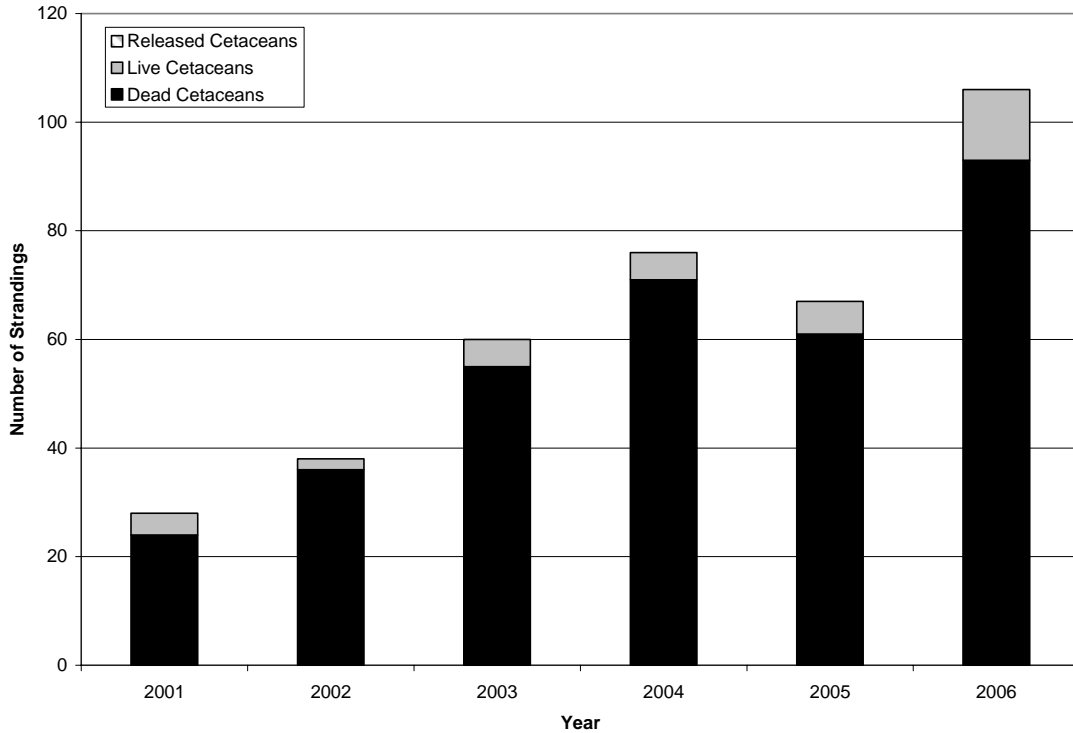
1 the resting animals. Figure 3-10 depicts the number of reported pinniped strandings in the Northwest  
2 Region from 2001-2006. The increasing trend in reported strandings, shown in Figure 3-10, may  
3 reflect improved coverage by the stranding network combined with increased funding. One pinniped  
4 was placed in a public display facility from 2001-2006.

5 The most common stranded cetacean species are the gray whale, harbor porpoises, Dall’s porpoises,  
6 Pacific white-sided dolphins, killer whales, sperm whales, Risso’s dolphin, minke, humpback, and fin  
7 whales. Seventeen different odontocete species, including beaked whales, have been reported  
8 stranded from 1989-2003. The majority of stranded odontocetes are dead when first observed.  
9 Figure 3-11 depicts the number of reported cetacean strandings in the Northwest Region from 2001-  
10 2006. The increasing trend in reported strandings, shown in Figure 3-11, may reflect improved  
11 coverage by the stranding network combined with increased funding. No cetaceans were placed in  
12 public display facilities from 2001-2006.



13 **Figure 3-10. Northwest Region Pinniped Strandings 2001-2006**

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**Figure 3-11. Northwest Region Cetacean Strandings 2001-2006**

3 Mass Strandings. The occurrence of mass strandings in Oregon and Washington is rare. However, a  
4 mass stranding of 41 sperm whales occurred in central Oregon in 1979.

5 Human interactions. Boat strikes and fisheries interactions with large whales have been documented.  
6 Documented human interactions with phocids include fisheries interactions, vehicle collisions, and  
7 shootings. Documented human interactions involving otariids are primarily shootings.

8 Temporal changes. Gray whales strand most frequently in the spring during their northward  
9 migration.

10 Marine Mammal Population Changes. The Southern Resident killer whale DPS experienced an  
11 almost 20 percent decline from 1996 to 2001. Since 2001 there has been a small increase in the  
12 population, and there were 87 whales in the Southern Resident DPS in 2007 (NMFS 2008a). Based  
13 on aerial surveys, the Washington inland stock of harbor porpoise has increased three fold since 1997.  
14 The outer coast stock of harbor porpoise appears to be declining. There has also been an increase in  
15 male California sea lions in Washington State waters.

1 UMEs. Table 3-4 describes the UMEs that have occurred in the Northwest Region from 1991 to  
 2 April 2008.

3 **Table 3-4. UMEs in the Northwest Region, 1991-2008**

| Year      | Species             | Location                       | Cause             | Numbers of Animals |
|-----------|---------------------|--------------------------------|-------------------|--------------------|
| 1993      | Pinnipeds           | Washington                     | human interaction | 53                 |
| 1999-2001 | Gray whales         | California, Oregon, Washington | undetermined      | 651                |
| 2006      | Harbor porpoises    | Oregon, Washington             | undetermined      | 113                |
| 2007      | Guadalupe fur seals | Oregon, Washington             | undetermined      | 15                 |

Reference: NMFS 2008b

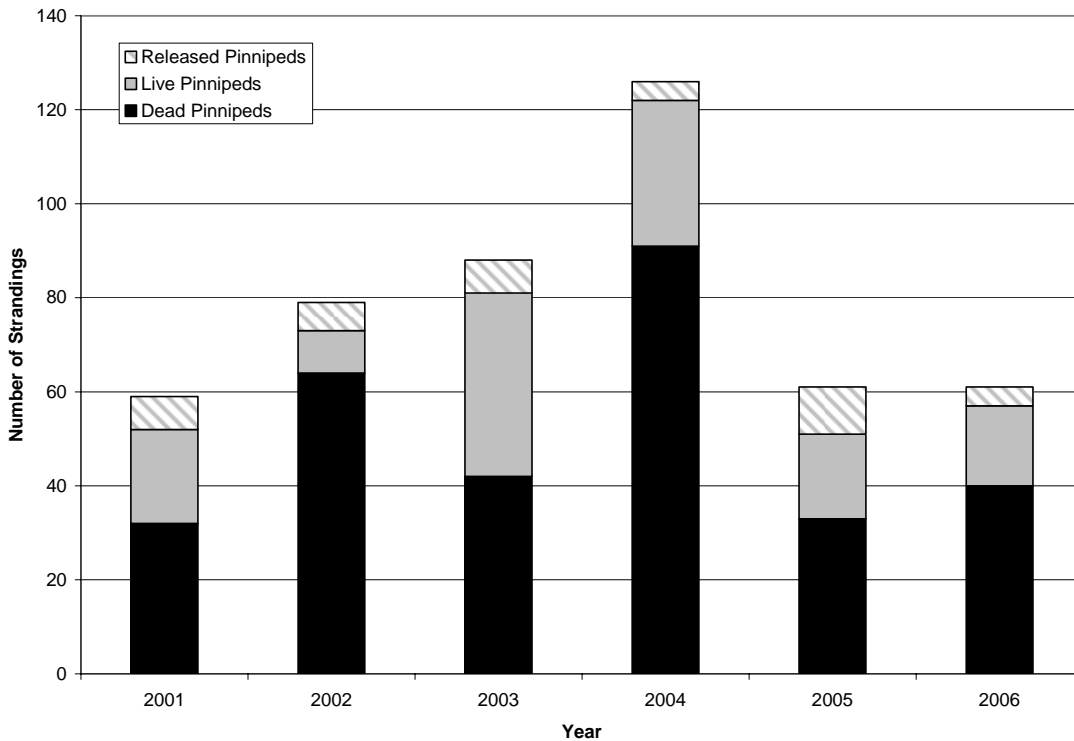
4  
 5 **NMFS Alaska Region.** Twenty-nine species of marine mammals have the potential to occur in the  
 6 Alaska Region (Appendix E, Table E-18) (Geraci and Lounsbury 2005). Threatened marine mammal  
 7 species include the southwest Alaska DPS of the northern sea otter (*Enhydra lutris kenyoni*), the  
 8 eastern DPS of the Steller sea lion, and the polar bear. Endangered marine mammal species include  
 9 the western DPS of Steller sea lions, the Cook Inlet stock of beluga whales (*Delphinapterus leucas*),  
 10 bowhead (*Balaena mysticetus*), blue, humpback, fin, sei, sperm, and North Pacific right whales.  
 11 ESA Candidate species include bearded, ringed, and spotted seals. All threatened and endangered  
 12 species are listed as depleted under the MMPA. The Eastern Pacific Stock of northern fur seals is  
 13 listed as depleted under the MMPA. The AT1 group of transient killer whales is also listed as  
 14 depleted. Critical habitat for the Steller sea lion is designated within Alaska and is defined as major  
 15 rookeries; haul-outs; and associated terrestrial, air, and aquatic zones. There are also three special  
 16 aquatic foraging areas that are designated as critical habitat for the Steller sea lion: Shelikof Strait (in  
 17 the Gulf of Alaska), Bogoslof Island area and Seguam Pass (in the Bering Strait), and the Aleutian  
 18 Islands area (58 FR 45269–45285). Critical habitat for the North Pacific right whale has been  
 19 designated in the Gulf of Alaska and the Southeast Bering Sea (71 FR 38277-38297).

20 The Alaska Regional Stranding Network coordinates with Alaska Native tribal governments and  
 21 villages, particularly for species that have co-management agreements, as mandated through Section  
 22 119 of the MMPA. Stranded animals are examined to determine if the death resulted from a struck-  
 23 but-lost situation. At times, Native villages request parts from an animal for subsistence use or  
 24 Native articles of handicrafts and clothing.



1 Stranding reports in Alaska are limited by the extensive and mostly rural coastline. Commonly  
2 reported stranded pinniped species (excluding walrus) include harbor seal, Steller sea lion, ringed  
3 seal, bearded seal, spotted seal, and elephant seal. On average, from 2001-2006, five harbor seal pups  
4 a year were brought to the rehabilitation facility in Alaska. Figure 3-12 depicts the number of  
5 reported pinniped strandings (excluding walrus) in the Alaska Region during from 2001-2006. One  
6 pinniped was placed in a public display facility from 2001-2006.

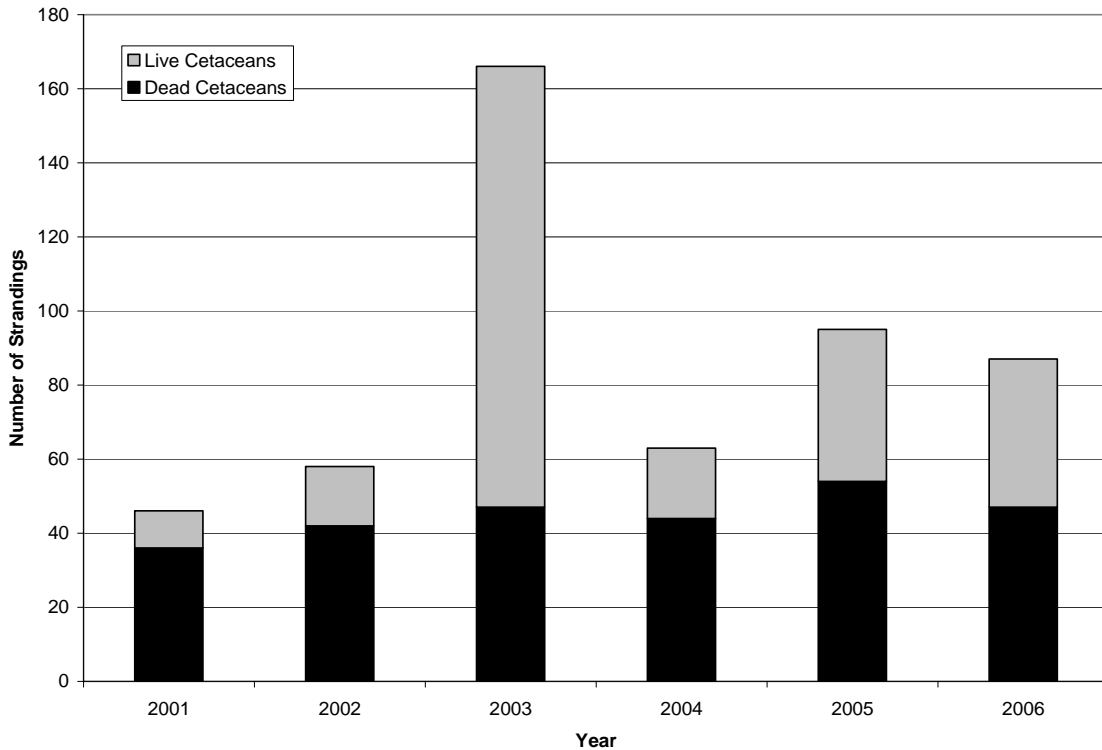
7 The most commonly stranded cetacean species in the Alaska Region are gray whales, beluga whales,  
8 humpback whales, killer whales, Dall’s porpoise, harbor porpoise, and Cuvier’s (*Ziphius cavirostris*),  
9 Baird’s (*Berardius bairdii*), and Stejneger’s (*Mesoplodon stejnegeri*) beaked whales. Infrequently  
10 reported stranded species include Pacific white-sided dolphins, sperm whales, minke whales, and fin  
11 whales. Most beluga whale strandings are from the Cook Inlet stock. On average, from 2001-2006,  
12 three beaked whale strandings were reported each year. Figure 3-13 depicts the number of reported  
13 cetacean strandings in the Alaska Region from 2001-2006. No cetaceans were released from  
14 rehabilitation during this time period. No cetaceans were placed in public display facilities from  
15 2001-2006.



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**Figure 3-12. Alaska Region Pinniped Strandings 2001-2006**



**Figure 3-13. Alaska Region Cetacean Strandings 2001-2006**

Mass Strandings. Cook Inlet beluga mass strandings, as related to tides, were reported three times in 2000 (two unconfirmed reports) and five times in 2003 (two unconfirmed reports), with a best estimate of 20 animals per event. In 2006 there were six polar bear mortalities. Mass walrus mortalities are occasionally reported at Alaska terrestrial haul-outs. In 2005, about 30 walrus died from terrain falls at Cape Pierce in the Togiak National Wildlife Refuge. Trampling deaths have been reported in the Penuk Islands near St. Lawrence Island.

Human Interactions. Documented human interactions for stranded animals include boat strikes and fisheries interactions. From 2000-2004, an average of seven humpback whale entanglements were reported annually. This number increased to approximately 22 in 2005 and 15 in 2006. Some of these entanglement events may be the result of increased reporting awareness or re-sightings of the same animal. However, the number of entangled humpback whale reports appears to be increasing. During this time, several bowhead and gray whales were also reported entangled. Several boat strike reports involving humpback whales are reported annually. Numerous cases of Steller sea lion fishery interactions are reported annually. These cases include animals that have swallowed hooks, flashers, and lures; animals with packing bands around their necks; and animals wrapped in net or other fishery

1 related material. From 1996-2000, the estimated mean mortality of walruses from fisheries activities  
2 was 1.2 walrus per year.

3 Temporal Changes. Most stranding reports of NMFS marine mammal species are received during the  
4 warmer months (May-October). No reported strandings of NMFS species appear to be from temporal  
5 or ice changes. Polar bear and Pacific walrus strandings would be most likely attributed to changing  
6 sea ice habitat and could occur year round. The most critical times for polar bears would likely be in  
7 the spring, soon after cubs are born, through the fall. For Pacific walrus, the critical time for young  
8 animals and calves would be during the late spring-early summer when the female and calves follow  
9 the ice pack north.

10 Marine Mammal Population Changes. Some marine mammal populations are increasing, including:  
11 the Central North Pacific stock of humpback whales, bowhead whales, the eastern population stock of  
12 Steller sea lions, and Bristol Bay beluga whales. Harbor seal populations have experienced declines  
13 in parts of Alaska, notably the Aleutian Islands, Prince William Sound, and Glacier Bay. Cook Inlet  
14 belugas were designated as depleted on May 31, 2000 (65 FR 34590) and endangered on October 22,  
15 2008 (73 FR 62919). Surveys on Cook Inlet belugas from 1999-2008 have demonstrated a decline of  
16 1.5 percent per year (NMFS 2008c). AT1 killer whales were designated as depleted on June 3, 2004  
17 (69 FR 31321). Northern fur seals, which were designated as depleted on May 18, 1988 (53 FR  
18 17888) are not recovering and continue to decline. The size and trend of the Pacific walrus  
19 population are currently unknown. Population point estimates from 1975-1990 ranged between  
20 202,039 to 246,360 walruses, but were not precise enough to accurately reflect trend. The Southern  
21 Beaufort Sea population and Chukchi/Bering Seas populations of polar bear are thought to be  
22 declining.

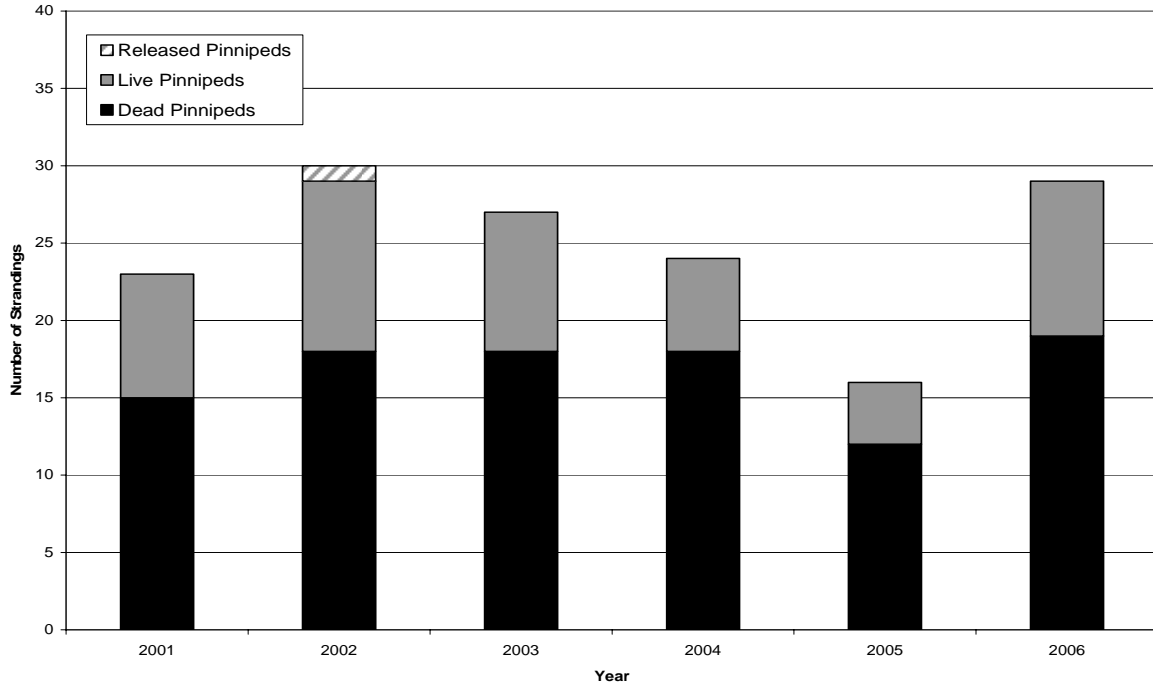
23 UMEs. A northern sea otter UME was declared in Alaska on August 24, 2006 for elevated levels of  
24 sea otter mortality since 2002, with the majority of deaths in 2005 and 2006. A significant and  
25 unusual pathology, *Streptococcus bovis* endocarditis/septicemia was reported in approximately 43  
26 percent of these animals.

27 ***NMFS Pacific Islands Region.*** Twenty-three marine mammal species have the potential to occur in  
28 the Pacific Islands Region (Appendix E, Table E-19) (Geraci and Lounsbury 2005). No threatened  
29 species occur in the region. Endangered species include the Hawaiian monk seal and humpback,  
30 sperm, and fin whales. All endangered species are listed as depleted under the MMPA. Critical  
31 habitat for the Hawaiian monk seal is designated and is defined as all beach areas, sand spits, and

1 islets (including all beach crest vegetation to its deepest extent inland), lagoon waters, and inner reef  
2 waters. Critical habitat also includes ocean waters out to a depth of 20 fathoms around Kure Atoll,  
3 Midway Islands (except Sand Island and its harbor), Pearl and Hermes Reefs, Lisianski Island,  
4 Laysan Island, Maro Reef, Gardner Pinnacles, French Frigate Shoals, Necker Island, and Nihoa  
5 Island (53 FR 18998).

6 The only pinniped species to naturally occur in the Hawaiian Islands is the Hawaiian monk seal.  
7 Hawaiian monk seals rest and pup on beaches in the main Hawaiian Islands, and may mistakenly be  
8 reported as being stranded. However, a total of 10 sick and injured (stranded) monk seals were  
9 reported from 2000-2004, and 8 of these animals were found dead. Rarely, elephant seals may also  
10 be found stranded in the main Hawaiian Islands. Figure 3-14 depicts the number of reported pinniped  
11 strandings in the Pacific Islands Region from 2001-2006. No pinnipeds were sent to public display  
12 facilities during this period.

13 The most common cetacean species to be reported stranded are humpback whales, sperm whales,  
14 spinner dolphins, spotted dolphins, and striped dolphins. Infrequently reported cetacean species  
15 include bottlenose dolphin, rough-toothed dolphin, pygmy sperm whale, dwarf sperm whales, pilot  
16 whales, false killer whales (*Pseudorca crassidens*), melon-headed whales, beaked whales, and killer  
17 whales. Approximately four large whales are reported stranded each year, with most of the strandings  
18 occurring during the humpback whale mating and calving season (November to April). Figure 3-15  
19 depicts the number of reported cetacean strandings in the Pacific Islands Region from 2001-2006. No  
20 cetaceans were sent to public display facilities during this period.

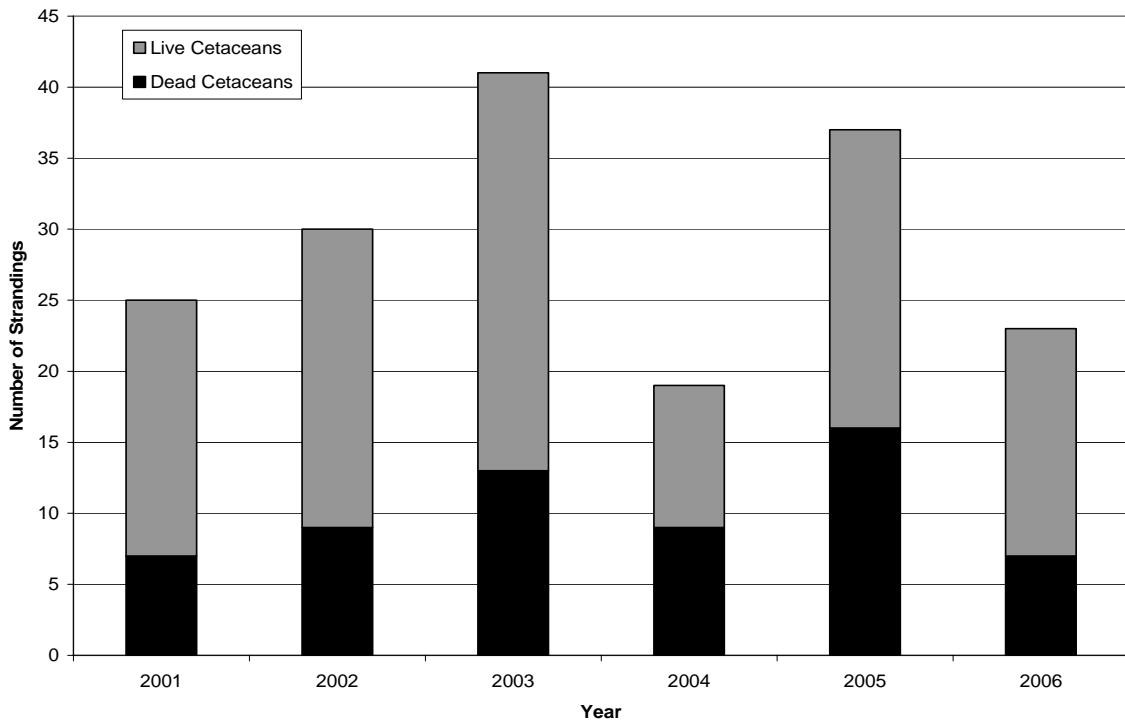


1

**Figure 3-14. Pacific Islands Region Pinniped Strandings 2001-2006**

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**Figure 3-15. Pacific Islands Region Cetacean Strandings 2001-2006**

1 Mass Strandings. Mass strandings are rarely recorded in the Pacific Islands Region. However, in  
2 2004 a group of 150-200 melon-headed whales were reported close to shore inside Hanalei Bay on  
3 the island of Kaua'i. These animals milled in shallow water for several hours and only returned to  
4 deep water after human intervention. The local citizens constructed a *lau* (a floating strand of woven  
5 vines) and used it to herd the animals out of the Bay.

6 Human Interaction. On average, four monk seals are reported hooked or entangled in fishing gear or  
7 marine debris. Documented human interactions with large whales include boat strikes and fisheries  
8 interactions. Humpback whales have been reported entangled in fishing gear, with an average of four  
9 entanglements per year.

10 Temporal Changes. No temporal changes have been noted in the Pacific Islands Region.

11 Marine Mammal Population Changes. The Hawaiian monk seal population has been declining at an  
12 average of 3.8 percent per year since 1998. The population is well below historical levels and has not  
13 recovered from past declines. Since 2000, there has been a general decline in both abundance and  
14 juvenile survival at Pearl and Hermes Reef, Midway Atoll, and Kure Atoll. The main Hawaiian  
15 Islands population may be increasing, but this has not been confirmed and the abundance appears to  
16 be too low to influence the current total population numbers (Carretta *et al.* 2007).

17 UMEs. A monk seal UME occurred from 2001 to 2002 due to starvation (NMFS 2008b).

## 18 **3.3 Water and Sediment Quality**

### 19 **3.3.1 Definition of the Resource**

20 Water quality is defined as the biological, chemical, and physical properties of a waterbody that  
21 determine it's suitability for human use or for its role in the ecosystem. In coastal environments  
22 water quality is influenced by river drainage, erosion, and atmospheric deposition (*e.g.*, precipitation  
23 and dust). Human activities affect water quality through nonpoint source runoff, pollutant discharges,  
24 dumping, hazardous material spills, and air emissions. Water quality is determine through a variety  
25 of indicators, including dissolved inorganic nitrogen (DIN), dissolved inorganic phosphorus (DIP),  
26 water clarity, and dissolved oxygen. Concentrations of DIN and DIP that indicate poor condition  
27 vary according to location. Water clarity is considered poor if less than 10 percent of surface light  
28 reaches 1 m. Dissolved oxygen is considered poor if concentrations less than 2 mg/L are present.  
29 Data on water quality are mainly taken from the Environmental Protection Agency (EPA) National  
30 Coastal Condition Report II (NCCR) (EPA 2005).

1 Sediment quality is the ability of sediment to support a healthy benthic population and it helps to  
2 determine the ecological health of aquatic systems. Sediments provide essential habitat and food for  
3 many organisms. Activities affecting sediment quality are runoff, pollutant discharges, dumping,  
4 hazardous materials spills, and air emissions. Typical sediment contaminants include heavy metals  
5 and POPs. POPs include dioxin, Polychlorinated Biphenyls (PCBs), Polycyclic Aromatic  
6 Hydrocarbons (PAHs), and pesticides. Most major harbors in the U.S. have moderate to severe  
7 sediment contamination. Sediment toxicity can be measured by conducting static toxicity tests with  
8 amphipods. Sediment contamination can be determined using Effects Range Median (ERM) and  
9 Effects Range Low (ERL) guidelines. The ERM is the median concentration of a contaminant  
10 observed to have adverse biological effects. The ERL is the 10<sup>th</sup> percentile concentration of a  
11 contaminant demonstrating adverse biological effects. Sediment toxicity from organic matter can be  
12 assessed by measuring the Total Organic Carbon (TOC) content. Data on sediment quality are  
13 compiled in the NCCR (EPA 2005).

### 14 **3.3.2 Affected Environment**

15 The North Atlantic coast is the most densely populated coastal region in the U.S. The overall  
16 estuarine ecological condition is rated as poor. Twenty-seven percent of the estuarine area is  
17 impaired for aquatic life use. Thirty-one percent of the estuarine area is impaired for human use. The  
18 water quality in estuaries is considered fair to poor. The DIN rating is fair, with 11 percent having  
19 concentrations exceeding 0.5 mg/L. The DIP rating is good, with 5 percent having concentrations  
20 exceeding 0.05 mg/L. The overall rating of water clarity is fair, with 23 percent of the estuarine area  
21 in poor condition. Northeast estuaries dissolved oxygen concentrations are good. Hypoxia and  
22 anoxia were apparent in 10 percent of the estuarine area, mainly in the isolated trenches of the  
23 Chesapeake Bay (EPA 2005).

24 A poor sediment quality rating was given to 16 percent of estuaries on the Northeast coast  
25 Unimpaired sediments are located in the Acadian Province (with the exception of Great Bay, NH),  
26 eastern Long Island Sound, and open regions of the Delaware and Chesapeake Bays. Toxic  
27 sediments were found in eight percent of Northeast estuaries. Sediments in Cape Cod Bay, New  
28 York Harbor, and western Long Island Sound are impaired by toxicity. Sediment contamination is  
29 considered fair. Sediment around major urban areas (New York Harbor, Narragansett Bay) exceeds  
30 ERM guidelines for metals and other organic contaminants. Other contaminants exceeding ERL  
31 guidelines included nickel, mercury, arsenic, chromium, Dichloro-Diphenyl-Trichloroethane (DDT),

1 and PCBs. The TOC for estuaries was good and elevated TOC levels corresponded to areas with high  
2 sediment contamination (EPA 2005).

3 Water quality of the South Atlantic coast estuaries is affected by the increasing coastal population.  
4 Estuarine areas are in fair to good ecological condition. Twenty-three percent of the estuarine area is  
5 impaired for aquatic life and human uses. The water quality in estuaries is considered fair to good.  
6 The DIN rating is good and no estuarine areas have a DIN concentration exceeding 0.5 mg/L. DIP is  
7 considered fair, with 12 percent having concentrations exceeding 0.05 mg/L. The overall rating of  
8 water clarity is fair, with 12 percent of the estuarine area in poor condition. Dissolved oxygen  
9 concentrations are good, with only two percent of the area exhibiting hypoxia. Sediment quality in  
10 the South Atlantic coast estuaries is fair to good. Sediment toxicity, contamination, and TOC are all  
11 considered good (EPA 2005).

12 In Puerto Rico, the overall ecological condition of estuaries is poor. Seventy-seven percent of the  
13 area is impaired for aquatic life use. The water quality in estuaries is considered fair. DIN is  
14 considered good, with no estuaries exceeding concentrations greater than 0.1 mg/L. The DIP rating is  
15 good, with only six percent exceeding concentrations greater than 0.01 mg/L. Water clarity is fair  
16 and dissolved oxygen concentrations are good, with one percent of the areas exhibiting hypoxia.  
17 Water quality in all of Puerto Rico's shoreline waters has been assessed. Twenty-one percent of  
18 shoreline waters are impaired, 24 percent are threatened, and 55 percent are fully supporting  
19 designated uses. Sediment quality is poor in Puerto Rico, with three percent of sediment considered  
20 toxic. Sediment contamination criteria (ERM and ERL) were exceeded in 23 percent of sediments,  
21 mostly for heavy metals, pesticides, and PCBs. Sediment TOC is poor, as 44 percent of sediment had  
22 a high TOC level (EPA 2002).

23 The U.S. Virgin Islands surface water quality is generally good, but quality is declining due to an  
24 increase in point and non-point source discharges into the marine environment. Vessel wastes and  
25 uncontrolled runoff are major direct discharges into surface waters (VI DPNR 2001). Estuaries in the  
26 Virgin Islands have not been assessed, as these waterbodies are not considered to be true estuaries.  
27 Ninety-seven percent of the shoreline has been assessed. Four percent of shoreline waters are  
28 impaired, 10 percent threatened, and 86 percent are fully supporting designated uses (EPA 2005).  
29 Sediment quality information for the Virgin Islands is not available.

30 Water quality in the Gulf of Mexico is affected by the growing population along the coast. The Gulf  
31 of Mexico estuarine area is in fair ecological condition. Thirty-five percent of the area is impaired for



1 aquatic life uses, and 14 percent are impaired for human use. The water quality in estuaries is  
2 considered fair. DIN is considered good, with only two percent having concentrations greater than  
3 0.5 mg/L. The DIP rating is fair, with 11 percent having concentrations exceeding 0.05 mg/L. The  
4 overall rating of water clarity is fair, with 29 percent in poor condition. Dissolved oxygen  
5 concentrations are good, with only one percent of the area exhibiting hypoxia. Coastal and deeper  
6 waters of the Gulf are degraded from spills and dumping from vessels. An area of hypoxia, located  
7 off of the Louisiana continental shelf, begins in late spring and disappears in the fall. Sediment  
8 quality in the Gulf of Mexico is fair, with less than one percent exhibiting toxicity. However, the  
9 toxicity percentage may be different, as data was missing from 38 percent of estuaries. Sediment  
10 ERM guidelines were exceeded primarily in Texas estuaries and ERL guidelines were exceeded in  
11 Mobile Bay, AL. Sediment TOC levels are considered good in the Gulf Coast (EPA 2005).

12 Ecological conditions in Pacific Coast estuaries are fair to poor. The water quality index for estuaries  
13 is good to fair. Poor water quality is mainly concentrated in south Hood Canal (Puget Sound) and  
14 San Francisco Bay. The DIN rating is good, with less than one percent exceeding concentrations of  
15 0.5 mg/L. DIP is considered fair, with concentrations exceeding 0.1 mg/L in San Francisco Bay and  
16 south Hood Canal. Water clarity is considered poor, especially in San Francisco Bay. Dissolved  
17 oxygen concentrations are good and hypoxia was only exhibited in two subestuaries of Puget Sound  
18 (EPA 2005). Sediment quality in Pacific Coast estuaries is fair to poor and toxicity is poor. There are  
19 high metal concentrations in San Francisco Bay and high metal and organic contaminants in Puget  
20 Sound and Los Angeles Harbor. ERM guidelines were exceeded in San Francisco Bay for chromium,  
21 mercury, and copper. In Southern California, DDT levels exceeded ERM guidelines. One site on the  
22 Columbia River exceeded ERM guidelines for either PAHs or PCBs. Three sites in Puget Sound also  
23 exceed these contaminant criteria. Los Angeles Harbor had high concentrations of metals and PAHs.  
24 Sediment TOC is considered good to fair. Los Angeles Harbor and Big Lagoon (in Northern  
25 California) are areas with high TOC (EPA 2005).

26 Most of Alaska's vast coastline has not been monitored for water quality. The majority of water  
27 resources are likely in pristine condition due to its size, sparse population, and remoteness. Water  
28 quality may be impaired around urban areas and near seafood processing facilities in the Aleutian  
29 Islands (EPA 2002). Only 0.1 percent of Alaska's estuaries water quality has been assessed. Of this  
30 percentage, 89 percent are impaired and 11 percent are fully supporting designated uses. Only 0.1  
31 percent of the Alaska shoreline has been assessed. Thirty-six percent of the assessed shoreline water  
32 is impaired. Sixty-four percent of shoreline water is fully supporting designated uses (EPA 2005).

1 An overall assessment of Alaska's sediment quality has not been conducted. Harbors and bays have  
2 the potential to contain toxic sediments contaminated with PCBs, lead, dioxin, and petroleum  
3 products.

4 Hawaii does not have a comprehensive coastal monitoring program. Water quality in Hawaii is  
5 variable, depending on storm water runoff. Storm water runoff decreases water quality as it carries  
6 pollutants into estuaries and coastal waters. Most industrial facilities and wastewater treatment plants  
7 discharge into coastal waters. Turbidity, nutrients, and pathogens from nonpoint source pollution  
8 also affect Hawaii's water quality (EPA 2002). Water quality has been assessed in 99 percent of  
9 Hawaiian estuaries. Of this percentage, 57 percent is impaired and 43 percent is fully supporting  
10 designated uses. Eighty-three percent of shoreline waters have been assessed. Two percent of  
11 shoreline waters are impaired, 1 percent is threatened, and 97 percent is fully supporting designated  
12 uses (EPA 2005). An overall assessment of Hawaii's sediment quality has not been conducted.

13 Guam's marine waters and bay sediments are generally free of pollutants, except in areas of localized  
14 pollutant runoff or where discharges from land or vessels occur. The deep surrounding seas rapidly  
15 dilute pollutant discharges (GEPA 2000). Of the bays assessed for water quality, three percent  
16 supported aquatic life and 65 percent supported swimming. Pollutants impacting water quality in  
17 these areas include pathogens, metals, suspended solids, urban runoff, and municipal facilities. The  
18 main cause of pollution in shoreline waters are microbial organisms (EPA 2002). Sediment quality  
19 has been assessed for four of Guam's main harbors: Agana Boat Basin, Outer Apra Harbor, Agat  
20 Marina, and Merizo Pier. Overall the sites were relatively clean, including deeper water sediments.  
21 Most sites had high levels of copper, zinc, lead, and tin. Apra Harbor had the highest levels of these  
22 contaminants as well as PCBs and PAHs (GEPA 2000).

23 Water quality in American Samoa is generally in good condition. Poor water quality conditions exist  
24 in populated areas where nutrient enrichment from human and animal wastes occurs. Heavy rains can  
25 bring sediments to coastal waters, a result of improper land use practices. Water and sediment quality  
26 in Pago Pago Harbor are in poor condition. Fish and substrates are contaminated with heavy metals,  
27 pesticides, and other pollutants. Previously, nutrient loading from cannery wastes caused algal  
28 blooms and fish kills. Wastes are now being dumped beyond the inner harbor (Craig 2002). Of the  
29 ocean shoreline assessed, 14 percent was impaired for aquatic life support. Fish consumption and  
30 swimming uses were impaired in 100 percent of the assessed shoreline (EPA 2002). Sediment quality  
31 information for the American Samoa is not available.

1 In the southern islands of CNMI, coastal water quality is impacted by sewage outfalls and overflows,  
2 septic systems, dredging, excess nutrients, and urban runoff. Sedimentation from unpaved roads and  
3 development increases turbidity in nearshore waters during heavy rains. High nutrient levels have  
4 negatively affected coral reefs and lagoons. Water quality data was collected in 2005 on Saipan,  
5 Tinian, Rota, and Managaha. In Saipan, 34 percent of coastal waters were non-supportive and 36  
6 percent were fully supportive of recreational uses. In Tinian and Rota, 64 percent were fully  
7 supportive of recreational uses, and no areas were non-supportive. All waters assessed on Managaha  
8 were fully supportive of recreational uses. Water quality near coral reefs was also monitored in  
9 2005. Twenty-eight percent of assessed waters were non-supportive of aquatic uses. Forty-eight  
10 percent were fully supportive of aquatic uses (Castro *et al.* 2006). Sediment quality information for  
11 CNMI is not available.

## 12 **3.4 Cultural Resources**

### 13 **3.4.1 Definition of the Resource**

14 Cultural resources are prehistoric or historic remains, artifacts, or indicators of past human activities  
15 and accomplishments. They include “historic properties,” defined as prehistoric or historic sites,  
16 buildings, structures, or objects listed or eligible for listing on the National Register of Historic Places  
17 (NRHP). Artifacts, records, and physical remains associated with historic properties may be  
18 considered cultural resources (NRCS 2006). Other types of cultural resources include cultural or  
19 religious practices and Traditional Cultural Properties (TCPs). TCPs are properties associated with  
20 cultural practices or beliefs of a living community that are important in maintaining the continuing  
21 cultural identity of the community (Parker and King 1998). Examples of TCPs include: Native  
22 American ceremonial locations; urban neighborhoods that are the traditional home of a particular  
23 cultural group; and locations associated with the traditional beliefs of a Native American group.

24 NEPA and CEQ regulations require Federal agencies to consider potential impacts on the “human  
25 environment,” which is defined as “the natural and physical environment and the relationships of  
26 people to that environment” (40 CFR 1508.14). Therefore, a Federal action must be analyzed for  
27 probable impacts on the cultural aspects of the human environment. The National Historic  
28 Preservation Act (NHPA) requires Federal agencies to consider the effects of their actions on historic  
29 properties (16 U.S.C. 470 et seq.). The Archeological and Historic Preservation Act requires Federal  
30 agencies to report any perceived impacts their actions may have on historical or archaeological data  
31 (including relics and specimens) (16 U.S.C. 469a et seq.). The Native American Graves Protection

1 and Repatriation Act requires the identification and appropriate disposition of human remains,  
2 funerary objects, sacred objects, or objects of cultural patrimony that are excavated on purpose or  
3 discovered inadvertently on Federal or tribal lands (25 U.S.C. 3001 et seq.).

#### 4 **3.4.2 Affected Environment**

5 Prehistoric sites on land include shell middens, lithic scatters, habitation sites, burials, and ceremonial  
6 sites and sacred sites of early Native American populations. Other Native American cultural remains  
7 include domestic artifacts, stone tools, ivory objects, woven fishing nets, fiber-tempered pottery,  
8 masks, pictographs, and petroglyphs. Petroglyphs have been found on prominent boulders along the  
9 shoreline in Washington State (Stilson *et al.* 2003).

10 In some coastal areas of the U.S., Native American tribes and other aboriginal peoples maintain  
11 strong cultural and subsistence ties to the environment and living natural resources, including marine  
12 mammals. This rich heritage may be traced to pre-history through art, language, tradition, or social  
13 customs. Native American villages located on the Pacific Coast depended on salmon, shellfish, and  
14 marine mammals for subsistence and cultural purposes. Whaling and sealing played a large role in  
15 the culture of tribes, including the Makah Tribe in Washington. The Makah hunted whales and used  
16 drift or stranded whales for subsistence uses, including food, tools, and trade. In the Pacific  
17 Northwest, Native American lands, trust resources, and tribal rights have been secured through  
18 treaties, statutes, judicial decisions, and EOs. NMFS administers its trust responsibilities, with  
19 respect to treaties, through government-to-government relationships with tribes. Present coastal tribes  
20 in Washington continue to use coastal resources for subsistence, ceremonial, and commercial  
21 activities. Important ceremonial resources include oysters, crabs, clams, salmon, bottomfish, kelp,  
22 seaweeds, sea urchins, and sea birds (OCNMS 1993).

23 Alaska Natives use marine mammal parts for cultural handicrafts and harvest marine mammals for  
24 subsistence. The Inuit people of Arctic Alaska currently hunt ribbon seals (*Phoca fasciata*), ringed  
25 seals (*Phoca hispida*), bearded seals (*Erignathus barbatus*), spotted seals (*Phoca largha*), bowhead  
26 whales, gray whales, walrus, and polar bears. Alaska natives also harvest beluga whales in the  
27 Bering, Chukchi, and Beaufort Seas and Cook Inlet. Harbor seals are currently harvested throughout  
28 their range by coastal Alaska Natives. Northern fur seals are hunted in the Pribilof Islands. There is  
29 also a limited harvest of Steller sea lions and sea otters. Under the MMPA (Section 119), NMFS  
30 enters into cooperative agreements with Alaska Native organizations to co-manage subsistence and  
31 conserve marine mammals, including ice seals, harbor seals, fur seals, beluga whales, and bowhead

1 whales. Co-management agreements help meet species protection and recovery goals under the ESA  
2 and MMPA, while sustaining the traditional livelihoods of Alaska Natives. Alaska Native  
3 organizations also participate in marine mammal research and monitoring efforts.

4 Prehistoric sites are prevalent in the Pacific Islands. Guam coastal areas include latte stones and  
5 ancient Chamorro artifacts. Latte stones were pillars which ancient Chamorro houses were built  
6 upon. Latte stones are inserted in sand containing fragments of pottery, shells, fish bones, charcoal,  
7 stone and shell tools. Burials in sand-lined pits have also been found near or under Latte stones. In  
8 American Samoa, habitation sites are expected to be located in coastal areas. Material remains found  
9 at these sites may include Lapita pottery, basalt flakes and tools, volcanic glass, shell fishhooks, shell  
10 ornaments, and faunal remains. Archaeological evidence indicates that early sites may be found on  
11 the shores of prehistoric embankments that have been filled in with sand. Remains of prehistoric  
12 villages may be visible on the surface, but many are buried underground (ASHPO 2006).  
13 Underground remains of prehistoric sites are also present in CNMI. Remains of Latte villages can be  
14 found on CNMI coastal stretches and may include petroglyphs and Latte stones.

15 Archaeological sites in Hawaii include burial sites and TCPs. TCPs include volcanic cones,  
16 landforms associated with deities, and submerged coral formations which were once fishing locations.  
17 Habitation sites, burials, religious structures, and fishponds are present along the shoreline. Most  
18 sites are above the high-water mark and may be buried underneath the sand of many beaches. The  
19 largest known concentration of native Hawaiian burials is located on the Mokapu Peninsula, Oahu.  
20 This dune complex has been listed on the NRHP. The site was excavated for military purposes from  
21 1938-1940 and reburial efforts are being conducted (Cleghorn 2001). Archaeological historic sites  
22 below the high-water mark are typically fishponds, but anchor holes and petroglyphs have been  
23 documented. Most archaeological sites and TCPs in Hawaii have not been surveyed. It is likely that  
24 most coastline areas contain historic sites and resources (USCG 1999). In the Northwestern Hawaiian  
25 Islands, Nihoa and Necker Islands are both listed on the NRHP for their ceremonial and religious  
26 usage by Native Hawaiians.

27 Many historic resources in the action area are listed on, or eligible to be listed on, the NRHP. These  
28 include lighthouses, ports, docks, coastal forts, and shipwrecks. The majority of historic sites in the  
29 Pacific Islands are areas from World War II. In American Samoa, Guam, and CNMI Japanese  
30 pillboxes and other coastal defenses can be found along the coastline. On CNMI, a mass grave of  
31 Japanese and U.S. military forces killed during battle is located on the coast (Cabrera 2005). Many  
32 shipwrecks are grounded on beaches throughout CNMI (CNMI 2001).

1 Submerged cultural resources include inundated archaeological sites, Native American artifacts,  
2 shipwrecks, and aircrafts. Native American artifacts include canoe runs, canoes, fish weirs, and  
3 petroglyphs (Stilson *et al.* 2003). Inundated archaeological sites found in nearshore areas include  
4 fishing weirs, bowls, donut stones, prehistoric stone anchors, historic metal anchors, and the remains  
5 of landings and wharfs. There is the potential for prehistoric sites offshore, where areas of the  
6 continental shelf were once shoreline. Archaeological surveys have not been conducted in most of  
7 these areas. American tanks that did not make landfall in CNMI sit in reef waters next to beaches  
8 (Cabrera 2005).

## 9 **3.5 Human Health and Safety**

### 10 **3.5.1 Definition of the Resource**

11 A human health and safety risk is any hazardous, unhealthy, or unsanitary condition causing, or  
12 capable of causing, an unreasonable threat to the health, safety, and welfare of persons living or  
13 working in the vicinity of such condition. Human health and safety risks are present during response,  
14 rehabilitation, release, disentanglement, and research activities. Possible concerns for workers  
15 include physical injury, illness, exposure to contaminants, and ocean conditions. The Occupational  
16 Safety and Health Administration (OSHA) sets standards to assure safe and healthy working  
17 conditions and prevent work-related injuries and illnesses. OSHA requires employers to have health  
18 and safety plans. Employers must also maintain accurate records of employee work-related injuries,  
19 illnesses, deaths, and exposure to toxic materials or harmful physical agents. OSHA has laboratory  
20 standards for air contaminants and the risk of exposure to hazardous chemicals.

21 Human health and safety risks may also affect the general public during normal beach and ocean  
22 activities, such as swimming, boating, and surfing. Possible concerns are drowning, illness, contact  
23 with marine animals, and exposure to contaminants.

### 24 **3.5.2 Affected Environment**

#### 25 **3.5.2.1 Marine Mammal Worker Safety**

26 *Stranding Response.* For authorized persons responding to strandings, hazards include physical  
27 injury, marine debris, zoonotic diseases, contaminant and toxin exposure, and exposure to the  
28 elements. In a survey of marine mammal workers, over half (54 percent) of the 483 respondents  
29 reported having at least one injury or illness believe to be the result of direct contact with marine  
30 mammals. Most injuries were cuts, scrapes, bites, and rashes (Mazet *et al.* 2004). Physical injuries

1 may occur from the stranded marine mammal. Stranded whales may thrash their flukes or roll over  
2 onto a person. Pinnipeds may attack and inflict serious bites that could become infected. Chemical  
3 exposure may occur if personnel are in contact with euthanasia solutions or other drugs. Other  
4 physical injuries include cuts from bone fragments and instruments. Lifting and rolling large animals  
5 and the use of heavy equipment can cause strains and bruises. Wet conditions can lead to slips, trips,  
6 falls, and possible drowning. Drowning is a risk during water rescues, especially if heavy surf  
7 conditions, dangerous undertows, or rip currents exist. Rescuers can become entangled in lines and  
8 nets used during water rescues, increasing the risk of drowning or other physical injury. The beach  
9 composition (fine sand, mud, cobble, boulder, etc.) can increase the difficulty of responding to  
10 strandings and may increase the risk of physical injuries.

11 Marine debris is a hazard during stranding responses. Workers may be injured by stepping on broken  
12 glass, rusty metal, needles, or other litter. Workers could become entangled in derelict fishing gear  
13 during water responses. Workers may also come into contact with contaminated debris, including  
14 medical wastes and sewage.

15 Reports of human illnesses from contact with marine mammals are rare, but have occurred. Marine  
16 mammals may carry infectious zoonotic diseases that may be transmitted to humans. Pathogens may  
17 be transmitted through direct contact with tissues, body fluids, or aerosols of the infected animals.  
18 These pathogens include, but are not limited to, *Mycoplasma* spp. (seal finger), *Mycobacterium* spp.,  
19 *Erysipelothrix* sp., *Leptospira* sp., *Brucella* spp., seal poxvirus, and calicivirus. Seal finger typically  
20 occurs after a pinniped bite and can cause swelling and severe pain, especially in the joints of the  
21 hands. Seal poxvirus can cause painful skin lesions that may last up to a year. *Leptospira* can  
22 produce chills, headaches, myalgia, and eye pain in humans. Other organisms that infect marine  
23 mammals and could affect humans include *Salmonella* spp., *Vibrio* spp., *Clostridium* sp., parasites,  
24 and fungi (Mazet *et al.* 2004, Cowan *et al.* 2001). In the survey by Mazet *et al.* (2004), respondents  
25 reported dangerous infections, including tuberculosis, leptospirosis, and brucellosis.

26 Marine animals in the water are a safety concern for marine mammal workers. Handling or stepping  
27 on coral can lead to cuts which may become infected. Jellyfish, including Portuguese man o'war,  
28 stings may cause minimal damage or fatal injuries. The defense mechanism of venomous fish (rays,  
29 scorpionfish, lionfish, etc.) can lead to bite or puncture wounds. Shark attacks are possible during  
30 response activities if workers are entering the water. Shark attacks are prevalent in U.S. coastal  
31 waters, with over 490 attacks since 1990. Of this number, 322 attacks have occurred in Florida; 53 in  
32 Hawaii; and 35 in California (FLMNH 2005).

1 Stranding responders may also be exposed to biotoxins from HABs. Most biotoxins are only a risk if  
2 contaminated seafood is consumed, except for brevetoxins. Aerosolized brevetoxins may be inhaled  
3 by humans and can cause respiratory problems, nausea, vomiting, and neurological symptoms.  
4 Responding to marine mammals contaminated with oil or other materials may cause lightheadedness;  
5 nausea; and eye, skin, and respiratory irritation (Geraci and Lounsbury 2005).

6 Stranding responders are exposed to the elements and may suffer from sunburn, heat exhaustion, and  
7 heatstroke. Symptoms of heat exhaustion and heatstroke include profuse sweating, muscle cramps,  
8 nausea, dizziness, fever, and unconsciousness. Hypothermia may occur in cold weather and if  
9 responders are in cold water for long periods of time. Symptoms of hypothermia include weakness,  
10 drowsiness, confusion, uncontrollable shivering, and cold, pale skin.

11 ***Disentanglement.*** Safety issues that may arise during disentanglement activities on water are related  
12 to aircraft operations, boating operations, the entanglement, physical and chemical restraint of the  
13 animal, and weather conditions. Safety hazards during aerial surveys to locate animals include  
14 collisions with another aircraft or a fixed object, mechanical failure, and crashes due to inclement  
15 weather conditions.

16 During disentanglement operations, boating accidents may include collisions with another vessel or a  
17 fixed object, capsizing, a person falling overboard, and drowning. The risk of an accident may  
18 increase if boats come too close to the tail of the whale or if nets and lines foul the boat's propeller.  
19 Pursuit of an entangled animal, rough seas, inclement weather conditions, and nightfall all increase  
20 the risk of a boating accident. Persons onboard have the potential to become entangled in nets, ropes,  
21 or buoys attached to the animal, increasing the risk of falling overboard.

22 Physical injuries from disentanglement activities, both in water and on land, include bites from  
23 entangled animals, bruises, dislocations, and broken bones. Cuts may occur from instruments used to  
24 disentangle the animal. Other physical injuries may occur from contact with marine debris.  
25 Chemical exposure is possible during the administration of drugs for restraint, treatment, or  
26 euthanasia.

27 ***Rehabilitation.*** Safety risks relative to rehabilitation include physical injury; zoonotic diseases; and  
28 contaminant, toxin, and chemical exposure. Rehabilitation personnel may incur physical injuries such  
29 as slips, trips, and falls from wet conditions around animal pools and pens. Lifting or moving animals  
30 may cause strains and bruises. Injuries to personnel working with animals in pools and pens include



1 bites, bruises, and drowning. Exposure to zoonotic diseases, contaminants, and toxins are potential  
2 risks to all personnel handling animals. Animal handlers in pools would be exposed to water  
3 contaminated with urine and feces. Chemical exposure is possible during the administration of drugs,  
4 including euthanasia solutions.

5 **Release.** Release activities may cause strains, bruises, animal bites, or more severe physical injuries  
6 from moving animals for transport. Exposure to liquid nitrogen may occur during freeze branding  
7 procedures. During vessel releases, physical injuries could occur as a result of vessel collisions,  
8 capsizing, inclement weather, and rough waters. Sunburn, heat exhaustion, heat stroke, and  
9 hypothermia are possible, if release activities require people to be outside for extending periods of  
10 time. Physical injuries may occur from contact with marine debris.

11 **Research.** Research activities conducted under the MMHSRP may occur in a laboratory and in or on  
12 the water. Safety issues in research laboratories include exposure to hazardous chemicals, flammable  
13 solvents, cryogenic liquids, air contaminants, biological agents, and UV radiation. Physical injuries  
14 such as cuts, punctures, bruises, and burns may occur while using laboratory equipment and  
15 materials.

16 Research activities conducted in the water would typically be health assessment captures and releases.  
17 Risks include entanglement in nets, drowning, exposure to zoonotic diseases, cuts from instruments,  
18 accidental needle sticks, and injuries from freeze branding. Sunburn, heat exhaustion, and heatstroke  
19 may also occur, with symptoms including profuse sweating, muscle cramps, nausea, dizziness, fever,  
20 and unconsciousness. Hypothermia may occur in cold weather and if researchers are in cold water for  
21 long periods of time. Symptoms of hypothermia include weakness, drowsiness, confusion,  
22 uncontrollable shivering, and cold, pale skin. Jellyfish, sting rays, other venomous fish, and sharks  
23 all pose threats to researchers in water. Physical injuries could occur as a result of vessel collisions,  
24 capsizing, inclement weather, rough waters, and contact with marine debris. Slips, trips, and falls  
25 would also be hazards during research activities.

### 26 **3.5.2.2 Public Safety**

27 Public health and safety issues during recreational activities in the action area include pollution,  
28 marine debris, HABs, marine animals, marine debris, surf conditions, exposure to the elements, and  
29 boating operations.

1 A major public health concern in recreational waters is pollution. Pollutants entering the water  
2 include sewage, trash, medical wastes, oil or chemical spills, stormwater runoff, and boating waste.  
3 In 2004, sewage spills and overflow closed beaches for a total of 1,319 days. Stormwater runoff  
4 closed beaches for 4,144 days. These pollutants can contaminate the water with toxins, heavy metals,  
5 pesticides, bacteria, and viruses. Microbial infections include gastroenteritis, salmonellosis,  
6 shigellosis, giardiasis, skin rashes, and pinkeye. In 2004, beach advisories or closures occurred for  
7 approximately 14,615 days due to elevated bacteria levels. Viral infections can cause hepatitis;  
8 gastroenteritis; respiratory illness; and ear, nose, and throat problems (NRDC 2005). Marine debris is  
9 often found on beaches and the ocean floor. Beachgoers may be injured by stepping on broken glass,  
10 rusty metal, needles, or other litter or come in contact with contaminated debris. Swimmers and  
11 divers may get entangled in derelict fishing gear.

12 Beaches may also be closed during a HAB event. Typically biotoxins from HABs are only hazardous  
13 if contaminated seafood is consumed. Inhalation of aerosolized brevetoxins can cause respiratory  
14 irritation, nausea, and neurological problems.

15 Human interactions with stranded marine mammals are public health risks. As mentioned above,  
16 stranded animals can thrash around, roll onto, and attack humans. Consumption of marine mammals,  
17 which currently occurs in Alaska, may also be hazardous if animals have environmental contaminants  
18 or diseases. Zoonotic diseases can be passed if a person comes into contact with the animal or its  
19 body fluids. Coral, jellyfish, venomous fish, and sharks are marine animals that humans may  
20 encounter during recreational activities.

21 Surf conditions include strong currents, rip currents, dangerous shorebreaks, and large and/or high  
22 waves. Hazardous surf conditions can cause injuries and drowning. Exposure to the elements can  
23 lead to sunburn, heat exhaustion, heatstroke, or hypothermia.

24 Boating operations include motorboats, sailboats, personal watercraft (jet skis), and kayaks. In 2004,  
25 the top five types of recreational boating accidents were: collision with a vessel; collision with a fixed  
26 object; falls overboard; capsizing; and skier mishap. The causes of boating fatalities are drowning,  
27 trauma, and hypothermia. Contributing factors to accidents are reckless operations, excessive speeds,  
28 hazardous waters, alcohol use, operator inexperience, and machinery system failure. Most accidents  
29 occurred during fishing activities and waterskiing or tubing activities (USCG 2005).

1    **3.6    Socioeconomics**

2    **3.6.1    Definition of the Resource**

3    Socioeconomics are defined as the basic attributes and resources associated with the human  
4    environment, particularly population and economic activity. Population levels are determined by  
5    regional birth and death rates, as well as immigration and emigration. Economic activity typically  
6    encompasses employment, personal income, and industrial or commercial growth. The alternatives  
7    would not affect population levels within the action area; therefore this information will not be  
8    discussed. Important economic activities in the coastal regions of the U.S. include commercial,  
9    recreational, and subsistence fisheries; tourism; and other recreational activities. Other recreational  
10   activities conducted include clamming, beachcombing, surfing, boating, and planned events (festivals,  
11   sport tournaments, etc.). The alternatives have the potential to economically impact the MMHSRP  
12   rehabilitation facilities. Therefore, current costs of maintaining these facilities are discussed.

13   EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income*  
14   *Populations*, requires Federal agencies to identify and address any disproportionately high and  
15   adverse human health or environmental effects their actions may have on minority and low-income  
16   populations. The alternatives are largely based upon marine mammal strandings and entanglements.  
17   Strandings and entanglements cannot be predicted and may occur anywhere on the coasts or in waters  
18   of the U.S. Potential effects of the alternatives would not occur with greater frequency for minority  
19   and low-income populations than for the general population as a whole. No environmental justice  
20   impacts would be expected from the alternatives and therefore will not be discussed further.

21   **3.6.2    Affected Environment**

22   Economic activities in coastal regions likely to intersect with one or more activities covered under  
23   this PEIS include industries encompassing stranding network participants (*e.g.*, zoos and veterinary  
24   services) and tourism industries. Basic information for the relevant industries was obtained through  
25   the U.S. Economic Census. The information provided includes revenues, number of establishments,  
26   and number of employees by coastal states and territories (or if data was available at the county level,  
27   by aggregating data by coastal counties). Tabulations of this information are provided in Appendix  
28   M.

29   Existing and potential members of the stranding network (and those who provide services to the  
30   network) are likely to fall into either two categories: zoos/botanical gardens and veterinary services.

1 The zoos and botanical gardens industry category is comprised of establishments primarily engaged  
2 in the preservation and exhibition of live plant and animal life and animal life displays, including  
3 aquaria. Since numerous SA holders are non-profits, statewide information for zoos and botanical  
4 gardens were also provided for those facilities with federal tax-exempt status. The veterinary services  
5 industry category is comprised of establishments of licensed veterinary practitioners primarily  
6 engaged in the practice of veterinary medicine, dentistry, or surgery for animals, as well as  
7 establishments primarily engaged in providing testing services for licensed veterinary practitioners.  
8 Summary information by state for these two industry categories are contained in Appendix M. The  
9 information for these industry categories include activities for the entire state, since some stranding  
10 activities related to those covered under the PEIS may occur further inland.

11 Tourism industries which may be affected by the various activities in this PEIS include lodging and  
12 restaurants located adjacent to stranding activities. Since marine mammal stranding events occur in  
13 the water or on the beach, tourism-related businesses that are likely to be affected are those located on  
14 or near the ocean; therefore summary statistics for lodging and restaurants located in coastal counties  
15 are reported. Appendix M contains combined summary information for lodging and restaurant  
16 industries located in coastal counties. Lodging includes hotels, motels, bed and breakfasts,  
17 recreational vehicle parks, campgrounds, recreational camps and vacation camps. The restaurant  
18 category includes full-service restaurants, limited-service restaurants, cafeterias, snack bars, and bars.

19 Stranding responses are usually short-term events. Most stranding responses last for a day.  
20 Responses to mass strandings of live animals may take several days. In tourist-based coastal  
21 economies, the economic input of stranding responders will be minimal and undetectable in regional  
22 economic statistics.

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## 4. Environmental Consequences

### 4.1 Introduction

This section evaluates the potential direct and indirect environmental and socioeconomic impacts of the alternatives. Table 4-1 lists the alternatives considered in detail and their descriptions. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are reasonably foreseeable effects caused by an action, but occur later in time or farther removed in distance from the action. CEQ regulations define the significance of impacts in terms of context and intensity. Context refers to the geographic area of effect, which varies with the setting of the alternatives and with each resource area being analyzed. Intensity refers to the severity of the impact and considers whether the effect would be negligible, minor, moderate, or major. Negligible impacts would not be detectable and would have no discernible effect. Minor impacts would be slightly detectable and would not be expected to have an overall effect. Moderate impacts would be clearly detectable and could have an appreciable effect. Major impacts would be clearly detectable and would have a substantial, highly noticeable effect. Duration, short-term or long-term, must be considered in the assessment of the environmental impacts. Short-term impacts are temporary and would generally end once the proposed activities have stopped. Long-term impacts are typically those effects that would last several years or more or would be permanent. Impacts were also evaluated in terms of whether they would be beneficial and/or adverse.

Mitigation measures are methods to avoid, minimize, rectify, or reduce the adverse environmental impacts of an action. Mitigation measures are discussed in Section 5. These are measures that would be taken to avoid or minimize adverse effects of the proposed actions.

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**Table 4-1. Alternatives Considered in Detail**

| <b>Alternative</b>                              | <b>Description</b>  |
|---|---|
| <b><i>Stranding Agreements and Response</i></b> |   |
| Alternative A1                                  | No Action- SAs expire, stranding response would end.  |
| Alternative A2                                  | Status Quo- Current SAs would be renewed, current stranding response activities continue. Final SA criteria would not be issued.  |
| Alternative A3                                  | SAs issued to any applicants after review, new SA template would not be utilized. Final SA criteria would not be issued. Current and future activities included.  |
| Alternative A4 (Preferred)                      | Final SA criteria would be implemented, new SA template would be utilized, current and future activities included.  |
| Alternative A5                                  | Final SA criteria would be implemented, new SA template would be utilized, and response to threatened, endangered, or rare animals would be required.   |
| <b><i>Carcass Disposal</i></b>                  |   |
| Alternative B1                                  | No Action- SAs expire, no carcass disposal would occur, carcasses would be left where stranded.   |
| Alternative B2                                  | Status Quo- Current methods of carcass disposal continue.   |
| Alternative B3 (Preferred)                      | Status Quo with the recommendation to transport chemically euthanized animal carcasses off-site.  |
| <b><i>Rehabilitation Activities</i></b>         |   |
| Alternative C1                                  | No Action- Current SAs would expire, stranding response would cease, and animals would not be rehabilitated.  |
| Alternative C2                                  | Status Quo- Current rehabilitation activities would continue. Final Rehabilitation Facility Standards would not be implemented.   |
| Alternative C3 (Preferred)                      | New SAs would be issued, rehabilitation activities continue. Final Rehabilitation Facility Standards would be implemented.  |
| Alternative C4                                  | New SAs would be issued, rehabilitation activities would continue. Rehabilitation of threatened, endangered, and rare animals would be required; response to other animals would be optional. Final Rehabilitation Facility Standards would be implemented. |
| <b><i>Release of Rehabilitated Animals</i></b>  |   |
| Alternative D1                                  | No Action- Current SAs would expire, stranding response and rehabilitation would cease, and therefore there would be no animals to release.   |
| Alternative D2                                  | Status Quo- Current release activities would continue. Adaptive changes to release activities would not be permitted. Final release criteria would not be implemented.  |
| Alternative D3 (Preferred)                      | New SAs would be issued, release activities continue. Final release criteria would be implemented and would include adaptive management of release activities.  |
| <b><i>Disentanglement Activities</i></b>        |   |
| Alternative E1                                  | No Action- No disentanglement network.  |
| Alternative E2                                  | Status Quo- Disentanglement network would continue current activities, no modifications or new members added.   |

**Table 4-1. Alternatives Considered in Detail (continued)**

| <b>Alternative</b>                                  | <b>Description</b>  |
|---|---|
| <b><i>Disentanglement Activities</i></b>            |   |
| Alternative E3 (Preferred)                          | Disentanglement network would continue current activities on East Coast with modifications to West Coast network. The Disentanglement Guidelines and training prerequisites would be implemented. |
| <b><i>Biomonitoring and Research Activities</i></b> |   |
| Alternative F1                                      | No Action- Biomonitoring and research activities would not occur.   |
| Alternative F2                                      | Status Quo- New ESA/MMPA permit would continue current biomonitoring and research activities.   |
| Alternative F3 (Preferred)                          | New ESA/MMPA permit would be issued to include current and future biomonitoring and research activities.  |

1

2 **4.2 Biological Resources**

3 This section evaluates the potential impacts on biological resources as a result of the alternatives.  
 4 Impacts on biological resources are evaluated in context and intensity on a population or species-wide  
 5 scale. Therefore, while more significant impacts may occur on individual animals, the overall impact  
 6 on the population or species may still be considered minor.

7 **4.2.1 Stranding Agreements and Response Alternatives**

8 **4.2.1.1 Alternative A1- No Action**

9 Under Alternative A1 stranding response from current SA (formerly LOA) holders would end once  
 10 all agreements have expired. Federal (not including NMFS), state, and local agencies authorized  
 11 under MMPA Section 109(h) would still be able to conduct emergency response to non-ESA listed  
 12 species, and those ESA-listed species for which response is part of the 4(d) rule (see 50 CFR  
 13 223.202(b)(2)). However, response activities would likely be limited and localized in extent, and  
 14 would consist mostly of carcass disposal for the protection of public health and safety. The  
 15 authorized level of stranding response would greatly decrease, ESA-listed marine mammals would  
 16 not be responded to, animals in peril would not be hazed away from hazards, and more animals would  
 17 likely perish. These animals would be removed from the population, which might have an adverse  
 18 effect on species, especially those that are depleted, threatened, or endangered. There would be a lack  
 19 of detection and notification of morbidity and mortality. The valuable information on marine mammal  
 20 populations, such as biology, health, and disease detection, collected during the examination of  
 21 stranded animals would no longer be collected. Scientists would not be able to study why strandings  
 22 occur, which could indirectly affect future marine mammal populations.



1 In addition, the ability of the stranding network to act as a surveillance network would be eliminated.  
2 This could result in the emergence and spread of marine mammal diseases, or the use and spread of  
3 fishery practices that were harmful to marine mammals, without any possibility for human  
4 intervention or mitigation until population-level effects were observed. At that point, it would likely  
5 be too late for any quarantine or translocation program to halt the spread of disease or for a fishery  
6 modification to occur. This could have adverse impacts on marine mammal populations, particularly  
7 those that are threatened or endangered, where the loss of a relatively small number of individuals  
8 represents a greater proportion of the species. One example would be the early detection of a disease  
9 such as *Morbillivirus* in the highly endangered Hawaiian monk seal (a naïve population). This  
10 outbreak could be mitigated by the isolation/translocation/captivity of affected individuals, but only if  
11 it was detected early in the spread of the disease, when few individuals had contracted the virus.

12 In addition, other environmental conditions have been first detected in marine mammals or beach-cast  
13 seabirds, including oil spills and HABS. Early detection of these circumstances also allows the  
14 potential for human intervention (finding the source of the oil spill) and reducing the overall number  
15 of affected biological resources. When a significant number of strandings occur that share the same  
16 findings of fishery interaction, this information can be used to manage the fishery to reduce the  
17 impacts on marine mammals. Gear modifications, geographic changes (area closures), and temporal  
18 changes (season dates) may all be changed so that the probability of fishery interactions with marine  
19 mammal populations (particularly those that are threatened or endangered) is reduced. The stranding  
20 network provides critical information about potential issues when first observed, which allows for  
21 response and management before the problem becomes widespread and costly or impossible to  
22 ameliorate.

23 No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other  
24 invertebrates, and birds would be expected to occur under this alternative. Effects from leaving a  
25 carcass on the beach are described in Section 4.2.2.1, Carcass Disposal.

#### 26 **4.2.1.2 Alternative A2- Status Quo**

27 Under Alternative A2, the current SAs would be renewed and current stranding response activities  
28 would continue without the issuance of Final SA criteria. Potential minor, short-term, adverse effects  
29 on all biological resources could occur from vessel and vehicle uses, but these impacts are expected to  
30 be negligible when compared to other inputs of hazardous materials from vessels, sewage outfalls,  
31 runoff, industrial operations, and other beach vehicle uses. Spills of hazardous materials or wastes

1 from vessels during response to free-swimming animals could impact biological resources. Some  
2 materials could be diluted quickly by currents, only causing temporary impacts. Other materials  
3 could linger in the water column or adhere to sediment particles, causing slightly longer impacts. As  
4 with any activity, vehicular transport, heavy equipment, or medical equipment used during beach  
5 response activities could leak oil or other materials into sand and nearshore waters. These would  
6 likely be small amounts that would be flushed out and/or diluted rapidly, causing a minor and  
7 temporary impact.

8 Minor, short- and long-term adverse effects on protected and sensitive habitats could occur during  
9 response activities. Equipment used for transport or response may traverse protected habitats to  
10 access a stranded animal. An animal may be stranded in a protected habitat and equipment might be  
11 needed for the response. Response activity could damage sand dunes and associated vegetation.  
12 Equipment may also cause compaction of the beach. Response equipment could also disturb or injure  
13 nesting sea turtles, depending on the location and time of year. Disturbance of a nesting sea turtle  
14 would likely be a short-term, minor impact. Injuring a nesting sea turtle and/or their eggs could  
15 produce minor, long-term effects, as all sea turtles are endangered species.

16 Minor, short-term adverse effects on shellfish and other invertebrates living in the beach and intertidal  
17 environment could occur during response activities. The traversing of heavy equipment over shellfish  
18 beds could damage or kill shellfish. Digging with a shovel or spade to allow room for an animal's  
19 flukes and flippers could also damage shellfish.

20 Minor to moderate, short-term adverse effects on coastal and marine birds could occur during  
21 response activities. The use of equipment and the presence of people could disturb birds nesting or  
22 roosting in trees or small bushes, and may cause them to temporarily leave the area. Ground nesting  
23 birds could be adversely affected by response activities. Heavy equipment could crush nests and  
24 response personnel could disturb or damage a nest. Response activities conducted in shallow waters  
25 could disturb foraging birds. This impact would be minimal, as birds could forage in nearby areas  
26 and would likely return once response activities ended.

27 Live stranded animals would most likely experience stress and pain due to the stranding event itself  
28 that could be decreased or increased by stranding response activities. The effects of stranding  
29 response activities on cetaceans would depend on the condition, species, and history of the animal.  
30 An alert and responsive animal may panic when responders approach. Mothers separated from their  
31 calves may become aggressive, and members of social species may experience negative effects from

1 being separated from conspecifics. Debilitated animals that are weakly responsive or non-responsive  
2 animals may not physically, but may physiologically, react to responders.

3 Healthy animals may be released immediately from the stranding site. Tagging may occur before the  
4 release in order to monitor the animal's movements. Roto-tags would most commonly be used, but  
5 radio tags could be attached if available. During the attachment of the roto-tag, pain would only last  
6 during the application, and sedatives or local anesthetic would be used. The tag site could become  
7 infected, causing pain to the animal. Tissue damage or infection could occur when the tag is shed.  
8 For pinnipeds, animal movement may prolong or prevent healing by producing repetitive stress on the  
9 tag site. Epoxy would be used to attach radio tags to pinnipeds and should not cause pain if done  
10 properly. However, it may result in discomfort if the placement of the instrument causes pulling of  
11 the hair or skin during animal movement. In addition, if the ratio of resin and hardener is not  
12 correctly measured, the resulting heat-producing reaction could burn the animal's skin. Both the resin  
13 and hardener could cause skin irritation, such as itching, rashes, hives, and dermatitis. The instrument  
14 could be knocked or torn off, pulling out hair and possibly some of the underlying skin, which would  
15 then be open to infection.

16 During mass strandings, animals may be marked with a grease pen, crayon, or zinc oxide to keep  
17 track of each animal. These materials would not cause an impact on marine mammals.

18 Handling, lifting, and moving an animal may cause injuries to the animal, including stress and  
19 increased shock. Flippers may be crushed or the animal may overheat if stretchers do not have  
20 openings for them. Creases or seams in stretchers and transport equipment may press into the skin,  
21 causing discomfort, pain, and possible temporary or permanent injuries. Chemical immobilization of  
22 a cetacean can be life threatening, if not administered and monitored correctly. When anesthetized,  
23 an animal may go into a dive reflex, which would include breath holding, slowing of the heart rate,  
24 and the pooling of blood from peripheral vessels. While under anesthesia, a cetacean may develop  
25 hypothermia. If the animal is not in water, improper body support could compromise cardiac and  
26 respiratory functions (Haulena and Heath 2001). During transport to a rehabilitation facility, animals  
27 may overheat in direct sun and heat without protection. Depending on body condition, cetaceans may  
28 overheat (hyperthermia) or develop hypothermia during transport. Body surfaces may be exposed to  
29 the drying effects of air. Animals may also be knocked around, causing muscle damage or they may  
30 inhale exhaust fumes. Improper transport of cetaceans may cause abrasions, pressure necrosis,  
31 thermoregulatory problems, and respiratory problems. Muscular stiffness may occur from transport,  
32 but most accepted transport methods try to minimize or avoid this entirely. Stiffness would disappear

1 within a few hours to a few days, unless there was permanent muscle damage (Antrim and McBain  
2 2001).

3 Beach response activities for live stranded pinnipeds would require physical capture of the animal.  
4 Captures may disrupt other animals, including conspecifics, if the capture occurs at a haul-out site or  
5 any other area where animals were located. Impacts would be expected, as non-target animals may  
6 flee into the water. Pups and young animals may be trampled or abandoned. Juvenile and adult  
7 animals may be trampled and killed during stampedes or injured on rocks and cliff faces. If animals  
8 were not injured, impacts would be minor and short-term as animals would likely return once  
9 responders have left. Handling and restraint, if not properly executed, may further injure or kill a  
10 pinniped (*e.g.* suffocation under the weight of a handler). Chemical immobilization (anesthesia or  
11 sedation) of a pinniped has risks, especially in ill or injured animals, if not administered and  
12 monitored correctly. When anesthetized or sedated, an animal may go into a dive reflex, which  
13 would include breath holding, slowing of the heart rate, and the pooling of blood from peripheral  
14 vessels. Pinnipeds may develop hypo- or hyperthermia while anesthetized. Transport to a  
15 rehabilitation facility may cause muscular stiffness or damage. Stiffness would disappear within a  
16 few hours to a few days, unless there was permanent muscle damage (Antrim and McBain 2001).  
17 Without protection, animals may overheat in direct sun and heat or develop hypothermia or frostbite  
18 in freezing temperatures. Inhalation of exhaust fumes and jolting during transport could injure  
19 pinnipeds.

20 Response may also include the harassment and/or capture of free-swimming animals that are trapped,  
21 out of habitat, extralimital, or exhibiting abnormal behavior. Reactions to vessel close approaches  
22 and hazing activities from cetaceans may include swimming faster, breaching, diving, tail and fin  
23 slapping, or moving away from the vessel. Pinniped reactions to vessels are highly variable,  
24 depending on the species (Calkins and Pitcher 1982). Behaviors in response to close approaches by  
25 vessel would generally be short-term, with a minimal effect on the animal.

26 Any capture and/or restraint procedure would likely have some effect on the behavior or activities of  
27 marine mammals. The method(s) of restraint, as well as the age and general condition of the animal  
28 are all factors that would affect an animal's response to capture. Animals could incur contusions,  
29 concussions, lacerations, nerve injuries, hematomas, and fractures in their attempts to avoid capture or  
30 escape restraint (Fowler 1978). The stress response could change an animal's reaction to many  
31 drugs, including those commonly used for chemical restraint, which could have lethal consequences.  
32 Stress could also alter an animal's immune system. It may also lead to behavioral changes including

1 increased aggressive and antisocial tendencies (Fowler 1986). Stress from capture and restraint could  
2 cause capture myopathy, which occurs when an animal cannot cool itself (Fowler 1978). Capture  
3 myopathy is characterized by degeneration and necrosis of striated and cardiac muscles and usually  
4 develops within 7 to 14 days after significant trauma, stranding, transport, or capture. Animals could  
5 also become entangled in the capture net, which may result in injuries or death. Animals may become  
6 stressed during handling and restraint. Signs of stress in cetaceans include reduced respiration,  
7 prolonged struggling while being held, and arching. Impacts on pinnipeds from capture and restraint  
8 are described above.

9 Response would include hazing an animal(s) when necessary to move it away from a possible health  
10 hazard. Potential adverse effects of hazing would likely be from the close approach of vessels, either  
11 used to deploy hazing methods or as a method itself. The intent of the activities would be to cause  
12 the animal to change their behavior and move away from a potential threat. Acoustic deterrent  
13 methods may cause temporary physical discomfort, but would not likely cause long-term injuries.  
14 The use of airguns around mysticetes is a concern because of their ability to hear low frequencies  
15 better than odontocetes. Concern with using mid-frequency sonar is the close range impacts on  
16 harbor porpoise, minke whales, Steller sea lions, and other species. The use of seal bombs near  
17 highly volatile oil is also a concern. Exclusion devices used for pinnipeds would not have a  
18 significant impact, as animals would not become trapped or entangled. Overall, no significant, long-  
19 term impacts to behavior would be expected with proper mitigation. A beneficial impact would be  
20 expected from hazing because it would likely prevent an animal from being harmed.

21 Biological samples may be collected from a stranded animal to help determine the medical and  
22 physiological condition of the animal, assess the best course of action, and monitor progress and  
23 appropriateness of treatment. Samples would include blood, swabs, biopsies, etc. Sample collection  
24 would likely cause minor stress to the animal, beyond the actual stranding event. Response activities  
25 would be conducted in an attempt to save an animal's life, to reduce pain and suffering, or to  
26 humanely euthanize an animal, which would be deemed in the best interest of the animal. Most  
27 adverse impacts on stranded animals would be outweighed by the potential beneficial impacts of  
28 saving an animal and/or reducing their pain and suffering.

29 Response activities would also include euthanasia, when deemed necessary. Euthanasia procedures  
30 would be performed by the attending veterinarian or a person acting on behalf of the attending  
31 veterinarian. All euthanasia procedures would follow the AVMA guidelines (AVMA 2001) and/or  
32 the AAZV guidelines (AAZV 2006). Chemical euthanasia agents may cause hyperexcitability or

1 violent reactions in some species. Intraperitoneal administration of a euthanasia solution may lead to  
2 the prolonged onset of action due to differential or slow absorption rates. It may also cause irritation  
3 in the surrounding tissues. Improperly administered chemical euthanasia agents or methods of  
4 delivery may prolong the pain and suffering of an animal. When done correctly, the use of ballistics  
5 should cause instantaneous unconsciousness followed by respiratory and cardiac arrest. However,  
6 improper uses, such as inappropriate caliber of the firearm or untrained personnel, may not cause  
7 unconsciousness before death and would then not be considered humane under the AVMA  
8 guidelines. During mass strandings, the use of ballistics may stress and exacerbate fear in the  
9 surviving animals. The incorrect charge placement of explosives may not cause instantaneous  
10 unconsciousness and may cause tissue destruction (Greer *et al.* 2001). Exsanguination (bleeding)  
11 may prolong pain and suffering if done incorrectly.

12 Issuance of SAs only to current SA holders limits the activities of the stranding network to the  
13 geographic area that is currently covered. Animals may strand in areas where response is limited or  
14 non-existent. Limited response may increase the pain and suffering of stranded animals, and animals  
15 would likely die without response from the stranding network. Limiting the issuance of SAs would  
16 not allow for new rehabilitation facilities to be added and would affect the amount of animals that  
17 could be accepted for rehabilitation. If current rehabilitation facilities do not have space for an  
18 animal, the animal would be euthanized or left on the beach during response activities. Prohibiting  
19 new activities could reduce the success of a response, as new tools and techniques would not be  
20 available for use.

21 Implementing the SA criteria would ensure that only those individuals, organizations, or institutions  
22 qualified and trained to conduct response, assessment, rehabilitation, and/or release of marine  
23 mammals would be given SAs. This would reduce the likelihood of increased risks to wild  
24 populations with release. Without using the criteria during the review of SA applicants,  
25 inexperienced personnel could be issued a SA to respond to and/or rehabilitate stranded animals.  
26 Inexperienced personnel could put the animal's health in jeopardy, increase their pain and suffering,  
27 and increase the adverse impacts on other biological resources. The potential for an appropriate  
28 response (immediate release, animal to rehabilitation, or euthanasia) would decrease. Without a  
29 nationwide set of criteria, SA holders in different NMFS regions may not be held to the same  
30 standards or require the same minimum experience and qualifications. This would include working  
31 with a licensed veterinarian for live animal response and rehabilitation to ensure animals receive  
32 adequate and humane care.

1 **4.2.1.3 Alternative A3**

2 Under Alternative A3, SAs would be issued to any applicants after review, the new SA template  
3 would not be utilized, and the Final SA criteria would not be issued. Current and future stranding  
4 response activities would be included in this alternative. Effects on biological resources from  
5 stranding response activities under Alternative A3 would be the same as those described under  
6 Alternative A2. Effects of not implementing the SA criteria would also be the same as those  
7 described under Alternative A2. Under Alternative A3, as new techniques and tools become  
8 available they could be permitted for use during response activities. This would likely have a  
9 beneficial impact on marine mammals as response efforts would be conducted using the best  
10 available equipment and methods.

11 Minor, adverse effects on marine mammals would be expected to occur if new SAs are issued to any  
12 applicant after they were reviewed by the appropriate NMFS Regional Office. Inexperienced  
13 individuals may be responding to stranded marine mammals, which could result in injuries or  
14 inhumane techniques. Some beneficial impacts could come from allowing new SA holders to be  
15 added, given that they have the proper experience with marine mammal response, as geographic  
16 coverage would increase and new rehabilitation facilities may be added to the Stranding Network.

17 **4.2.1.4 Alternative A4- Preferred Alternative**

18 Under Alternative A4, the Final SA criteria and the new SA template would be implemented and  
19 current and future stranding response activities would occur. Effects on biological resources from  
20 stranding response activities under Alternative A4 would be the same as those described for  
21 Alternative A2. Under Alternative A4, as new techniques and tools become available they could be  
22 permitted for use during response activities. This would likely have a beneficial impact on marine  
23 mammals as response efforts would be conducted using the best available equipment and methods.  
24 Modifications could also be made to euthanasia techniques if safer, more effective methods or  
25 chemical euthanasia solutions are developed. The use of new techniques and tools would have  
26 impacts similar to, or less than, those described under Alternative A2.

27 Long-term beneficial effects on marine mammals would be expected to occur with the  
28 implementation of the SA template and criteria. The template contains the requirement for periodic  
29 review and reapplication in order to stay in the stranding network. Reviews would occur by the  
30 Regional NMFS Office after the first year for new (probational) network members, every 3 years for  
31 members doing live animal response and rehabilitation, and every 5 years for organizations

1 responding solely to dead animals. In addition, the new agreement provides NMFS with the option to  
2 place organizations on probation or suspension, or to terminate the SA, for noted deficiencies or  
3 failure to comply with the terms and conditions of the SA. The SA criteria would make certain that  
4 SA holders in every NMFS region were held to the same standards and require the same minimum  
5 experience and qualifications. A licensed veterinarian would be highly recommended during all  
6 emergency response activities and during the transport of cetaceans. A licensed veterinarian would  
7 be required at all rehabilitation facilities. This attending veterinarian would meet qualifications as set  
8 forth in the Minimum Criteria and Rehabilitation Facility Guidelines, including: 1) having an active  
9 veterinary license in the U.S. (has graduated from a veterinary school accredited by the AVMA  
10 Council on Education, or has a certificate issued by the American Veterinary Graduates Association's  
11 Education Commission for Foreign Veterinary Graduates) or has received equivalent formal  
12 education as determined by NMFS; and 2) having the appropriate registrations and licenses (*e.g.*, for  
13 handling controlled substances, including registering with the Drug Enforcement Administration  
14 [DEA]) to obtain the necessary medications for marine mammal response. This would likely increase  
15 the potential for an appropriate response, rehabilitation, and/or release, and may minimize the  
16 negative impacts associated with stranding response on biological resources. New SA holders could  
17 be added under the alternative, which would be a beneficial impact on marine mammals.

#### 18 **4.2.1.5 Alternative A5**

19 Under Alternative A5, the Final SA criteria and the new SA template would be implemented and  
20 response to threatened, endangered, or rare animals would be required. Effects on biological  
21 resources from stranding response activities under Alternative A5 would be the same as those  
22 described under Alternative A2. Effects on biological resources from the implementation of SA  
23 criteria would be the same as those described under Alternative A4.

24 Requiring response to threatened, endangered, or rare animals would be a positive effect on those  
25 populations. However, making response to other animals optional could adversely affect those  
26 populations as they could become threatened or endangered in the future. It may also indirectly affect  
27 ESA-listed species, as non-listed species often serve as models for other animals. Limiting response  
28 to non-listed species would decrease the information gained from strandings that could be beneficial  
29 to the survival of threatened and endangered species. Responding to other species allows the  
30 detection of new diseases or hazardous conditions in the ocean, which may reduce impacts on  
31 threatened and endangered species or species of concern.



1 **4.2.2 Carcass Disposal Alternatives**

2 **4.2.2.1 Alternative B1- No Action**

3 Under Alternative B1, no carcass disposal would occur and carcasses would remain on the beach to  
4 naturally decompose. Federal (not including NMFS), state, and local agencies authorized under  
5 MMPA 109(h) would still be able to conduct carcass disposal of non-ESA listed species. Carcass  
6 disposal activities would likely be limited and localized. Carcasses would likely be removed to avoid  
7 having a decomposing animal on a public beach. Animal carcasses may contain POPs, toxic metals,  
8 pathogens, and/or biotoxins. Contaminant levels would likely be higher in species that feed at higher  
9 trophic levels and/or in areas where prey may be more contaminated. A literature review has been  
10 conducted to determine the persistent contaminants found in selected marine mammal species (see  
11 Appendix J). Species addressed in the review were based upon the frequency and patterns with which  
12 they strand. The review concluded that there is a limited amount of information on most species and  
13 their contaminants. Therefore, the evaluation of the potential toxicological environmental hazards  
14 posed by a decomposing carcass cannot be determined at this time.

15 **4.2.2.2 Alternative B2- Status Quo**

16 Under Alternative B2, current methods of carcass disposal would continue. Current carcass disposal  
17 methods under Alternative B2 include on-site burial, transport off-site (for burial or rendering),  
18 disposal at sea, and natural decomposition (left on-site). Spills of hazardous materials or wastes from  
19 vessels during at-sea carcass disposal activities could impact biological resources. Some materials  
20 could be diluted quickly by currents, only causing temporary impacts. Other materials could linger in  
21 the water column or adhere to sediment particles, causing slightly longer impacts. Biological  
22 resources could be injured or killed if they are in the vicinity of a spill. Equipment used during  
23 carcass disposal activities could leak oil or other materials into sand and nearshore waters. Hazardous  
24 material leaks from equipment could impact shellfish, other invertebrates, and nearshore fish.  
25 However, these would likely be small amounts that would be flushed out and/or diluted rapidly,  
26 causing a minor, short-term impact. However, all of these impacts would be negligible when  
27 compared to other inputs of hazardous materials from vessels, sewage outfalls, runoff, industrial  
28 operations, and other beach vehicle uses.

29 Digging physically alters and disrupts the site. However, effects would be negligible as on-site burial  
30 would not be conducted in protected and sensitive habitats without consulting the proper authorities  
31 (see Section 5.2). Potential damage could occur as equipment may need to traverse sensitive habitats

1 to access the carcass for removal or disposal. Equipment used for disposal at sea and the carcass  
2 itself could hit and damage submerged sensitive habitats, such as coral reefs.

3 Animal carcasses may contain POPs, toxic metals, pathogens, and/or biotoxins. Contaminant levels  
4 would likely be higher in species that feed at higher trophic levels and/or in areas where prey may be  
5 more contaminated. The evaluation of the potential toxicological environmental hazards posed by a  
6 decomposing carcass cannot be determined at this time (see Appendix J). However, the potential  
7 does exist for the decay products of carcasses to be released into the surrounding environment or  
8 recycled into the food web, with subsequent negative impacts.

9 Animals may also contain chemical residues from substances administered by stranding response  
10 personnel, including chemical euthanasia solution and sedatives. If the animal is a rehabilitated  
11 animal that has restranded, it may also contain antibiotics, antifungals, and other medicine. These  
12 chemicals persist in the carcass at different concentrations and for different amounts of time. They  
13 would not likely create a large-scale environmental hazard, as the levels would be negligible  
14 compared to levels found in runoff and sewer discharge, and the compounds are not likely to  
15 bioaccumulate through the food web.

16 Contaminants from potentially toxic carcasses left on site or buried could leach into groundwater and  
17 flow into nearshore water, harming sensitive areas in and around the carcass. This impact would be  
18 minor and short-term. If contaminants enter groundwater, they would likely be flushed out quickly  
19 by tidewater and/or precipitation. Higher concentrations of contaminants may occur in nearshore  
20 waters down site from the carcass. These concentrations would be diluted and flushed out by the  
21 currents; therefore the impact on biological resources would be temporary and minor. Sediment  
22 quality would not likely be impacted by contaminants, as they would be flushed out or diluted before  
23 they could adhere to the substrate. Therefore, any organisms using sediment would not be impacted.

24 SAV and macroalgae could be indirectly affected by on-site burial. Contaminants from chemically  
25 euthanized carcasses could leach into groundwater and impact waters used by SAV and macroalgae.  
26 Carcass disposal at sea could cause minor, short-term, adverse effects. Equipment used for disposal  
27 at sea and the carcass itself could potentially damage SAV and macroalgae or remove SAV from  
28 sediment. Impacts would be minor, as SAV and macroalgae would grow back and organisms that use  
29 them as habitat would be able to utilize surrounding areas.

1 On-site carcass burial could adversely affect sea turtles nesting on beaches, depending on the location  
2 and time of year. However, carcass burial sites would not be sited near nesting sea turtles,  
3 eliminating the potential for adverse effects.

4 Minor, short-term adverse effects on coastal and marine birds could occur during carcass disposal.  
5 The use of equipment and the presence of people could disturb birds nesting or roosting in trees or  
6 small bushes, and may cause them to temporarily leave the area. These birds would likely return to  
7 the area once response activities ended and impacts would be temporary, as response activities would  
8 occur for a short period. Ground nesting birds could be adversely affected by transport and burial  
9 activities. Heavy equipment could crush nests and digging for burial could completely remove a nest.  
10 Personnel helping with disposal could disturb or damage a nest.

11 Minor, short-term adverse effects on shellfish and other invertebrates could occur during response  
12 activities. The traversing of heavy equipment over shellfish beds to access a carcass could damage or  
13 kill shellfish. Shellfish would not be negatively impacted during digging for carcass burial, as burial  
14 sites would be chosen well above the high tide line. Other invertebrates could be disturbed and  
15 negatively impacted during burial activities. Contaminants from toxic carcasses could leach into  
16 groundwater and nearshore waters and impact shellfish. Potential effects on fish may result from  
17 contaminants in nearshore waters. Impacts on shellfish and fish from contaminants would be minor,  
18 as contaminants would be flushed out and/or diluted rapidly.

19 Scavengers may be adversely affected if carcasses of chemically euthanized or toxic animals are left  
20 to decompose on the beach. Euthanasia solution is toxic and may injure or kill animals feeding on  
21 these carcasses, known as secondary toxicosis. In addition, scavengers may consume POPs, other  
22 toxic chemicals, and biotoxins which may bioaccumulate over time, with the potential for serious  
23 injuries or death. Diseased animal carcasses may also cause serious injuries or death if consumed by  
24 scavengers. Likewise, disposal of these carcasses at sea could also affect scavengers, such as sharks  
25 and seabirds. Negligible, short-term, adverse effects on scavengers would be expected to occur from  
26 the removal of carcasses from beaches. Carcasses provide food many animals, including foxes,  
27 coyotes, birds, and polar bears. Threatened bald eagles may feed on marine mammal carcasses left on  
28 beaches. California condors, an endangered species recently reintroduced in California, may also  
29 feed on marine mammal carcasses. California condors would not be affected, as most carcasses  
30 (mainly pinnipeds that have not been chemically euthanized) are left on beaches in California where  
31 the condors are located. Effects of carcass removal are expected to be negligible because scavengers

1 are not solely dependent on marine mammal carcasses for survival. In most areas, strandings are rare  
2 and not a major component of scavengers' diets.

3 Minor, indirect benefits may occur from carcasses towed out to sea. Disposal at sea of carcasses may  
4 create food for other organisms. However, this may lead to recycling of contaminants. Large whale  
5 carcasses have been known to become habitat and food for a variety of organisms, such as those as  
6 seen on natural whale falls (Smith and Baco 2003). Some stranding network members have  
7 coordinated carcass disposal efforts with research groups studying whale falls and the transitory  
8 benthic invertebrate communities surrounding them.

### 9 **4.2.2.3 Alternative B3- Preferred Alternative**

10 Under Alternative B3, current methods of carcass disposal would continue with a recommendation to  
11 transport chemically euthanized animal carcasses off-site. Effects from Alternative B3 would be the  
12 same as those described under Alternative B2, except for the effects from chemically euthanized  
13 animal carcasses. Under Alternative B3, these carcasses would be transported off-site to a proper  
14 landfill whenever possible, removing the risk of contamination. This would be a positive effect on  
15 protected and sensitive habitats, SAV and macroalgae, fish, shellfish, other invertebrates, and  
16 scavengers.

17 Under this alternative, modifications may be made to carcass disposal activities. Currently, the  
18 potential toxicological environmental hazards posed by a decomposing carcass are not known. If and  
19 when this information becomes available, additional precautions (*e.g.*, removal of certain species  
20 carcasses from beaches) would be implemented, if necessary. These modifications would have a  
21 beneficial impact on the surrounding biological resources.

## 22 **4.2.3 Rehabilitation Activities Alternatives**

### 23 **4.2.3.1 Alternative C1- No Action**

24 Under Alternative C1, current SAs would expire, stranding response would end, and animals would  
25 not be taken into rehabilitation. Marine mammals not taken into rehabilitation most would likely die  
26 from injuries or disease. For populations that are endangered, this could potentially affect the  
27 survival of the species. No effects on protected and sensitive habitats, SAV and macroalgae, sea  
28 turtles, fish, shellfish, other invertebrates, or birds would be expected to occur from this alternative.

1 **4.2.3.2 Alternative C2- Status Quo**

2 Under Alternative C2, current rehabilitation activities would continue, but the final Rehabilitation  
3 Facility Standards would not be implemented. Stranded animals would be taken into rehabilitation  
4 with the intent to release them back to the wild, if possible, once they are healthy. Biological samples  
5 may be collected from a stranded animal to help determine the medical and physiological condition of  
6 the animal, assess the best course of action, and monitor progress and appropriateness of treatment.  
7 Samples would include blood, swabs, biopsies, etc. Sample collection would likely cause minor  
8 stress to the animal, beyond the actual stranding event. Handling, lifting, and restraining an animal  
9 could cause injuries. When anesthetized or sedated, an animal may go into a dive reflex, which  
10 would include breath holding, slowing of the heart rate, and the pooling of blood from peripheral  
11 vessels. Anesthetized animals could develop hypothermia or hyperthermia. Administration of drugs  
12 and surgical procedures could cause injuries or death. However, all rehabilitation activities would be  
13 conducted in an attempt to help sick and injured animals. Rehabilitation would be conducted with  
14 proper veterinary oversight and the use of established and accepted methods. Most adverse impacts  
15 on animals in rehabilitation would be outweighed by the potential beneficial impact of saving an  
16 animal and returning it to the wild.

17 Animal euthanasia may occur, when deemed necessary by the attending veterinarian. Euthanasia  
18 procedures would be carried out by, or under the direction of, the attending veterinarian. Chemical  
19 euthanasia agents may cause hyperexcitability or violent reactions in some species. Intraperitoneal  
20 administration of a euthanasia solution may lead to the prolonged onset of action due to differential or  
21 slow absorption rates. It may also cause irritation in the surrounding tissues. Improperly administered  
22 chemical euthanasia agents or methods of delivery may prolong the pain and suffering of an animal.

23 Current facilities may not have enough space or resources to accommodate a stranded animal or may  
24 only rehabilitate certain animals. If no rehabilitation facility can take an animal, the animal may be  
25 euthanized. Standards for the humane treatment of marine mammals would constantly be developed,  
26 applied, and re-examined. Practices currently acceptable may not be acceptable in the future. If  
27 adaptive changes are not allowed, the success of rehabilitation would not increase. Animals may not  
28 be able to return to the wild, which may mean the animal would be euthanized or placed into  
29 permanent captivity in a public display or research facility. Removal of marine mammals from the  
30 wild would negatively effect populations that are depleted, threatened, or endangered.

1 The Rehabilitation Facility Standards would not be implemented, compromising animal health, the  
2 success of rehabilitation, and the potential for release to the wild. Inadequate care may increase pain  
3 and suffering of a marine mammal. Pool and pen sizes could be inadequate or contain too many  
4 animals, which would restrict animal movement and may cause aggressive behaviors between  
5 animals. New animals may not be placed into quarantine, which could introduce new pathogens to  
6 other animals currently in the rehabilitation facility, which are already compromised. Pathogens may  
7 also be introduced and spread through contaminated supplies, equipment, and personnel, by mixing of  
8 marine mammal species within the rehabilitation setting (particularly species that do not interact or  
9 whose ranges do not overlap in the wild), or by encounters between marine mammals and terrestrial  
10 mammals (particularly canids, felids, and raccoons). Any pathogen within a rehabilitation “hospital”  
11 setting has the potential to mutate or evolve into a novel organism (including those with drug resistant  
12 properties), creating a new (or drug-resistant) disease which could then be introduced into the naïve  
13 wild population upon the release of an infected animal following rehabilitation, particularly if the  
14 animal is not thoroughly evaluated prior to release.

#### 15 **4.2.3.3 Alternative C3- Preferred Alternative**

16 Under Alternative C3, new SAs would be issued, rehabilitation activities would continue, and the  
17 final Rehabilitation Facility Standards would be implemented. The effects on marine mammals from  
18 rehabilitation activities under this alternative would be the same as those described under Alternative  
19 C2. No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish,  
20 other invertebrates, or birds would be expected to occur from rehabilitation activities under this  
21 alternative.

22 The Rehabilitation Facility Standards would be implemented, requiring current and future facilities to  
23 adhere to the minimum standards as part of their SA. The standards would ensure a healthy  
24 environment for animals, maximize the success of rehabilitation, and increase the potential for release  
25 to the wild. The standards cover facilities, housing, space, water quality, quarantine, sanitation  
26 practices, food handling and preparation, and veterinary medical care. Rehabilitation facilities would  
27 be required to submit the maximum holding capacity for their facility based upon the minimum space  
28 requirements in order to minimize overcrowding. Long-term beneficial impacts would be expected,  
29 as these standards would ensure that safe, healthy, and humane conditions are in place at all facilities.  
30 The standards would decrease the risk of disease transmission within the facility with the  
31 requirements for quarantine facilities and quarantine protocols for all incoming animals. Minimum  
32 quarantine and biosecurity standards include, but are not limited to: having separate filtration and

1 water flow systems; providing sufficient space or solid barriers between animal enclosures to prevent  
2 direct contact; and maintaining equipment and tools strictly dedicated to the quarantine area.  
3 Additional quarantine standards are described under mitigation in Section 5.2.3.

4 Veterinary medical care standards (Sections 1.7 [for cetaceans] and 2.7 [for pinnipeds] in the  
5 Rehabilitation Facility Standards) would ensure that veterinarians and other personnel have the  
6 appropriate knowledge and experience to properly care for and treat marine mammals. An attending  
7 veterinarian would be required to work with staff at all rehabilitation facilities and be involved in  
8 making decisions regarding medical care and husbandry of current and incoming animals. Veterinary  
9 care standards, including recommended standards, are described under mitigation in Section 5.2.3.

10 Standards for open ocean/bay net pens reduce the probability of disease transmission to other healthy  
11 animals in the pens or the wild population and ensure that good water quality would be maintained.  
12 Even with these standards, adverse impacts from the use of net pens may occur. Animals in net pens  
13 are still exposed to conditions that cannot be controlled, such as water temperature, HABs, and the  
14 elements. The recommended placement of net pens may not always be feasible due to geography,  
15 currents, proximity to protected areas, or proximity to economic interests (*e.g.*, aquaculture). The use  
16 of temporary pools may adversely affect animal health. Proper water quality and temperature may  
17 not be maintainable and disease transmission may occur if more than one animal is housed in a pool.  
18 Animals in outside temporary pools would also be exposed to the elements.

19 Under this alternative, modification of rehabilitation activities could occur. Rehabilitation activities  
20 may change with improvements in technologies, techniques, and other aspects of marine mammal  
21 medicine. These new activities would have impacts similar to, or less than, those currently  
22 conducted. The closure of rehabilitation facilities is also included under modification of activities.  
23 Animals being held at a facility would be transferred to the nearest available rehabilitation facility in  
24 the region. Impacts from the transfer of animals would include handling, lifting, restraint, and  
25 transport. Impacts from handling, lifting, and restraint are the same as those described under  
26 Alternative C2.

27 During transport, cetaceans may overheat (hyperthermia) or develop hypothermia during transport.  
28 Body surfaces may be exposed to the drying effects of air. Improper transport of cetaceans may  
29 cause abrasions, pressure necrosis, thermoregulatory problems, and respiratory problems. Muscular  
30 stiffness may occur from transport, but most accepted transport methods try to minimize or avoid this  
31 entirely. Stiffness would disappear within a few hours to a few days, unless there was permanent

1 muscle damage (Antrim and McBain 2001). Animals may also be knocked around, causing muscle  
2 damage or they may inhale exhaust fumes.

#### 3 **4.2.3.4 Alternative C4**

4 Under Alternative C4, new SAs would be issued, rehabilitation activities would continue, and the  
5 final Rehabilitation Facility Standards would be implemented. The rehabilitation of threatened,  
6 endangered, and rare animals would be required and the rehabilitation of other animals would be  
7 optional. The effects on marine mammals from rehabilitation activities under this alternative would  
8 be the same as those described under Alternative C2. No effects on protected and sensitive habitats,  
9 SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, or birds would be expected to  
10 occur from rehabilitation activities under this alternative. The effects on marine mammals would be  
11 the same as those described under Alternative C3.

12 Adverse impacts would also be expected for animals that are not rare, threatened, or endangered.  
13 Rehabilitation of all other animals would not be required, but would be optional depending on facility  
14 resources. Animals not taken into rehabilitation would be euthanized on the beach. These animals  
15 often serve as models for other species and provide valuable information that could be used during  
16 rehabilitation. For example, through the treatment and care of California sea lions (a commonly  
17 stranded pinniped along the West Coast) husbandry practices have been refined and are used to the  
18 benefit of Steller sea lions (a threatened species), including nutrition; stress reduction; animal  
19 monitoring; and veterinary techniques including drugs, sedatives, and anesthetics. Similarly,  
20 rehabilitation practices refined on Northern fur seals from the non-listed San Miguel stock off the  
21 California coast benefit Northern fur seals from the depleted Eastern Pacific stock, as well as  
22 endangered Guadalupe fur seal. Information obtained from California sea lions regarding impacts of  
23 disease and environmental conditions, such as domoic acid, provide valuable data regarding food web  
24 transfer and exposure routes, possible treatment options, and population-impacts. Due to similar  
25 physiology, much of this information may be extrapolated to other otariid species including Steller  
26 sea lions and Northern fur seals to determine how these animals may be exposed (via the food web)  
27 and affected, as well as treated. In addition, animals from the “common” species are frequently  
28 placed with rare, threatened or endangered animal to provide adequate non-human socialization.  
29 Absence of common animals, and lack of experience treating them, would lead to difficulties in  
30 adequately treating rare, threatened and endangered species. This would be an indirect adverse affect  
31 on rare, threatened, and endangered species.



1 **4.2.4 Release of Rehabilitated Animals Alternatives**

2 During the public comment period, particular concerns were raised regarding the release of  
3 rehabilitated ices seals in Alaskan waters. In response to these concerns, which raised issues both  
4 related to potential impacts on biological resources (conspecifics or other wild ice seal populations)  
5 and potential effects on cultural resources for subsistence harvest of ice seals, several of the  
6 alternatives would adopt mitigation measures to minimize the potential for disease transmission from  
7 rehabilitated ices seals, as described in Section 5.2.4 of this PEIS.

8 **4.2.4.1 Alternative D1- No Action**

9 Under Alternative D1, current SAs would expire, stranding response and rehabilitation would cease,  
10 and there would be no animals to release. All marine mammals brought in for rehabilitation would  
11 remain in captivity or be euthanized. This alternative would reduce potential impacts on wild  
12 populations, as there would no longer be the risk of introducing a diseased animal that could  
13 potentially infect other marine mammals. However, it would eliminate the potentially beneficial  
14 effects of returning animals to the wild population. No effects on protected and sensitive habitats,  
15 SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, or birds would be expected to  
16 occur from release activities under this alternative.

17 **4.2.4.2 Alternative D2- Status Quo**

18 Under Alternative D2, current release activities would continue, adaptive changes to release activities  
19 would not be permitted, and the final Release criteria would not be implemented. Minor, short- and  
20 long-term adverse effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish,  
21 shellfish, and birds could occur from release activities under this alternative. Spills of hazardous  
22 materials or wastes from release vessels could impact these resources. Some materials could be  
23 diluted quickly by currents, only causing temporary impacts but others could linger in the water  
24 column or adhere to sediment particles, causing slightly longer impacts on sensitive habitats, SAV,  
25 and macroalgae. Hazardous materials could injure or kill sea turtles or marine mammals in the  
26 vicinity of a spill. Equipment used for beach release activities could leak oil or other materials into  
27 sand and nearshore waters. Sea turtles and birds could be injured and their nests may be damaged.  
28 These materials would likely be flushed out and/or diluted rapidly, causing a minor, short-term  
29 impact to sensitive habitats, SAV and macroalgae, fish, shellfish, and other invertebrates.

30 As required under regulations at 50 CFR 216.27, all animals would be tagged or marked prior to  
31 release. Commonly used methods of tagging delphinids include freeze branding on or below the

1 dorsal fin (both sides of the body) and/or the attachment of a roto-tag (cattle ear tag) to the dorsal fin.  
2 Freeze branding may cause little or momentary pain during application, which would require 15-20  
3 seconds per brand. Initial discomfort or pain would be relieved by the appropriate anesthetic or  
4 analgesic. Discomfort may persist for some time after the procedure, but is expected to be minor.  
5 Therefore, impacts would be considered negligible and not significant. However, liquid nitrogen  
6 could spill onto an animal during the process, causing more than momentary pain. During the  
7 attachment of the roto-tag, pain would only last during the application, and sedatives or local  
8 anesthetic would be used. However, the tag site could become infected, causing pain to the animal.  
9 When the tag is shed, tissue damage may occur and the site could become infected. NMFS must be  
10 contacted if other additional tagging methods may be used, including radio, satellite, or microchip  
11 (Passive Integrated Transponder [PIT] tags) (see Section 4.2.6.2 for impacts from other tagging  
12 methods). For cetaceans other than delphinids, NMFS must be contacted to determine the appropriate  
13 identification method(s).

14 Pinnipeds would be given flipper tags (roto-tags), with placement dependent on the species. Tags  
15 would be attached to the hind flipper of phocids and the foreflipper of otariids (Geraci and Lounsbury  
16 2005). Flipper tagging would cause temporary pain during attachment and the tag site may become  
17 infected. The tag may also be ripped out and the site could become infected. Animal movement may  
18 prolong or prevent healing by producing repetitive stress on the wound. Additional tagging may  
19 include radio, satellite, or microchip (PIT) tags with a variety of attachment methods (see Section  
20 4.2.6.2 for impacts from other tagging methods).

21 Tagging allows an individual animal to be monitored after being released and evaluate its success in  
22 returning to the wild (Lander *et al.* 2001). If released animals appear to be compromised (*e.g.*, not  
23 feeding, ill, or interacting with people) based on tag data, animals could potentially be recaptured for  
24 further rehabilitation or permanent captivity. This would be beneficial to the individual animal and  
25 may also protect the wild population by preventing disease transmission or transfer of negative  
26 behaviors, such as human interaction. Conversely, if the tag data indicates that the animal is behaving  
27 “normally” (diving to depths indicative of feeding, swimming in normal patterns, in geographic  
28 association with other animals of the same species, avoiding people), the rehabilitation may be  
29 deemed a success, and the tag can provide basic biological data about the animal and species. For  
30 instance, the first rehabilitation and release of a Risso’s dolphin occurred at the Riverhead Foundation  
31 for Marine Research and Preservation in New York (DiGiovanni *et al.* 2005). After release, this  
32 animal was tracked for 67 days. Aerial over flights showed that it was in the vicinity of other Risso’s

1 dolphins and that it was diving up to a maximum of 600 m depth for a maximum duration of 15  
2 minutes. This rehabilitation effort was deemed to be a success, based on this follow-up information.  
3 This is also some of the first information that has been collected on a free-ranging Risso's dolphin, so  
4 it is beneficial to basic scientific inquiries about marine mammals. For some marine mammal  
5 species, particularly those that are offshore or cryptic, tagging may be the only way to monitor these  
6 animals and gather necessary life history data (Wilson and McMahon 2006). Over time, data may be  
7 collected from a significant number of released animals (particularly those that commonly strand) that  
8 can provide population-level insights into species movement and behavior patterns.

9 Tagging and post-release monitoring is also beneficial in the evaluation and improvement of  
10 response, rehabilitation, and release procedures. For example, cetaceans that mass strand in the  
11 Northeast U.S. (particularly Cape Cod) are not typically rehabilitated, and are either euthanized or  
12 refloated and released off the beach. While animals that are pushed out are not generally observed  
13 re-stranded in the area, their ultimate fate has been unknown. Recently, satellite transmitters were  
14 deployed on two beach-released Atlantic white-sided dolphins that were part of separate mass  
15 stranding events (Rice and Cooper 2005). Both animals were tracked for over 30 days, and the tracks  
16 indicated survivorship as well as vigorous swim and dive behavior following return to offshore  
17 habitats. Some studies are also being done on classes or groups of animals that strand due to a  
18 common etiology (cause), such as domoic acid in California pinnipeds. California sea lions that have  
19 been deemed successfully rehabilitated (passed all of the pre-release screening tests) have been  
20 tracked post-release and determined to have long-term medical and behavioral problems that persist  
21 from the domoic acid intoxication, including seizures, disorientation, isolation, and not reacting to  
22 approach from humans and dogs (Thomas and Harvey 2005). Several animals re-stranded, and the  
23 behavior of others made survivability questionable. As a result, rehabilitation decisions are being re-  
24 examined for this and other species, including the definition of a "successful" rehabilitation.

25 Transport of animals to release sites could cause stress or injuries to an animal. During transport to  
26 the release site, animals may overheat in direct sun and heat without protection. Cetaceans may  
27 overheat (hyperthermia) or develop hypothermia during transport. Body surfaces may be exposed to  
28 the drying effects of air. Animals may also be knocked around, causing muscle damage or they may  
29 inhale exhaust fumes. Improper transport of cetaceans may cause abrasions, pressure necrosis,  
30 thermoregulatory problems, and respiratory problems. Muscular stiffness may occur from transport,  
31 but most accepted transport methods try to minimize or avoid this entirely. Stiffness would disappear

1 within a few hours to a few days, unless there was permanent muscle damage (Antrim and McBain  
2 2001).

3 The release of pinnipeds on rookeries or haul-out sites could disrupt other animals. When pinnipeds  
4 are startled and disperse from rookeries, pups may be trampled or abandoned. Juvenile and adult  
5 animals may be trampled during stampedes or injured on underwater rocks and cliff faces.

6 Animals deemed releasable after rehabilitation would be returned to the wild, which may have a  
7 positive or negative impact on marine mammal populations. Without the use of release criteria,  
8 animals that are not medically, developmentally, or behaviorally cleared for release could be released.  
9 Releasing unhealthy animals could increase their pain and suffering. An animal that is not healthy or  
10 has behavioral issues could re-strand or die, which would counteract the care it received in  
11 rehabilitation. Animals that are not healthy could transmit diseases to wild populations (Cunningham  
12 1996, Measures 2004). An animal that is not behaviorally ready for release may not have the skills  
13 needed to survive in the wild. The animal may not be able to forage or avoid predators. An animal  
14 may have abnormal breathing and may be unable to swim or dive properly. Animals with behavioral  
15 issues could also approach, interact, and be aggressive with people, creating hazard to themselves and  
16 public safety.

#### 17 **4.2.4.3 Alternative D3- Preferred Alternative**

18 Under Alternative D3, new SAs would be issued, release activities would continue, adaptive changes  
19 to release activities would be permitted, and the final Release criteria would be implemented. Effects  
20 on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, birds, and marine  
21 mammals from release activities under Alternative D3 would be the same as those described under  
22 Alternative D2, except for the impacts on marine mammals. Beneficial effects would be expected for  
23 marine mammals because the release criteria would be implemented and adaptive changes would be  
24 permitted.

25 Under the release criteria, animals would be medically cleared by the attending veterinarian and their  
26 assessment team before a release determination is made. The medical assessment would include a  
27 hands-on physical examination and a review of the animal's complete history, diagnostic test results,  
28 and medical and husbandry records. These procedures would minimize the risk of disease  
29 introduction or transmission to the wild population.

1 Animals would also be developmentally and behaviorally cleared before release occurred, enhancing  
2 their chance for survival. Developmental clearance would ensure that the animal has attained a  
3 sufficient age to be nutritionally independent, including the ability to forage and hunt. Behavioral  
4 clearance would include an assessment of an animal's breathing, swimming, diving, locomotion on  
5 land (pinnipeds) foraging, and hunting abilities. An evaluation of an animal's visual and auditory  
6 functions would be conducted. For cetaceans, any behavioral conditioning would be eliminated prior  
7 to release such that the association of food rewards with humans is diminished.

8 An animal that has recovered from an infectious disease would be released near its original stranding  
9 site, when feasible, in order to minimize disease risks to the wild population. NMFS must be  
10 consulted when an animal cannot be released near their original stranding site to determine a  
11 preferred release site.

12 Adaptive changes would allow the use of new procedures and technology, such as tags and telemetry  
13 packages. New tags and telemetry packages would likely be smaller in size and weight and less  
14 invasive than those currently used. Impacts from these new activities would be similar to, or less  
15 than, those impacts described under Alternative D2 for current tagging activities. The release criteria  
16 may change as new information and data are obtained from released animals and as improvements are  
17 made in marine mammal medicine. New procedures and technologies may also increase the success  
18 of a release and the survival of an animal.

## 19 **4.2.5 Disentanglement Alternatives**

### 20 **4.2.5.1 Alternative E1- No Action**

21 Under Alternative E1, there would be no disentanglement network. No significant effects on  
22 protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, or birds would be  
23 expected to occur from Alternative E1. However, gear on an entangled animal may be shed and  
24 become marine debris, which could potentially harm biological resources. The amount that may be  
25 shed would be negligible compared to the amount of gear already in the ocean.

26 Lines and gear may cause serious injuries to animals and restrict their ability to move, dive, and feed.  
27 If an animal cannot free itself from the entangling material it would most likely die. Without  
28 disentanglement efforts, animals would likely suffer a slow, painful death. North Atlantic right  
29 whales would be greatly affected if disentanglement efforts ceased, as entanglements are known to be  
30 a significant source of mortality. The best estimate of the size of the North Atlantic right whale

1 population is a range of 300 to 350. Although other population size estimates are available, the most  
2 recent Stock Assessment Report (Waring *et al.* 2007) indicates that the best estimate minimum  
3 population size for the species is 313 individually-recognized whales known to be alive in 2002.  
4 Recent models indicate that this population is likely declining, rather than remaining static or  
5 increasing (Caswell *et al.* 1999). The loss of one individual, especially a reproductively healthy  
6 female, would be a major impact on the species. For biological reasons, the number of reproductive-  
7 age females is more essential to a species' ability to maintain itself or grow than the number of males.  
8 Humpback whales and other large endangered whales would also be negatively affected if  
9 disentanglement activities ended.

#### 10 **4.2.5.2 Alternative E2- Status Quo**

11 Under Alternative E2, the disentanglement network would continue the current activities with no  
12 modifications or new members added. Minor, short-term adverse effects on protected and sensitive  
13 habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds could occur  
14 from this alternative. Spills of hazardous materials or wastes from vessels could impact these  
15 biological resources. Some materials could be diluted quickly by currents, only causing temporary  
16 impacts. Other materials could linger in the water column or adhere to sediment particles, causing  
17 slightly longer impacts. No impacts would be expected to occur during pinniped disentanglements on  
18 land.

19 Under Alternative E2, the disentanglement network would continue to disentangle or attempt to  
20 disentangle animals. Removal of life-threatening gear would not only increase the chance of survival  
21 for the individual animal, but would have a positive impact on those species that are threatened and  
22 endangered. These activities pose minimal adverse and significant beneficial impacts to the  
23 entangled animal.

24 Minor adverse effects on marine mammals could occur during disentanglement activities. Takes of  
25 entangled animals would occur during close approaches by aircraft (to locate entangled animals or for  
26 photo-identification) or by vessel (for documentation, general assessment, photo-identification, and  
27 disentanglement attempts). Incidental takes from close approaches are likely if other animals are in  
28 the vicinity of the entangled animal. Aerial surveys to locate entangled animals would be of a short-  
29 duration and aircraft would circle at an altitude ranging from 300-1,000 ft (91-305 m) above the  
30 animal. Harassment of marine mammals could occur if the aircraft operated below a certain altitude.  
31 Aerial surveys may cause an animal to change its behavior, such as diving rapidly. However, this

1 change in behavior would be short-term, with a minimal effect on the animal. Responders have  
2 reported that whales they have encountered have not exhibited evasive behavior in response to aerial  
3 approaches for the purpose of photo-identification and basic sighting data.

4 Animal reactions to close approaches may include swimming faster, breaching, diving, tail and fin  
5 slapping, or moving away from the vessel. Responders have reported that some whales encountered  
6 for assessment and documentation have not exhibited evasive behavior. Whales encountered closely  
7 (within 30 m) for the purpose of tagging and disentanglement efforts did exhibit evasive behavior in  
8 response to vessel approaches. These behaviors would generally be short-term, with a minimal effect  
9 on the animal. Response of the entangled animal to disentanglement attempts depends upon the  
10 species. Humpback whales are relatively easy to handle, especially if they have been entangled for a  
11 prolonged period of time. Experience has indicated that humpbacks are unlikely to be evasive or  
12 aggressive during disentanglement efforts, however there are always exceptions. Right whales tend  
13 to respond with aggressive behavior and are uncooperative. To decrease reactions from animals,  
14 approaches would be slow and from the side or behind, with minimal noise. Standby vessels  
15 maintain some distance to minimize potential whale disturbance.

16 During attempts to physically restrain whales, floats, buoys, and control lines would be attached.  
17 Right whales have been known to tow numerous floats and drag moderate-sized vessels. Physical  
18 restraint of the animal may increase stress or pain. Physical restraint of a pinniped may also cause  
19 injuries or death. Chemical restraint may lower a free-swimming whale's respiratory rate, slow their  
20 breathing, and decrease their swimming strength. Sedatives may be delivered through a blow-dart  
21 style syringe, which may startle the animal and cause it to react. Chemical restraint of a pinniped  
22 may initiate the dive reflex, which would include breath holding, slowing of the heart rate, and the  
23 pooling of blood from peripheral vessels. The short-term effects from physical and chemical  
24 restraints would be outweighed by the potential beneficial outcomes.

25 Potential injuries may occur when cutting line and gear off the animal. Unintentional injuries may  
26 occur as an animal moves while cutting or if control of the equipment is lost. Responders may  
27 intentionally injure an animal, when no options to safely remove gear exist and only after  
28 consideration of the possible damage. The potential for a positive outcome outweighs the short-term  
29 effects of these injuries. Potential injuries could also occur if there are hazardous material spills from  
30 vessels, including stand-by vessels, during disentanglement activities. These occurrences could cause  
31 injury or death to marine mammals in the vicinity.

1 During large whale disentanglement, biopsy sampling may occur via remote dart. Animal reactions  
2 to remote biopsy darting are discussed under Section 4.2.6.2, biopsy sampling. Responders report  
3 that while there is typically a low level of evasive response to the close approach for the biopsy  
4 sample, there have not been obvious reactions to the biopsy dart itself. Samples of skin or other  
5 tissue may be recovered from removed fishing gear and would have no impacts on animals.

6 During small cetacean disentanglement, the animal typically must be captured utilizing in-water  
7 capture techniques, such as encirclement via hoop net, followed by physical restraint. Additional  
8 animals may be captured or harassed during the rescue attempt. During pinniped capture and  
9 disentanglement activities, non-entangled animals may be disturbed off a haul-out site.

10 Potential adverse effects could occur, as the addition of new network members would not be allowed.  
11 Without the addition of new members, entangled animals may not be responded to, decreasing their  
12 chance of survival and increasing their pain and suffering. Modifications are not allowed, including  
13 new techniques and tools which could increase the success of disentanglement. Guidelines and  
14 training prerequisites which are currently utilized on the East Coast would not be implemented  
15 nationwide, which may mean inexperienced people could be conducting disentanglement activities on  
16 the West Coast. This would likely increase risks to already vulnerable entangled animals and the  
17 surrounding environment, as well as decrease the success of a disentanglement attempt.

#### 18 **4.2.5.3 Alternative E3- Preferred Alternative**

19 Under Alternative E3, the disentanglement network would continue the current activities on the East  
20 Coast with modifications to the West Coast network. The disentanglement guidelines and training  
21 prerequisites would be implemented. Effects on protected and sensitive habitats, SAV and  
22 macroalgae, sea turtles, fish, shellfish, and birds from Alternative E3 would be the same as those  
23 described under Alternative E2. Effects on marine mammals from close approaches, physical  
24 restraint, chemical restraint, and cutting of lines would be the same as those described under  
25 Alternative E2.

26 Major, long-term beneficial effects on marine mammals would be expected under Alternative E3.  
27 The disentanglement network would continue to disentangle or attempt to disentangle whales.  
28 Removal of life-threatening gear would not only increase the chance of survival for the individual  
29 animal, but would have a positive impact on those species that are threatened and endangered. New  
30 members could be added to the network which would increase the number of animals responded to.  
31 Guidelines and training prerequisites would be implemented nationwide, helping ensure that only



1 experienced and qualified individuals are engaged in disentanglement activities. This would likely  
2 increase the success of disentanglement and decrease the potential risk to entangled animals and the  
3 surrounding environment.

4 Disentanglement activities may be modified under this alternative, as new techniques and tools are  
5 developed. New tools may include safer, more effective cutting instruments and new telemetry  
6 buoys. Chemical and physical restraint techniques may be improved, including the administration of  
7 sedatives and the attachment of buoys, floats, and control lines. These new activities would have  
8 impacts similar to, or less than, those currently used during disentanglement activities.

## 9 **4.2.6 Biomonitoring and Research Activities Alternatives**

### 10 **4.2.6.1 Alternative F1- No Action**

11 Under Alternative F1, biomonitoring and research activities would not occur. No effects on protected  
12 and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, or birds would be expected to  
13 occur from Alternative F1. Both beneficial and adverse effects on marine mammals would be  
14 expected. Biomonitoring and research activities would end and therefore takes of marine mammals  
15 would also end. This would be beneficial to animals, as they would no longer experience any  
16 negative impacts from these activities. However, without these research activities, important health  
17 and exposure data on marine mammal populations would no longer be collected. This would limit  
18 information on exposure of marine mammals to chemical and biological toxins. It would also hinder  
19 some research on the adverse health effects of toxin exposure for marine mammals and would restrict  
20 investigations into factors for UMEs. This could impede future conservation and management  
21 actions and ultimately result in detrimental impacts on marine mammal populations, especially those  
22 that are threatened and endangered.

### 23 **4.2.6.2 Alternative F2- Status Quo**

24 Under Alternative F2, the new ESA/MMPA permit would continue the current biomonitoring and  
25 research activities. Potential minor, short-term, adverse effects on all biological resources could occur  
26 from vessel and vehicle uses. Spills of hazardous materials or wastes from vessels could impact  
27 biological resources. Some materials could be diluted quickly by currents, only causing temporary  
28 impacts. Other materials could linger in the water column or adhere to sediment particles, causing  
29 slightly longer impacts. Equipment used during beach research activities could leak oil or other  
30 materials into sand and nearshore waters during beach releases. These would likely be small amounts  
31 that would be flushed out and/or diluted rapidly, causing a minor, short-term impact. However, all of

1 these impacts would be negligible when compared to other inputs of hazardous materials from  
2 vessels, sewage outfalls, runoff, industrial operations, and other beach vehicle uses.

3 Potential minor, short-term, adverse effects on protected and sensitive habitats could include damage  
4 from vessels or researchers in the water or on the beach. Coral reefs and other habitats may be  
5 damaged from contact with a vessel or a person.

6 Negligible, short-term adverse effects on SAV and macroalgae could occur during research activities.  
7 Vessels used during research activities conducted in shallow waters may damage SAV and  
8 macroalgae with their propellers. Vessel operators would be aware of this potential impact and would  
9 avoid these areas, where feasible. Any damage to SAV and macroalgae would be negligible and  
10 short-term, as only a minimal amount would be disturbed and would grow back.

11 Minor to major, short- and long-term effects on sea turtles could occur during research activities.  
12 Activities conducted on beaches could disrupt nesting sea turtles or damage their nests.

13 Minor, short-term adverse effects on coastal and marine birds could occur during research activities.  
14 The close approach by vessels or aircraft, the use of equipment, or the presence of researchers on  
15 beaches could disturb birds nesting or roosting in trees or small bushes, and may cause them to  
16 temporarily leave the area. Ground nesting birds could be adversely affected by research activities.  
17 Equipment could crush nests and research personnel could disturb or damage a nest. Research  
18 conducted in nearshore waters could disturb foraging birds. This impact would be minimal and  
19 temporary, as birds could forage in nearby areas and would likely return once research activities  
20 ended.

21 Beneficial and adverse effects on marine mammals would be expected to occur from Alternative F2.  
22 Indirect beneficial effects would occur because valuable information on marine mammals and marine  
23 mammal health trends would be collected. This information would be used to understand stranding  
24 events, UMEs, and basic biological processes. Under this alternative, new research activities could  
25 not be conducted. This would limit the ability to collect information in areas not currently studied or  
26 to utilize new technologies and techniques during research activities. This would likely have a  
27 negative impact on marine mammals.

28 Adverse effects on marine mammals from biomonitoring and research activities would be expected to  
29 occur under this alternative. Takes of marine mammals would occur from close approaches,  
30 euthanasia, capture and restraint, tagging, marking, and biological sampling. General methodologies

1 used for biomonitoring and research are described in Appendix H and their impacts are described  
2 below. The numbers of estimated takes are listed in Appendix I.

3 ***Close Approach, Vessel and Aerial Surveys.*** Takes of animals would occur during close approaches  
4 by vessel or aircraft. Close approaches would occur during numerous research activities such as  
5 health assessment, biopsy sampling, breath sampling, tagging, photo identification, and collection of  
6 sloughed skin and feces. Incidental takes of non-targeted animals, including USFWS species, from  
7 close approaches are likely if they are in the vicinity of the targeted animal(s). Reactions from  
8 cetaceans may include swimming faster, breaching, diving, tail and fin slapping, or moving away  
9 from the vessel. Cetacean reactions to aerial surveys depend on the aircraft's altitude, length of pass,  
10 and species or individual behaviors. Approaches to marine mammals below certain altitudes may  
11 harass marine mammals and cause a change in behavior, or elicit behaviors, such as diving rapidly.  
12 Behaviors in response to close approaches by vessel and aircraft would generally be short-term, with  
13 a minimal effect on the animal or the population.

14 Pinniped reactions to vessels and aircraft are highly variable, depending on the species (Calkins and  
15 Pitcher 1982). In Steller sea lion studies, reactions ranged from none to complete and immediate  
16 departure from the haul-out site. In most cases, the potential impact to the animal is limited to  
17 disturbance; with the animal remaining at the haul-out site. When pinnipeds are startled and disperse  
18 from rookeries, pups or young may be trampled or abandoned. Juvenile and adult animals may be  
19 trampled during stampedes or injured on underwater rocks and cliff faces. The incidence of  
20 stampedes in response to aerial surveys at specific altitudes is unknown. Disturbance from aerial  
21 surveys would be dependent on plane specifications, flight patterns, and the altitude.

22 ***Capture, Restraint, and Handling.*** Any capture and/or restraint procedure would likely have at least  
23 some short-term effect on the behavior or activities of marine mammals. The number of times an  
24 animal would be captured, the method(s) of restraint, as well as the age and general condition of the  
25 animal are all factors that would affect an animal's response to capture. Animals could incur  
26 contusions, concussions, lacerations, nerve injuries, hematomas, and fractures in their attempts to  
27 avoid capture or escape restraint (Fowler 1978). The stress response could change an animal's  
28 reaction to many drugs, including those commonly used for chemical restraint, which could have  
29 lethal consequences. Stress could also alter an animal's immune system. Stress from capture and  
30 restraint could cause capture myopathy, which occurs when an animal cannot cool itself (Fowler  
31 1978). Capture myopathy is characterized by degeneration and necrosis of striated and cardiac

1 muscles and usually develops within 7 to 14 days after significant trauma, stranding, transport, or  
2 capture.

3 Potential effects from anesthesia used for chemical restraint are described above. Physical restraint of  
4 a pinniped, if not properly executed, may injure or kill an animal (*e.g.* suffocation under the weight of  
5 a handler). Mechanical restraint methods may pose some risk to pinnipeds. Excessive pressure is  
6 possible using squeeze cages, which may cause trauma or interfere with adequate ventilation.  
7 Restraint boards may use a hinged guillotine to secure an animal's neck, which could obstruct the  
8 airway (Gulland *et al.* 2001).

9 During health assessments animals could become entangled in the capture net, which may result in  
10 injuries or death. Animals may become stressed during handling and restraint. Signs of stress include  
11 reduced respiration, prolonged struggling while being held, and arching. During a health assessment  
12 study in St. Joseph Bay, FL (July 2006), a bottlenose dolphin became entangled deep in capture net  
13 and was found dead during the extrication of other dolphins from the net. Incidental takes of non-  
14 target animals, including USFWS species, are possible during capture activities. Animals may be  
15 accidentally captured in the net and could also become entangled in the net, which may result in  
16 injuries or death.

17 ***Tagging/Attachment of Scientific Instruments- Cetaceans.*** During research activities, tags will not  
18 be attached to large cetacean calves less than six months of age or females accompanying such calves.  
19 For small cetaceans, no tagging will occur on calves less than one year of age and mothers  
20 accompanying these animals would not specifically be targeted. However, they may be tagged if  
21 accidentally captured during health assessments. Tagging would include reactions to the close  
22 approach and the physical attachment of the tag. Reactions to close approaches are described above.  
23 Free-swimming cetaceans often react when hit by tags delivered by remote devices, such as tagging  
24 guns and crossbows. Cetaceans may also react when tags miss the animal and hit the water nearby.  
25 In most cases, the reactions of the remotely tagged animal and non-target animals last little more than  
26 a few minutes, after which behavior appears to return to normal (Watkins and Tyack 1991, Goodyear  
27 1993, Hooker *et al.* 2001). The physical presence of a tag may lead to an alteration in the normal  
28 behavior of tagged animals, including a temporary disruption of feeding or mating activities. The  
29 hydrodynamic drag created by the presence of the tag on the animal should not cause an adverse  
30 impact. The proportion of the hydrodynamic drag from the tag package to the animal's size and  
31 weight is such that the energetic demand on the animal would likely be insignificant. Potential  
32 adverse effects would be minimized by using the smallest possible instrument package and the

1 smallest spear tip practicable. Therefore, animal disturbance would only occur during the close  
2 approach and the moment of attachment.

3 Suction cup tagging procedures have been analyzed by NMFS PR1 in several environmental  
4 assessments (EAs) and biological opinions, where findings resulted in no significant impact on the  
5 animals (NMFS 2004). The possibility of injury to an animal comes from the remote risk of the  
6 suction cup landing in or striking a sensitive part of the animal, such as the eye, mouth, or blowhole.  
7 However, given the skills of the experienced researchers, this risk would be minimal or non-existent.  
8 The non-invasive nature of suction cup tags eliminates the threat of infection, but not inflammation.  
9 The suction cup would not remain attached to the whale for any significant length of time (typically  
10 not longer than 48 hours), and likely releases within a few hours. The animal can easily dislodge the  
11 tag by rolling, breaching, or rubbing. An animal could sustain injuries while trying to remove the tag  
12 by rubbing against the sea floor or other animals. The tag may migrate along the skin of the animal  
13 but would not cover the blowhole, as drag would move it away from the blowhole. The ease and  
14 speed with which some animals can remove a tag indicates that it is unlikely that an animal would  
15 endure long-term stress from the attachment. Vessel strikes pose a risk with suction cup tagging, as  
16 the animal must be followed for the duration of attachment. Vessels would be close to animals and  
17 may strike both target and non-target animals.

18 Implantable tags used on cetaceans have a greater potential for disturbance in application and would  
19 be more invasive than suction cup tags. Implantable tags typically penetrate the surface of the blubber  
20 layer. Tags generally work their way out of the blubber after weeks or months, but some new satellite  
21 tags may remain implanted for over a year (Mate *et al.* 2007). Disturbance of the animal would  
22 mainly occur during the close approach and attachment of the tag. Responses often seen include head  
23 lifts, fluke lifts, exaggerated fluke beats on diving, quick dives, or increased swimming speeds. Other  
24 observed responses include evasive swimming behavior, fluke slaps, head lunges, and decreased  
25 surfacing rates. Observations after tagging have shown that responses are short-term (Mate *et al.*  
26 2007). These responses would not likely injure individuals. The implanted tag would not be  
27 expected to alter the behavior of the whale, particularly with regard to feeding, reproduction, or  
28 migratory behavior. Potential adverse effects are minimized by using the smallest possible  
29 instrument package, a smaller spear tip to minimize penetration into the blubber, and minimizing the  
30 velocity of the package at impact. Inflammation would be expected to occur after tag implantation  
31 and infection would be possible. There would be a low potential for an abscess or septicemia to occur  
32 after implantation. Post-tagging swelling or indentations may occur after the tags are lost, extruded,

1 or migrate out. However, there is no evidence that these swellings are signs of infection of the  
2 epidermis or poor health (NMFS 2006). A NMFS PR1 EA (NMFS 2006) states that past research  
3 and permit annual reports have shown that the chance of infection from the break in the epidermis  
4 from an implantable tag is likely to be extremely low and insignificant.

5 During health assessment captures, animals would be tagged with either a roto-tag or radio tag on the  
6 trailing edge of the dorsal fin. No tagging would occur on young of the year animals. Mothers  
7 accompanying these animals would not specifically be targeted. However, they may be tagged if  
8 accidentally captured so that they may be monitored and/or more readily identified and avoided for  
9 future net sets. The attachment of the roto-tag or radio tag would not be considered significant, as  
10 pain would only last during the application, and local anesthesia may be used. Little tissue damage to  
11 the trailing edge of the dorsal fin would occur when the tag is released.

12 For saddle tags, the saddle will be raised off the surface of the dorsal fin by inserting foam washers on  
13 the pins between the skin and saddle. This will allow for water flow and heat exchange to occur,  
14 minimizing any effects from placement on the dorsal fin. Spider tags could be ripped out of the  
15 blubber, causing pain and potential infection

16 ***Tagging/Attachment of Scientific Instruments- Pinnipeds.*** Tagging of pinnipeds would cause  
17 temporary stress during capture and restraint to attach or implant the tag. Invasive tags would cause  
18 temporary pain during attachment or implantation. Animal movement may prolong or prevent  
19 healing of flipper tags by producing repetitive stress on the wound. Infection of the wound site would  
20 be possible. The tag may pull out of the flipper during swimming or moving on a rookery or haul-out  
21 site. The site where the tag was could become infected. There is no quantitative information on the  
22 rate of infection caused by flipper tagging (NMFS 2004).

23 Effects associated with implanted tags may include excessive tissue reaction, infection, and  
24 subsequent rejection of implanted materials. Elephant seals had short reactions to PIT tag implants  
25 and there were no external signs of tissue reaction (Galimberti et al. 2000). For LHX tags, pain  
26 would not occur during surgery, as animals would be anesthetized. Animals may have post-operative  
27 pain and discomfort at the incision site. Animals would be held in captive observation for a period of  
28 time (6 to 10 weeks) to ensure proper wound healing and the absence of complications. If necessary,  
29 animals may be treated with appropriate antibiotics and/or analgesics if an infection or pain occurs.  
30 LHX tags have been used in sea otters for over 20 years, and the typical reactions, both behaviorally

1 and physically, to the tag are innocuous (Lander et al. 2001). LHX tags were implanted into  
2 rehabilitated California sea lions with no short- or long-term effects noted (Horning and Hill 2005).

3 Attachment of scientific instruments to pinnipeds may have both short- and long-term adverse effects,  
4 in addition to the effects of capture and restraint. Possible short-term impacts can include a reduction  
5 in foraging activity or an increase in grooming, at the expense of other behaviors (Kenward 1987).  
6 These types of impacts would likely be present after most tagging events and may be as much a  
7 delayed result of the capture and handling as of the tag's presence. Some pinnipeds fitted with  
8 crittercams reacted during deployment (tagging) and for a short period after deployment. Few  
9 pinnipeds exhibited curiosity about the crittercam or had aggressive reactions toward it for short  
10 periods (Marshall 1998). The hydrodynamic drag created by the instrument could exert an additional  
11 energetic demand on an animal. Over time, this drag may result in reduced foraging success,  
12 increased metabolic load, and stress to the animal.

13 The attachments of instruments to the hair with epoxy should not cause pain if done properly.  
14 However, it may result in discomfort if the placement of the instrument causes pulling of the hair or  
15 skin during animal movement. In addition, if the ratio of resin and hardener is not correctly  
16 measured, the resulting heat-producing reaction could burn the animal's skin and pelage (Lander et al.  
17 2001). Both the resin and hardener could cause skin irritation, resulting in itching, rashes, hives, and  
18 dermatitis. The instrument could be knocked or torn off, pulling out hair and possibly some of the  
19 underlying skin, which would then be open to infection.

20 **Marking.** Freeze branding may cause little or momentary pain to cetaceans during application, which  
21 would require 15-20 seconds per brand (typically six brands per animal). Initial discomfort or pain  
22 would be relieved by the appropriate anesthetic or analgesic. Discomfort may persist for some time  
23 after the procedure, but is expected to be minor. Potential discomfort or pain would be relieved by  
24 the appropriate anesthetic or analgesic. Therefore, impacts would be considered negligible and not  
25 significant.

26 Marking pinnipeds with paint applied remotely using a paint gun may stun an animal and cause  
27 momentary stress and a startle reaction. If the target animal is hit or missed, other non-target animals  
28 may be temporarily disturbed. Capturing and restraining animals for marking with paint, bleach, or  
29 dye would likely involve more stress than remote marking and may cause incidental disturbance of  
30 nearby animals. A pinniped may also be marked by gluing a tag to their fur. The epoxy could cause  
31 burns, skin irritation, or an allergic reaction. Infection would be possible if the tag was torn off.

1 **Biopsy Sampling.** The effects of close approaches needed to conduct biopsy sampling are discussed  
2 above. A careful approach generally elicits, at most, a minimal and short-lived response from whales;  
3 even those subjected to invasive biopsy procedures (NMFS 1992). A NMFS PR1 EA (NMFS 2004)  
4 concluded that, based on existing data and published research, biopsy sampling on large cetaceans  
5 (via crossbow, compound bow, dart guns, or pole spears) would not have long-term adverse effects  
6 on the target species. Published research has shown that short-term effects of biopsy darting on  
7 cetaceans would be startling or momentarily painful to the animal. No evidence of infection at the  
8 sight of penetration or elsewhere has been seen among whales resighted in days following biopsy  
9 sampling (NMFS 1992).

10 Minke, fin, blue, and humpback whales showed no behavioral reactions to about 45 percent of  
11 successful biopsies, taken with punch-type tips fired from crossbows (Gauthier and Sears 1999).  
12 Behavioral responses in the remainder of the biopsies ranged from tail flicks, hard tail flicks,  
13 submerging below the water surface, or some combination of these responses. Most individuals of  
14 these species resumed their normal behavior within a few minutes of the sample collection. A study  
15 by Clapham *et al.* (1993) noted that studies on biopsy procedures showed no evidence of short- or  
16 long-term significant impacts on cetaceans.

17 Surgical biopsy sampling of epidermis and blubber also occur during health assessment captures.  
18 Animals may exhibit signs of stress due to capture and restraint, as discussed above. Animals may  
19 experience momentary pain during the administration of local anesthesia. In rare occurrences, the  
20 biopsied area may become infected. Animals may have some soreness or pain with healing, but other  
21 adverse impacts would not be expected from blubber biopsies (Wells *et al.* 2005).

22 Effects of skin and blubber biopsy samples on pinnipeds would include the effects of the capture and  
23 restraint necessary for obtaining these samples are described above. In addition, there would be the  
24 potential for an infection after any of these procedures, given the unsanitary environment of  
25 rookeries. Healthy animals should be able to heal and recover from a properly performed procedure.  
26 Animals with compromised immune systems may develop major complications. The procedures may  
27 also cause more than momentary pain.

28 **Blood Sampling.** The risks of blood collection would be largely incidental to capture and restraint.  
29 Multiple attempts to obtain a blood sample would not only be stressful and cause some degree of  
30 pain; they may result in damage to the vein, clotting, and an abscess. Removing a volume of blood



1 too large relative to the animal's mass and ability to replace the amount can result in fatigue, anemia,  
2 weakened immunity, and problems with clotting.

3 ***Breath Sampling.*** Breath sampling activities on free-swimming cetaceans would include close  
4 approaches by vessels. Impacts from close approaches are described above. The use of the extended  
5 pole and the quick physical contact of the vacuum cylinder may affect an animal. The reaction of  
6 cetaceans to physical contact for breath sampling has not been adequately studied. However, the  
7 contact of the apparatus on animals is very brief, lasting only a few seconds. This physical contact is  
8 not likely to disrupt the behavior of marine mammals and would not have a significant effect on an  
9 individual.

10 ***Ultrasound Sampling.*** Ultrasound sampling activities on free-swimming cetaceans would include  
11 close approaches by vessels. Impacts from close approaches are described above. The use of the  
12 extended pole and the quick physical contact of the ultrasound device may affect an animal. The  
13 reaction of cetaceans to physical contact for ultrasound sampling has not been adequately studied.  
14 However, the contact of the apparatus on animals is very brief, lasting only a few seconds. This  
15 physical contact is not likely to disrupt the behavior of marine mammals and would not have a  
16 significant effect on an individual. Ultrasound sampling may occur on animals captured for other  
17 research. Impacts from capture and restraint activities are described above. Cetaceans may be  
18 sampled out of the water and improper body support could compromise cardiac and respiratory  
19 functions (Haulena and Heath 2001). Animals may overheat in direct sun and heat without protection  
20 and body surfaces may be exposed to the drying effects of air. The external ultrasound procedure  
21 itself would pose minimal to no risk of injury to an animal. Internal ultrasound procedures pose the  
22 risks of infection and perforation.

23 ***Tooth Extraction.*** Potential adverse effects from tooth extraction relate to the risks of capture,  
24 restraint, anesthesia, and the possibility of infection following the extraction. The procedure may  
25 result in more than momentary pain, which could temporarily interfere with foraging.

26 ***Other Sampling.*** Other sampling that could occur includes the collection of feces, swabs, sloughed  
27 skin, urine, and other bodily fluids. The close approach of free-swimming cetaceans to collect feces  
28 and sloughed skin would have a minor impact on the animals. The collection of pinniped feces may  
29 disturb animals on haul-out sites or rookeries. Animals may rapidly depart the area, which could  
30 result in injury or death. Skin swabs, feces, urine, and other bodily fluids may be collected from  
31 animals during health assessments. Potential adverse effects from this sampling would likely result

1 from capture and restraint and not from sampling itself. Efforts would be made to reduce the animal  
2 holding time.

3 ***Hair, Nails, and Vibrissae Sampling.*** Clipping hair, nails, and whiskers would not likely result in  
4 pain. The effects on the animal from clipping are probably incidental to the effects of capture and  
5 restraint. Pulling a whisker may cause more than momentary pain, due to the highly sensitive nature  
6 of the snout and because the hair bulb is surrounded by blood and neurons.

7 ***Administration of Drugs and Euthanasia.*** Delivery of anesthesia or sedation in marine mammals,  
8 especially pinnipeds, can be complicated by their anatomical and physiological specializations to life  
9 in the marine environment. Determining the proper dose is dependent on a fairly accurate assessment  
10 of the animal's weight and condition. Miscalculation of an animal's weight could lead to an  
11 overdose, which can have lethal consequences (Fowler 1986). Anesthesia or sedation may activate  
12 the dive reflex, which would include breath holding, slowing of the heart rate, and the pooling of  
13 blood from peripheral vessels. Phocids that have died as a result of anesthesia exhibited signs of  
14 bradycardia, tachycardia, hypoventilation, cyanosis, hyperthermia, and decreased peripheral perfusion  
15 (Haulena and Heath 2001). Other drugs that may be administered include antibiotics, antifungals, and  
16 analgesics. Potential adverse effects from all drugs include drug interactions, incorrect drug dosages,  
17 side effects, injuries, and death. Effects vary according to drug, dosage, animal, and method of  
18 administration.

19 Chemical euthanasia may be the most humane method available for marine mammal situations.  
20 Euthanasia may occur with an overdose of sedatives and anesthetics or with euthanasia drugs. Some  
21 euthanasia agents may cause hyperexcitability or violent reactions in animals. Intraperitoneal  
22 administration of a euthanasia solution may cause effects due to differential absorption, leading to the  
23 prolonged onset of action. It may also cause irritation in the surrounding tissues (Greer et al. 2001).  
24 Improper chemical euthanasia agents or methods of delivery may prolong the pain and suffering of an  
25 animal.

26 The correct use of ballistics to euthanize or humanely kill an animal would cause instantaneous  
27 unconsciousness, followed by respiratory and cardiac arrest or vice versa. Improper uses may not  
28 cause unconsciousness before death and would not be considered humane. During mass strandings,  
29 the use of ballistics may stress and exacerbate fear in the surviving animals, if they die in the vicinity.  
30 The use of ballistics and explosives require expertise for proper placement. Incorrect charge

1 placement may not cause instantaneous unconsciousness and may cause tissue destruction (Greer et  
2 al. 2001).

3 Exsanguination may occur when no other options are available, especially in cases of large whales  
4 after sedation with analgesics or anesthesia. It requires expertise in anatomical knowledge of the  
5 head and cervical spine, or the location and approaches to the heart. Prolonged pain and suffering  
6 would occur if done incorrectly. Exsanguination should never be done on a whale that was conscious  
7 and responsive (Geraci and Lounsbury 2005).

8 ***Auditory Brainstem Response (ABR)/Auditory Evoked Potential (AEP).*** Potential adverse effects  
9 from ABR and AEP procedures would be as a result of capture, restraint, and holding described  
10 above. The maximum sound levels presented would be lower than sound levels produced by animal  
11 whistles and echolocation clicks. Sounds may be quieter than those animals are normally exposed to  
12 on a daily basis. Therefore, impacts from the procedures themselves would not be considered  
13 significant. Short-term impacts, including inflammation and hyperemia, would be expected from the  
14 suction cups used to attach electrodes to the animal.

15 ***Diagnostic Testing and Analysis of Specimens.*** Diagnostic testing and the analysis of specimens  
16 would have no impact on marine mammals. Specimens would be archived in the NMMTB or other  
17 authorized laboratory and would not have any adverse impacts.

18 ***Import/Export of Marine Mammals or Marine Mammal Parts.*** Import and export of specimens  
19 would not have an impact on marine mammals. All specimens would be collected legally in the U.S.  
20 or other foreign countries and meet the other conditions required by the MMPA, and may be subject  
21 to additional requirements and evaluation under the Animal Welfare Act. Potential adverse effects of  
22 importing or exporting marine mammals in rehabilitation would be the result of restraint and  
23 transport. Handling, lifting, and moving an animal could cause injuries. Cetacean flippers may be  
24 crushed or overheat if stretchers do not have openings for them. Creases or seams may press into the  
25 skin, causing discomfort and possible injury. Transport of animals could cause stress or injuries to an  
26 animal. Depending on the mode of transportation, animals may overheat in direct sun and heat  
27 without protection. Animals may develop hypothermia and frostbite if transport occurs during  
28 freezing temperatures. Cetaceans may be exposed to the drying effects of air. Animals may also be  
29 knocked around in the vehicle or vessel or inhale exhaust fumes. Improper transport of cetaceans  
30 may cause abrasions, pressure necrosis, thermoregulatory problems, and respiratory problems.  
31 Cetaceans transported on airplanes are susceptible to the effects of high-altitude sickness. Most

1 impacts during transport would be minor and temporary and would end once the animal reached its  
2 destination.

3 The impacts of restraint and transport would also apply to import and export of permanently captive  
4 marine mammals (for instance, from a foreign public display facility) for health research purposes  
5 under the ESA/MMPA permit. However, the care and handling of captive animals falls under the  
6 purview of the USDA/APHIS. Any import/export activities for captive marine mammals would meet  
7 the conditions for import or export under the MMPA and would be subject to additional requirements  
8 and evaluation under the Animal Welfare Act.

#### 9 **4.2.6.3 Alternative F3- Preferred Alternative**

10 Under Alternative F3, the new ESA/MMPA permit would be issued to include current and future  
11 biomonitoring and research activities. Effects on biological resources from Alternative F3 would be  
12 the same as those described under Alternative F2, with some exceptions for new research activities.

13 ***Passive Acoustic Recording.*** Passive acoustic recording would not have an adverse effect on marine  
14 mammals. The actual presence of the hydrophone in the water would not be expected to have any  
15 impact on marine mammals. A NMFS EA (NMFS 2004) noted that, on some occasions, researchers  
16 have noted instances of animals investigating the hydrophone. However there is no known  
17 documentation of the presence of a hydrophone, or a similar recording device, resulting in any  
18 adverse impact.

19 ***Active Acoustic Playbacks.*** Active acoustic playbacks would involve close approaches by one or  
20 more vessels and would have negligible adverse behavioral impacts on marine mammals, as  
21 described in Section 4.2.6.2. The source levels of the sounds produced under the proposed activities  
22 would be sufficiently low and produced at a large enough distance from the animal (minimum 100 m)  
23 to not result in levels that would be painful or overly disruptive to the animals. Previous tests indicate  
24 that sounds produced by these proposed playback equipment would be less powerful and attenuate  
25 more rapidly than other anthropogenic sources in the action area (*i.e.* cruise ships, fishing vessels, and  
26 large pleasure craft) (NMFS 2004). Incidental harassment of non-target animals (including USFWS  
27 species) is not likely, as the source levels of the sounds would be sufficiently low.

28 ***Cognitive Assessment of Sea Lions in Rehabilitation Suffering from Domoic Acid Intoxication.***  
29 All methods used during the assessment will be low-impact and non-invasive, and no immediate or  
30 residual negative impacts on the animals are expected as a result of their participation in the study.

1 However, mortality rates are high for domoic acid exposed animals, so it is likely that a proportion of  
2 the subjects will die unpredictably during the course of the study. Based on the results of a previous  
3 3-year study published in Goldstein et al. (2008) and in Zabka et al. (in press), it is expected that  
4 animals suffering from long-term effects of domoic acid will eventually die up to two years post  
5 exposure if they have extensive cardiac or hippocampal lesions that can result in cardiac conduction  
6 defects or seizures. Therefore, it is possible that as many as 50 sea lions may die during the cognitive  
7 assessment procedures as a result of permanent lesions due to domoic acid intoxication.

## 8 **4.3 Water and Sediment Quality**

9 This section evaluates the potential impacts on water and sediment quality as a result of the  
10 alternatives. Impacts on water and sediment quality are evaluated in context and intensity on a wide  
11 geographic scale. Therefore, while more significant impacts may occur in localized areas, the overall  
12 impact on the watershed, beach, coastline, ocean, etc. would be considered minor.

### 13 **4.3.1 Stranding Agreements and Response Alternatives**

#### 14 **4.3.1.1 Alternative A1- No Action**

15 Under Alternative A1 stranding response from current SA holders would end once all agreements  
16 have expired. No effects on water and sediment quality would be expected to occur under Alternative  
17 A1, as stranding response activities would end.

#### 18 **4.3.1.2 Alternative A2- Status Quo**

19 Under Alternative A2, the current SAs would be renewed and current stranding response activities  
20 would continue without the issuance of Final SA criteria. Minor, short-term adverse effects on water  
21 and sediment quality could occur under Alternative A2. Equipment used for transport could leak oil  
22 or other materials into sand and nearshore waters. This would likely be localized and flushed out  
23 and/or diluted rapidly, causing a minor impact. Tissue, blood, and other body fluids may contain  
24 euthanasia solution, other drugs, POPs, toxic metals, pathogens, and/or biotoxins. Chemical residues  
25 from euthanasia solution and other drugs persist in the carcass at different concentrations and for  
26 different amounts of time. They would not likely create an environmental hazard, as they would be  
27 broken down quickly and would not persist in the surrounding environment. Contaminants would  
28 also be localized and flushed out of the sand and groundwater by the tides and/or precipitation. Any  
29 contaminants entering the nearshore waters would be diluted quickly by the currents, and impacts  
30 would be minor and temporary.

1 Animals may also contain chemical residues from substances administered by stranding response  
2 personnel, including chemical euthanasia solution and sedatives. If the animal is a rehabilitated  
3 animal that has restranded, it may also contain antibiotics, antifungals, and other medicine. These  
4 chemicals persist in the animal at different concentrations and for different amounts of time. They  
5 would not likely create an environmental hazard, as they would be broken down quickly and would  
6 not persist in the surrounding environment.

#### 7 **4.3.1.3 Alternative A3**

8 Under Alternative A3, SAs would be issued to any applicants after review, the new SA template  
9 would not be utilized, and the Final SA criteria would not be issued. Effects on water and sediment  
10 quality from stranding response activities under Alternative A3 would be the same as those described  
11 under Alternative A2.

#### 12 **4.3.1.4 Alternative A4- Preferred Alternative**

13 Under Alternative A4, the Final SA criteria and the new SA template would be implemented and  
14 current and future stranding response activities would occur. Effects on water and sediment quality  
15 from stranding response activities under Alternative A4 would be the same as those described under  
16 Alternative A2.

#### 17 **4.3.1.5 Alternative A5**

18 Under Alternative A5, the Final SA criteria and the new SA template would be implemented and  
19 response to threatened, endangered, or rare animals would be required. Effects on water and  
20 sediment quality from stranding response activities under Alternative A5 would be the same as those  
21 described under Alternative A2.

### 22 **4.3.2 Carcass Disposal Alternatives**

#### 23 **4.3.2.1 Alternative B1- No Action**

24 Under Alternative B1, no carcass disposal would occur and carcasses would remain on the beach to  
25 naturally decompose. Carcasses left on the beach to naturally decompose would not cause an impact,  
26 unless the animal contained contaminants. Body fluids may contain POPs, toxic metals, pathogens,  
27 and/or biotoxins could seep into the sand beneath the animal or leach into groundwater and flow into  
28 nearshore waters. If contaminants enter groundwater, they would likely be flushed out quickly by  
29 tidewater and/or precipitation. The impact on water quality would likely be temporary and minor.

1 Sediment quality would not likely be impacted by contaminants, as they would be localized and  
2 flushed out or diluted before they could adhere to the substrate.

### 3 **4.3.2.2 Alternative B2- Status Quo**

4 Under Alternative B2, current methods of carcass disposal would continue. Potential effects depend  
5 on the method of carcass disposal and if the carcass was toxic from the use of euthanasia solution.  
6 Carcasses left on the beach to naturally decompose would not cause an impact, unless the animal had  
7 been chemically euthanized or contains contaminants. The evaluation of the potential toxicological  
8 environmental hazards posed by a decomposing carcass cannot be determined at this time (see  
9 Appendix J). Additionally, the types and levels of contaminants in a carcass are generally not known  
10 at the time of disposal because of the time delay in processing analytical lab tests. However, the  
11 remote potential does exist for decay products of carcasses to be released into the surrounding  
12 environment or recycled into the food web, with subsequent negative impacts. Chemical residues  
13 from euthanasia solution and other drugs persist in the carcass at different concentrations and for  
14 different amounts of time. They would not likely create an environmental hazard, as they would break  
15 down quickly and would not persist in the surrounding environment. Body fluids containing POPs,  
16 toxic metals, pathogens, and/or biotoxins could seep into the sand beneath the animal or leach into  
17 groundwater and flow into nearshore waters. If contaminants enter groundwater, they would likely be  
18 localized and flushed out quickly by tidewater and/or precipitation. Higher concentrations of  
19 contaminants may occur in nearshore waters down site from the carcass. These concentrations would  
20 be diluted and flushed out by the currents. The amount of time for contaminants to flush out of  
21 groundwater would depend upon the amount of precipitation, tides, and the permeability of the  
22 sand/sediment. The size and number of carcasses would also factor into the amount of time for  
23 contaminants to disperse. The impact on water quality would likely be localized, temporary, and  
24 minor. Sediment quality would not likely be impacted by contaminants, as they would be flushed out  
25 or diluted before they could adhere to the substrate.

26 Burial of carcasses could increase erosion, but this would be a negligible impact. The burial site  
27 would only be disturbed for a short-period of time and would be refilled with sand to match the  
28 surrounding ground level. Burial does not inactivate all pathogens in the carcass. Some carcasses  
29 may contain POPs, toxic metals, pathogens, and/or biotoxins; however the specific types and levels of  
30 contaminants are typically not known at the time of burial. As these carcasses decay, body fluids may  
31 leach into the sand and groundwater, potentially impacting the adjacent coastal waters and sediments.  
32 As described above, contaminants would be flushed out of groundwater and diluted in nearshore

1 waters by the currents. Carcasses containing euthanasia solution or other drugs would not likely  
2 persist in the environment. Impacts to water and sediment quality would be temporary and minor.

3 Disposal of carcasses at sea may negatively impact water and sediment quality. Carcasses of  
4 euthanized animals could release POPs, toxic metals, pathogens, and/or biotoxins into the water or  
5 food web during decomposition. However, the impact would be minor as the contaminants would  
6 dilute rapidly in the water. The material used to sink the carcass may have an adverse effect, if it  
7 could be considered a contaminant. However, Jersey (concrete) barriers would generally be used to  
8 sink a carcass and these would have no impact on water or sediment quality. Transport of the carcass  
9 offsite could temporarily increase erosion, due to the use of heavy equipment. This would be a  
10 negligible impact as equipment would only be used for a short time period (hours). Spills of  
11 hazardous materials or wastes from transport vessels could impact water and sediment quality.  
12 Impacts would be considered minor to major, depending on the material, size of spill, location, and/or  
13 vicinity of these resources. Some materials could be diluted quickly by currents, causing localized,  
14 temporary impacts. Other materials could linger in the water column or adhere to sediment particles,  
15 causing slightly longer but still localized impacts.

16 Heavy equipment or vehicles may be necessary to transport a carcass off-site. Equipment used to  
17 transport animals could leak oil or other materials into sand and nearshore waters during operations.  
18 These would likely be small amounts that would be localized, flushed out and/or diluted rapidly,  
19 causing a minor, short-term impact. Other materials could linger in the water column or adhere to  
20 sediment particles, causing slightly longer but still localized impacts.

21 Burial in a landfill would not create any negative impacts for non-toxic carcasses. If carcasses are  
22 known or assumed (based upon test results or prior knowledge of the species) to have contaminant  
23 levels that meet or exceed the local definition of hazardous waste, they would be taken to a hazardous  
24 waste landfill for proper disposal. Carcasses may be taken to a licensed rendering or incineration  
25 facility. Because the landfill, rendering, or incineration facilities have been previously licensed, all  
26 environmental impacts from these facilities have already been considered. Any impacts from these  
27 activities would be covered by the individual rendering or incinerating facility and their permits, not  
28 the MMHSRP or stranding network members.

#### 29 **4.3.2.3 Alternative B3- Preferred Alternative**

30 Under Alternative B3, current methods of carcass disposal would continue with a recommendation to  
31 transport chemically euthanized animal carcasses off-site. The effects on water and sediment quality



1 under Alternative B3 would be the same as those described under Alternative B2. However, under  
2 Alternative B3, modifications may be made to carcass disposal activities. Currently, the potential  
3 toxicological environmental hazards posed by a decomposing carcass are not known. If and when  
4 this information becomes available, additional precautions (*e.g.*, removal of certain species carcasses  
5 from beaches) would be implemented, if necessary. These modifications would have a beneficial  
6 impact on water and sediment quality.

7 Composting may be added as a disposal method after on-going research is completed. By-products  
8 and finished products from composting a carcass would have little or no adverse effects on water and  
9 sediment quality or the surrounding environment (Mukhtar *et al.* 2004). Temperatures during the  
10 composting process are high enough to kill pathogens and breakdown contaminants and euthanasia  
11 solution (Geraci and Lounsbury 2005).

### 12 **4.3.3 Rehabilitation Activities Alternatives**

#### 13 **4.3.3.1 Alternative C1- No Action**

14 Under Alternative C1, current SAs would expire, stranding response would end, and animals would  
15 not be taken into rehabilitation. No effects on water or sediment quality would be expected to occur  
16 under Alternative C1. Rehabilitation would no longer occur and therefore potential risks to water and  
17 sediment quality would be removed.

#### 18 **4.3.3.2 Alternative C2- Status Quo**

19 Under Alternative C2, current rehabilitation activities would continue, but the final Rehabilitation  
20 Facility Standards would not be implemented. Minor adverse effects could occur under Alternative  
21 C2. Rehabilitation facilities that discharge directly to surface waters would have the required  
22 National Pollutant Discharge Elimination System (NPDES), state, and local permits for facility  
23 discharges. Any wastewater effluent discharged to a publicly owned treatment works (POTWs)  
24 would be required to meet municipal wastewater treatment standards and have any necessary effluent  
25 discharge permits under the Clean Water Act. Impacts from permitted discharges would already be  
26 accounted for under the respective Federal, state, and/or local regulations. Facilities discharging to  
27 POTWs would have a pretreatment plan in place if necessary, as POTWs do not remove toxic  
28 organics or metals.

29 Net pens could pose minimal adverse impacts to water quality because they are open to ocean and bay  
30 waters. Water and sediment near the pen would be exposed to any medicines, materials, or

1 equipment used in rehabilitation. There would also be an increase in pathogen and fecal exposure.  
2 Temporary pools would not have any means to treat effluent. Temporary pools could leak water  
3 containing wastes, pathogens, or other contaminants into the soil and groundwater. Temporary pools  
4 could also contaminate water and sediment when they are emptied, if the water is discharged into  
5 surface waters.

#### 6 **4.3.3.3 Alternative C3- Preferred Alternative**

7 Under Alternative C3, new SAs would be issued, rehabilitation activities would continue, and the  
8 final Rehabilitation Facility Standards would be implemented. Effects on water and sediment quality  
9 from rehabilitation activities under Alternative C3 would be the same as those described under  
10 Alternative C2. However, under this alternative, modification of rehabilitation activities could occur.  
11 Rehabilitation activities may change with improvements in technologies, techniques, and other  
12 aspects of marine mammal medicine. Impacts on water and sediment quality from these new  
13 activities would be similar to, or less than, those currently conducted. The closure of rehabilitation  
14 facilities is also included under modification of activities. The closure of a rehabilitation facility  
15 would eliminate any potential adverse impacts on water and sediment quality

#### 16 **4.3.3.4 Alternative C4**

17 Under Alternative C4, new SAs would be issued, rehabilitation activities would continue, and the  
18 final Rehabilitation Facility Standards would be implemented. Effects on water and sediment quality  
19 from rehabilitation activities under Alternative C4 would be the same as those described under  
20 Alternative C2.

### 21 **4.3.4 Release of Rehabilitated Animals Alternatives**

#### 22 **4.3.4.1 Alternative D1- No Action**

23 Under Alternative D1, current SAs would expire, stranding response and rehabilitation would cease,  
24 and there would be no animals to release. No effects on water or sediment quality would be expected  
25 to occur under Alternative D1. Release of rehabilitated animals would not take place and there would  
26 be no risks to water and sediment quality.

#### 27 **4.3.4.2 Alternative D2- Status Quo**

28 Under Alternative D2, current release activities would continue, adaptive changes to release activities  
29 would not be permitted, and the final Release criteria would not be implemented. Minor, short-term,

1 adverse effects on water and sediment quality could occur under Alternative D2. Release of  
2 rehabilitated animals would not intentionally generate any pollutants or disturb sediment. However,  
3 spills of hazardous materials or wastes from release vessels could impact water and sediment quality.  
4 Some materials could be diluted quickly by currents, causing temporary impacts. Other materials  
5 could linger in the water column or adhere to sediment particles, causing slightly longer impacts.  
6 Equipment to transport animals could leak oil or other materials into sand and nearshore waters  
7 during beach releases. These would likely be small amounts that would be localized, flushed out,  
8 and/or diluted rapidly, causing a minor, short-term impact. Other materials could linger in the water  
9 column or adhere to sediment particles, causing slightly longer but still localized impacts.

#### 10 **4.3.4.3 Alternative D3- Preferred Alternative**

11 Under Alternative D3, new SAs would be issued, release activities would continue, adaptive changes  
12 to release activities would be permitted, and the final Release criteria would be implemented. Effects  
13 on water and sediment quality from Alternative D3 would be the same as those described under  
14 Alternative D2.

#### 15 **4.3.5 Disentanglement Alternatives**

##### 16 **4.3.5.1 Alternative E1- No Action**

17 Under Alternative E1, there would be no disentanglement network. No effects on water or sediment  
18 quality would be expected to occur under Alternative E1, as disentanglement activities would no  
19 longer occur.

##### 20 **4.3.5.2 Alternative E2- Status Quo**

21 Under Alternative E2, the disentanglement network would continue the current activities with no  
22 modifications or new members added. Minor, short-term, adverse effects water or sediment quality  
23 could occur under Alternative E2. Disentanglement activities would not intentionally generate any  
24 pollutants or disturb sediment. However, spills of hazardous materials or wastes from  
25 disentanglement vessels could impact water and sediment quality. Some materials could be diluted  
26 quickly by currents, causing localized, temporary impacts. Other materials could linger in the water  
27 column or adhere to sediment particles, causing slightly longer but still localized impacts.

1 **4.3.5.3 Alternative E3- Preferred Alternative**

2 Under Alternative E3, the disentanglement network would continue the current activities on the East  
3 Coast with modifications to the West Coast network. Effects on water or sediment quality from  
4 Alternative E3 would be the same as those described under Alternative E2.

5 **4.3.6 Biomonitoring and Research Activities Alternatives**

6 **4.3.6.1 Alternative F1- No Action**

7 Under Alternative F1, biomonitoring and research activities would not occur. No effects on water and  
8 sediment quality would be expected to occur under Alternative F1. Biomonitoring and research  
9 activities would no longer occur and therefore potential risks to water and sediment quality would be  
10 removed.

11 **4.3.6.2 Alternative F2- Status Quo**

12 Under Alternative F2, the new ESA/MMPA permit would continue the current biomonitoring and  
13 research activities. Minor, short-term, adverse effects on water and sediment quality could occur  
14 under Alternative F2. Biomonitoring and research activities would not intentionally generate any  
15 pollutants or disturb sediment. Spills of hazardous materials or wastes from vessels or the loss of  
16 research materials overboard could impact water and sediment quality. Some materials could be  
17 diluted quickly by currents, only causing localized, temporary impacts. Other materials could linger  
18 in the water column or adhere to sediment particles, causing slightly longer but still localized impacts.  
19 Equipment used for beach research activities could leak oil or other materials into sand and nearshore  
20 waters. These would likely be small amounts that would be flushed out and/or diluted rapidly,  
21 causing a minor, short-term impact.

22 Any hazardous or non-hazardous wastes from laboratories used for diagnostic testing and analyses  
23 would be covered under those laboratories and their hazardous wastes and wastewater permits, not the  
24 MMHSRP.

25 **4.3.6.3 Alternative F3- Preferred Alternative**

26 Under Alternative F3, the new ESA/MMPA permit would be issued to include current and future  
27 biomonitoring and research activities. Effects on water and sediment quality from Alternative F3  
28 would be the same as those described under Alternative F2.

## 1 **4.4 Cultural Resources**

2 This section evaluates the potential impacts on cultural resources as a result of the alternatives.  
3 Section 5.4 of this PEIS describes mitigation measures that would be taken to protect cultural  
4 resources under certain alternatives. These mitigation measures include contacting the appropriate  
5 SHPO prior to undertaking actions, such as carcass burial, in areas where there is a potential for  
6 submerged or buried cultural resources to be present.

### 7 **4.4.1 Stranding Agreements and Response Alternatives**

#### 8 **4.4.1.1 Alternative A1- No Action**

9 Under Alternative A1 stranding response from current SA holders would end once all agreements  
10 have expired. No effects on cultural resources would be expected to occur from Alternative A1.  
11 Stranding response activities would end, removing any potential risk to cultural resources.

#### 12 **4.4.1.2 Alternative A2- Status Quo**

13 Under Alternative A2, the current SAs would be renewed and current stranding response activities  
14 would continue without the issuance of Final SA criteria. The use of equipment and vehicles on the  
15 beach, as well as digging, may affect cultural resources buried in sand or dunes. Equipment used in  
16 nearshore waters may affect submerged cultural resources. However, the potential for impact would  
17 be minor, as stranding events are scattered along the entire U.S. coastline. The probability that these  
18 events, and therefore response activities, may be located on a beach or in water containing cultural  
19 resources is small.

20 Stranding response on Native American/Alaska Native lands would be coordinated with Native  
21 American tribes, Alaska Natives, or other aboriginal peoples to accommodate cultural uses of marine  
22 mammals. Responders would also be sensitive to the fact that tribal cultures often involve  
23 ceremonial, medicinal, or subsistence uses of plants, animals (including marine mammals), and  
24 specific geographic locations. There would not be any effects on Alaska Natives, Native American  
25 tribes, or other aboriginal people's cultural uses of coastal resources.

#### 26 **4.4.1.3 Alternative A3**

27 Under Alternative A3, SAs would be issued to any applicants after review, the new SA template  
28 would not be utilized, and the Final SA criteria would not be issued. The effects on cultural resources  
29 from Alternative A3 would be the same as those described under Alternative A2.

1 **4.4.1.4 Alternative A4- Preferred Alternative**

2 Under Alternative A4, the Final SA criteria and the new SA template would be implemented and  
3 current and future stranding response activities would occur. The effects on cultural resources from  
4 Alternative A4 would be the same as those described under Alternative A2.

5 **4.4.1.5 Alternative A5**

6 Under Alternative A5, the Final SA criteria and the new SA template would be implemented and  
7 response to threatened, endangered, or rare animals would be required. The effects on cultural  
8 resources from Alternative A5 would be the same as those described under Alternative A2.

9 **4.4.2 Carcass Disposal Alternatives**

10 **4.4.2.1 Alternative B1- No Action**

11 Under Alternative B1, no carcass disposal would occur and carcasses would remain on the beach to  
12 naturally decompose. No effects on cultural resources would be expected to occur from Alternative  
13 B1. Carcass disposal activities would end, removing any potential risk to cultural resources.

14 **4.4.2.2 Alternative B2- Status Quo**

15 Under Alternative B2, current methods of carcass disposal would continue. Minor, adverse effects on  
16 cultural resources could be expected to occur under Alternative B2. Carcass burial could damage  
17 resources located on or beneath the beach. Digging may unearth artifacts and equipment used for  
18 digging could physically impact buried resources. This would negatively impact areas such as the  
19 Pacific Islands area, where many known artifacts and habitation sites are buried on beaches.  
20 Transporting the carcass off-site has the potential to damage resources, as the equipment used could  
21 crush buried resources. However, the potential for impact would be minor, as stranding events are  
22 scattered along the entire U.S. coastline. The probability that these events, and therefore disposal  
23 activities, may be located on a beach or in water containing cultural resources is small.

24 Carcass disposal on Native American/Alaska Native lands would be coordinated with Native  
25 American tribes, Alaska Natives, or other aboriginal peoples to accommodate cultural uses of marine  
26 mammals. Responders would also be sensitive to the fact that tribal cultures often involve  
27 ceremonial, medicinal, or subsistence uses or plants, animals (including marine mammals), and  
28 specific geographic locations. There would not be any effects on Alaska Natives, Native American  
29 tribes, or other aboriginal people's cultural uses of coastal resources.

1 **4.4.2.3 Alternative B3- Preferred Alternative**

2 Under Alternative B3, current methods of carcass disposal would continue with a recommendation to  
3 transport chemically euthanized animal carcasses off-site. The effects on cultural resources from  
4 Alternative B3 would be the same as those described under Alternative B2.

5 **4.4.3 Rehabilitation Activities Alternatives**

6 **4.4.3.1 Alternative C1- No Action**

7 Under Alternative C1, current SAs would expire, stranding response would end, and animals would  
8 not be taken into rehabilitation. No effects on cultural resources would be expected to occur under  
9 Alternative C1. Rehabilitation activities would end, removing any potential risk to cultural resources.

10 **4.4.3.2 Alternative C2- Status Quo**

11 Under Alternative C2, current rehabilitation activities would continue, but the final Rehabilitation  
12 Facility Standards would not be implemented. Potential minor, adverse effects on cultural resources  
13 could be expected to occur under Alternative C2. The use of temporary pools could damage cultural  
14 resources, depending on where they are sited. The use of net pens may disturb or damage submerged  
15 cultural resources.

16 **4.4.3.3 Alternative C3- Preferred Alternative**

17 Under Alternative C3, new SAs would be issued, rehabilitation activities would continue, and the  
18 final Rehabilitation Facility Standards would be implemented. The effects on cultural resources from  
19 Alternative C3 would be the same as those described under Alternative C2.

20 **4.4.3.4 Alternative C4**

21 Under Alternative C4, new SAs would be issued, rehabilitation activities would continue, and the  
22 final Rehabilitation Facility Standards would be implemented. The effects on cultural resources from  
23 Alternative C4 would be the same as those described under Alternative C2.

24 **4.4.4 Release of Rehabilitated Animals Alternatives**

25 During the public comment period, particular concerns were raised regarding the release of  
26 rehabilitated ices seals in Alaskan waters. In response to these concerns, which raised issues related  
27 to potential effects on cultural resources for subsistence harvest of ice seals, several of the alternatives

1 would adopt mitigation measures to minimize the potential for disease transmission from rehabilitated  
2 ices seals, as described in Section 5.2.4 of this PEIS.

#### 3 **4.4.4.1 Alternative D1- No Action**

4  
5 Under Alternative D1, current SAs would expire, stranding response and rehabilitation would cease,  
6 and there would be no animals to release. No effects on cultural resources would be expected to occur  
7 from Alternative D1. Release of rehabilitated animals would end, removing any potential risk to  
8 cultural resources.

#### 9 **4.4.4.2 Alternative D2- Status Quo**

10 Under Alternative D2, current release activities would continue, adaptive changes to release activities  
11 would not be permitted, and the final Release criteria would not be implemented. Minor, adverse  
12 effects on cultural resources could be expected to occur from Alternative D2. The use of equipment  
13 and vehicles on the beach during release activities may affect cultural resources buried in sand or  
14 dunes. However, the potential for impact would be minor, as release activities are scattered along the  
15 entire U.S. coastline. The probability that these activities may be located on a beach containing  
16 cultural resources is small. Archaeological studies have not been conducted in most coastal areas.  
17 Release activities conducted at sea would not affect any submerged cultural resources.

#### 18 **4.4.4.3 Alternative D3- Preferred Alternative**

19 Under Alternative D3, new SAs would be issued, release activities would continue, adaptive changes  
20 to release activities would be permitted, and the final Release criteria would be implemented. The  
21 effects on cultural resources from Alternative D3 would be the same as those described under  
22 Alternative D2.

#### 23 **4.4.5 Disentanglement Alternatives**

##### 24 **4.4.5.1 Alternative E1- No Action**

25 Under Alternative E1, there would be no disentanglement network. No effects on cultural resources  
26 would be expected to occur from Alternative E1. Disentanglement activities would end, removing  
27 any potential risk to cultural resources.



1 **4.4.5.2 Alternative E2- Status Quo**

2 Under Alternative E2, the disentanglement network would continue the current activities with no  
3 modifications or new members added. No effects on cultural resources would be expected to occur  
4 from Alternative E2. Disentanglement activities would generally occur in open ocean areas and  
5 would not be near or in contact with any submerged cultural resources. Pinniped disentanglements  
6 may occur on beaches, but impacts to cultural resources would not be expected.

7 **4.4.5.3 Alternative E3- Preferred Alternative**

8 Under Alternative E3, the disentanglement network would continue the current activities on the East  
9 Coast with modifications to the West Coast network. No effects on cultural resources would be  
10 expected to occur from Alternative E3. Disentanglement activities would generally occur in open  
11 ocean areas and would not be near or in contact with any submerged cultural resources. Pinniped  
12 disentanglements may occur on beaches, but impacts to cultural resources would not be expected.

13 **4.4.6 Biomonitoring and Research Activities Alternatives**

14 **4.4.6.1 Alternative F1- No Action**

15 Under Alternative F1, biomonitoring and research activities would not occur. No effects on cultural  
16 resources would be expected to occur from Alternative F1. Biomonitoring and research activities  
17 would end, removing any potential risk to cultural resources.

18 **4.4.6.2 Alternative F2- Status Quo**

19 Under Alternative F2, the new ESA/MMPA permit would continue the current biomonitoring and  
20 research activities. Adverse effects on cultural resources would not likely occur from this alternative.  
21 Research activities conducted on beaches could potentially disturb buried resources if vehicles or  
22 other equipment is used. Research activities conducted in the water, such as health assessment  
23 captures, could damage submerged cultural resources. Activities may involve anchoring boats or nets  
24 to the bottom and positioning researchers in the water. Activities in shallow areas could potentially  
25 disturb or come in contact with artifacts and other resources. Research activities in open ocean areas  
26 would not be near or in contact with any submerged cultural resources. However, the potential for  
27 impact would be minor as research activities are scattered along the entire U.S. coastline. The  
28 probability that these activities may be located on a beach or in water containing cultural resources is  
29 small.

1 **4.4.6.3 Alternative F3- Preferred Alternative**

2 Under Alternative F3, the new ESA/MMPA permit would be issued to include current and future  
3 biomonitoring and research activities. The effects on cultural resources from Alternative F3 would be  
4 the same as those described under Alternative F2.

5 **4.5 Human Health and Safety**

6 This section evaluates the potential impacts on human health and safety as a result of the alternatives.

7 **4.5.1 Stranding Agreements and Response Alternatives**

8 **4.5.1.1 Alternative A1- No Action**

9 Under Alternative A1 stranding response from current SA holders would end once all agreements  
10 have expired. Response to all stranded animals, alive or dead, would not occur and animals would be  
11 left on beaches. Without response activities, people would likely approach the animal or carcass  
12 either out of curiosity or in an attempt to help. Animal carcasses and live animals may contain  
13 contaminants or zoonotic diseases that people or domestic animals may come in contact with through  
14 tissues, fluids, bites, or scratches. Live animals may bite, roll, or thrash around, causing physical  
15 injuries to people who attempt to interact with the animals.

16 Direct, beneficial effects would be expected for stranding response personnel. As response to stranded  
17 animals ends, the safety risks for response personnel would no longer exist.

18 **4.5.1.2 Alternative A2- Status Quo**

19 Under Alternative A2, the current SAs would be renewed and current stranding response activities  
20 would continue without the issuance of Final SA criteria. The general public could be affected if they  
21 approached the carcass or live animal out of curiosity or in an attempt to help. Animal carcasses and  
22 live animals may contain contaminants or zoonotic diseases that people or domestic animals may  
23 come in contact with through tissues or fluids. People may have allergic reactions to animal blubber  
24 and oils. Serious infections may occur from contact with animals. Pathogens encountered may be  
25 antibiotic resistant, making treatment more difficult. Live animals may bite, roll, or thrash around,  
26 causing physical injuries. However, the potential for adverse effects is less under this alternative than  
27 Alternative A1, as responders would be on scene, reducing the ability for the public to come into  
28 contact with an animal.

1 Risk to responders would also include contaminants, zoonotic diseases, and physical injuries.  
2 Contaminants, including biotoxins and petroleum products, may produce short-term affects, such as  
3 respiratory problems, lightheadedness, nausea, eye irritation, or skin irritation. Responders may have  
4 allergic reactions to animal blubber and oils. Serious infections may occur from contact with animals.  
5 Pathogens encountered may be antibiotic resistant, making treatment more difficult. Zoonotic  
6 diseases may have short-term affects including swelling, joint pain, skin lesions, and flu-like  
7 symptoms. Long-term effects from zoonotic diseases could occur, especially if they are not  
8 diagnosed properly. Physical injuries may include strains or bruises from moving an animal or from  
9 slips, trips, or falls. Workers may be injured by stepping on broken glass, rusty metal, needles, or  
10 other litter. Workers could become entangled in derelict fishing gear during water responses.  
11 Workers may also come into contact with contaminated debris, including medical wastes and sewage.  
12 Accidental injections or exposure to euthanasia solution could cause adverse effects, depending on  
13 the chemical(s) used. Etorphine can be absorbed through broken skin and mucous membranes (*e.g.*  
14 eyes, nose, and mouth). Accidental injections of paralytic agents are considered life-threatening  
15 (Greer *et al.* 2001). Responses in or close to water could result in drowning if proper safety measures  
16 are not taken. Responders in water may come into contact with sharks, jellyfish, rays, and other  
17 venomous fish.

#### 18 **4.5.1.3 Alternative A3**

19 Under Alternative A3, SAs would be issued to any applicants after review, the new SA template  
20 would not be utilized, and the Final SA criteria would not be issued. Effects on human health and  
21 safety from Alternative A3 would be the same as those described under Alternative A2.

#### 22 **4.5.1.4 Alternative A4- Preferred Alternative**

23 Under Alternative A4, the Final SA criteria and the new SA template would be implemented and  
24 current and future stranding response activities would occur. Effects on human health and safety from  
25 Alternative A4 would be similar to those described under Alternative A2. However, the  
26 implementation of SA criteria would ensure that responders are experienced and therefore have the  
27 knowledge to avoid or minimize health and safety risks.

1 **4.5.1.5 Alternative A5**

2 Under Alternative A5, the Final SA criteria and the new SA template would be implemented and  
3 response to threatened, endangered, or rare animals would be required. Effects on human health and  
4 safety from Alternative A5 would be the same as those described under Alternative A4.

5 **4.5.2 Carcass Disposal Alternatives**

6 **4.5.2.1 Alternative B1- No Action**

7 Under Alternative B1, no carcass disposal would occur and carcasses would remain on the beach to  
8 naturally decompose. Carcasses of most stranded animals would be left on beaches and would  
9 naturally decompose (limited carcass disposal may still occur from Federal (not including NMFS),  
10 state, and local agencies authorized under MMPA Section 109(h)). People would likely approach and  
11 touch the carcass out of curiosity. Animal carcasses may contain contaminants or zoonotic diseases  
12 that people may come in contact with through tissues or fluids. Contaminants, including petroleum  
13 products and other hazardous materials, may produce short-term affects, such as respiratory problems,  
14 lightheadedness, nausea, eye irritation, or skin irritation. If disposal activities occur during a *Karenia*  
15 *brevis* bloom (a HAB), aerosolized brevetoxins may be inhaled by humans and could cause  
16 respiratory problems, nausea, vomiting, and neurological symptoms. People may have allergic  
17 reactions to animal blubber and oils. Serious infections may occur from contact with carcasses.  
18 Pathogens encountered may be antibiotic resistant, making treatment more difficult. Zoonotic  
19 diseases may have short-term affects including swelling, joint pain, skin lesions, and flu-like  
20 symptoms. Long-term effects from zoonotic diseases could occur, especially if they are not  
21 diagnosed or treated properly.

22 Contaminated carcasses left on the beach could potentially contaminate the groundwater and/or  
23 nearshore water. Impacts would be minor and temporary, as contaminants in groundwater would  
24 likely be flushed out quickly by tidewater and/or precipitation. Contaminants in nearshore waters  
25 would rapidly be diluted and flushed out by currents. Risks to human health could occur if toxic  
26 carcasses were consumed.

27 The alternative would have a beneficial effect, as personnel involved in carcass disposal would no  
28 longer be exposed to health and safety risks.

1 **4.5.2.2 Alternative B2- Status Quo**

2 Under Alternative B2, current methods of carcass disposal would continue. Minor, short-term,  
3 adverse effects on human health and safety would be expected to occur under Alternative B2.  
4 Carcasses of stranded animals may be left to naturally decompose, buried, towed to sea, or  
5 transported off-site to a rendering facility, landfill, or compost facility. Animal carcasses may contain  
6 euthanasia solution, contaminants, or zoonotic diseases that people may come in contact with through  
7 tissues or fluids, if the carcasses are left to naturally decompose. Contaminants, including petroleum  
8 products and other hazardous materials, may produce short-term affects, such as respiratory problems,  
9 lightheadedness, nausea, eye irritation, or skin irritation. If disposal activities occur during a *Karenia*  
10 *brevis* bloom (a HAB), aerosolized brevetoxins may be inhaled by humans and could cause  
11 respiratory problems, nausea, vomiting, and neurological symptoms. People may have allergic  
12 reactions to animal blubber and oils. Serious infections may occur from contact with carcasses.  
13 Pathogens encountered may be antibiotic resistant, making treatment more difficult. Zoonotic  
14 diseases may have short-term affects including swelling, joint pain, skin lesions, and flu-like  
15 symptoms. Long-term affects from zoonotic diseases could occur, especially if they are not  
16 diagnosed or treated properly.

17 Carcasses containing environmental contaminants left on the beach or buried could potentially  
18 contaminate the groundwater and/or nearshore water. Impacts would be minor and temporary, as  
19 contaminants in groundwater would likely be flushed out quickly by tidewater and/or precipitation.  
20 Contaminants in nearshore waters would rapidly be diluted and flushed out by currents. Chemically  
21 euthanized carcasses left on the beach or buried would not likely effect human health. Risks to  
22 human health could occur if toxic or chemically euthanized carcasses were consumed.

23 Persons involved with the disposal risk physical injuries from using equipment to bury, transport off-  
24 site, or tow the carcass out to sea. Persons could be hit or crushed by equipment or may risk  
25 drowning when towing the carcass out to sea. Carcasses that are disposed in shipping lanes or  
26 resurface could cause vessel accidents.

27 **4.5.2.3 Alternative B3- Preferred Alternative**

28 Under Alternative B3, current methods of carcass disposal would continue with a recommendation to  
29 transport chemically euthanized animal carcasses off-site. Effects on human health and safety under  
30 Alternative B3 would be the same as those described under Alternative B2, with one exception.  
31 Chemically euthanized animal carcasses would not be buried on the beach whenever possible,

1 minimizing the risk of humans coming in contact with these carcasses. This would be a beneficial  
2 impact on health and safety. However, carcasses containing environmental contaminants could still be  
3 buried and contaminate the groundwater and/or nearshore water. Impacts would be minor and  
4 temporary, as contaminants in groundwater would likely be flushed out quickly by tidewater and/or  
5 precipitation. Contaminants in nearshore waters would rapidly be diluted and flushed out by currents.  
6 Risks to human health would still exist if toxic carcasses were consumed.

7 Under this alternative, modifications may be made to carcass disposal activities. Currently, the  
8 potential toxicological environmental hazards posed by a decomposing carcass are not known. If and  
9 when this information becomes available, additional precautions (*e.g.*, removal of certain species  
10 carcasses from beaches) would be implemented, if necessary. These modifications would have a  
11 beneficial impact on human health and would remove the risk of toxic carcasses being consumed.

## 12 **4.5.3 Rehabilitation Activities Alternatives**

### 13 **4.5.3.1 Alternative C1- No Action**

14 Under Alternative C1, current SAs would expire, stranding response would end, and animals would  
15 not be taken into rehabilitation. A beneficial effect on human health and safety would be expected to  
16 occur from Alternative C1. Rehabilitation of marine mammals would no longer occur and risks to  
17 marine mammal workers would end.

### 18 **4.5.3.2 Alternative C2- Status Quo**

19 Under Alternative C2, current rehabilitation activities would continue, but the final Rehabilitation  
20 Facility Standards would not be implemented. Minor, short-term, adverse effects on human health  
21 and safety could be expected to occur from under Alternative C2. Animal induced injuries would  
22 include bites or physical injuries from being hit by a fin, tail, or other body part. Working on wet  
23 surfaces may cause bruises, slips, trips, or falls. Drowning is a possibility as work would occur  
24 around or in pools and pens. Physical injuries may occur from the use of other equipment.

25 Rehabilitation staff may be exposed to contaminants, potential zoonotic pathogens, euthanasia  
26 solution, animal drugs, and chemicals used for sanitation purposes. Contaminants, including  
27 petroleum products and other hazardous materials, may produce short-term effects, such as  
28 respiratory problems, lightheadedness, nausea, eye irritation, or skin irritation. If disposal activities  
29 occur during a *Karenia brevis* bloom (a HAB), aerosolized brevetoxins may be inhaled by humans  
30 and could cause respiratory problems, nausea, vomiting, and neurological symptoms. Serious

1 infections may occur from contact with animals. Pathogens encountered may be antibiotic resistant,  
2 making treatment more difficult. Zoonotic diseases may have short-term affects including swelling,  
3 joint pain, skin lesions, and flu-like symptoms. Long-term affects from zoonotic diseases could  
4 occur, especially if they are not diagnosed properly.

5 Accidental injections or exposure to euthanasia solution could cause adverse effects, depending on  
6 the chemical(s) used. Etorphine can be absorbed through broken skin and mucous membranes (*e.g.*  
7 eyes, nose, and mouth). Accidental injections of paralytic agents are considered life-threatening  
8 (Greer *et al.* 2001). Accidental injections and exposure to other drugs used in animal treatment could  
9 occur and affects would depend upon the drug. Facility personnel may come into contact with  
10 harmful chemicals used for cleaning or maintaining pool water quality. Improperly stored or handled  
11 pool chemicals can be highly reactive and may generate high temperatures, release toxic vapors, or  
12 ignite nearby combustible materials. Reactivity may be triggered by the inadvertent mixing of a pool  
13 chemical with an incompatible material or wetting the chemical with water (EPA 2001).

#### 14 **4.5.3.3 Alternative C3- Preferred Alternative**

15 Under Alternative C3, new SAs would be issued, rehabilitation activities would continue, and the  
16 final Rehabilitation Facility Standards would be implemented. Effects on human health and safety  
17 from Alternative C3 would be the same as those described under Alternative C2, with one exception.  
18 The Rehabilitation Facility Standards would be implemented under Alternative C3, which would have  
19 a beneficial effect on health and safety. While some of these measures may currently occur at  
20 rehabilitation facilities, the standards would ensure that all facilities would be implementing the most  
21 effective safety measures. The standards would require safety plans for the direct handling of all  
22 species seen at the facility. Personnel would be trained to identify potential zoonotic diseases and  
23 prevent their transmission from animal to human. Staff would also be trained to properly handle  
24 contaminated equipment and proper sanitation techniques. Safety equipment such as eye protection,  
25 protective clothing, and eye flushing stations, would be provided.

#### 26 **4.5.3.4 Alternative C4**

27 Under Alternative C4, new SAs would be issued, rehabilitation activities would continue, and the  
28 final Rehabilitation Facility Standards would be implemented. Effects on human health and safety  
29 from Alternative C4 would be the same as those described under Alternative C3.

1 **4.5.4 Release of Rehabilitated Animals Alternatives**

2 **4.5.4.1 Alternative D1- No Action**

3 Under Alternative D1, current SAs would expire, stranding response and rehabilitation would cease,  
4 and there would be no animals to release. A beneficial effect on human health and safety would be  
5 expected from Alternative D1. Release activities would cease and risks to marine mammal workers  
6 would end.

7 **4.5.4.2 Alternative D2- Status Quo**

8 Under Alternative D2, current release activities would continue, adaptive changes to release activities  
9 would not be permitted, and the final Release criteria would not be implemented. Minor, short-term,  
10 adverse effects could be expected from Alternative D2. Physical injuries, such as strains, cuts, and  
11 bruises, may occur while lifting and moving an animal for transport. Injuries from animals, such as  
12 bites or being hit by flukes may occur. Exposure to liquid nitrogen, used for freeze branding, may  
13 occur while pouring liquid nitrogen or coming in contact with the brand. Liquid nitrogen can cause  
14 rapid freezing and tissue damage to skin, eyes, and other exposed body parts. Vessel collisions, fire,  
15 capsizing, running aground, and inclement weather during cetacean release activities can result in  
16 injuries, including bruises, cuts, drowning, and lightning strikes.

17 **4.5.4.3 Alternative D3- Preferred Alternative**

18 Under Alternative D3, new SAs would be issued, release activities would continue, adaptive changes  
19 to release activities would be permitted, and the final Release criteria would be implemented. Effects  
20 on human health and safety from Alternative D3 would be the same as those described under  
21 Alternative D2.

22 **4.5.5 Disentanglement Alternatives**

23 **4.5.5.1 Alternative E1- No Action**

24 Under Alternative E1, there would be no disentanglement network. A beneficial effect on marine  
25 mammal responder health and safety would be expected under Alternative E1. Disentanglement  
26 operations would end and responders would no longer be at risk of injury. However, adverse impacts  
27 on public health and safety could occur if individuals attempted to disentangle an animal themselves.  
28 Risks would include serious physical injuries and drowning.



1 **4.5.5.2 Alternative E2- Status Quo**

2 Under Alternative E2, the disentanglement network would continue the current activities with no  
3 modifications or new members added. Responders put themselves at risk during all disentanglements.  
4 The boat could become entangled in the lines connected to the whale. Animal movements may cause  
5 serious physical injuries, knock a person overboard, or capsize the boat. Drowning is a very real  
6 threat to responders. Responders could also become entangled in restraint lines onboard the boat or  
7 while attempting to cut lines from the animal. Responders could come into contact with drugs used  
8 for the chemical restraint of animals. Under this alternative, no responders would enter the water to  
9 cut lines.

10 Modifications, including new techniques and tools, are not allowed. Without modifications, hazards  
11 to responders would still occur and could feasibly increase. Human safety risks would also increase  
12 without the implementation of disentanglement guidelines and training prerequisites. Less  
13 experienced individuals would not have the skills and knowledge to avoid or minimize dangerous  
14 situations, putting themselves and others at risk.

15 Potential adverse effects on public health and safety could occur. Individuals may attempt to  
16 disentangle an animal, putting themselves at risk of serious physical injuries and drowning.

17 **4.5.5.3 Alternative E3- Preferred Alternative**

18 Under Alternative E3, the disentanglement network would continue the current activities on the East  
19 Coast with modifications to the West Coast network. Risks to responders and safety measures would  
20 be the same as those described under Alternative E2. However, there would be less risk under this  
21 alternative, as modifications which could reduce threats to responders, would be allowed. New  
22 techniques and tools could decrease the time necessary for disentanglements, therefore reducing the  
23 time responders are on the water and in contact with animals. New tools, such as cutting instruments,  
24 may reduce the potential for injuries. Modifications of safety measures would also reduce threats to  
25 responders. Implementation of disentanglement guidelines and training prerequisites would increase  
26 the number of experienced responders. Experienced responders would have the skills and knowledge  
27 to avoid or minimize dangerous situations. Even with experienced responders and safety measures,  
28 there would still be potential for adverse effects on human health and safety.

29 Potential adverse effects on public health and safety could occur. Individuals may attempt to  
30 disentangle an animal, putting themselves at risk of serious physical injuries and drowning. However,

1 the public may decide not to interfere if they know there are qualified, experienced, and authorized  
2 individuals to conduct disentanglement activities. This may reduce some of the potential health and  
3 safety impacts.

#### 4 **4.5.6 Biomonitoring and Research Activities Alternatives**

##### 5 **4.5.6.1 Alternative F1- No Action**

6 Under Alternative F1, biomonitoring and research activities would not occur. A beneficial effect on  
7 human health and safety would occur under Alternative F1. Biomonitoring and research activities  
8 would cease and risks to researchers would end.

##### 9 **4.5.6.2 Alternative F2- Status Quo**

10 Under Alternative F2, the new ESA/MMPA permit would continue the current biomonitoring and  
11 research activities. Personnel working on sample analyses in laboratories may come into contact with  
12 harmful chemicals. Physical injuries may be sustained from the use of laboratory equipment or sharp  
13 instruments.

14 All researchers conducting activities outdoors, either on land or vessel, risk sunburn, heat exhaustion,  
15 or heat stroke in hot weather or hypothermia in cold weather. Researchers conducting activities on  
16 pinniped rookeries and haul-out sites risk attacks by the animals. Besides a physical injury, bites or  
17 other contact may expose researchers to zoonotic diseases.

18 Sampling animals from vessels pose a variety of safety hazards. The use of crossbows, poles, and  
19 other equipment used for tagging and sampling could cause serious physical injuries. Risks would  
20 also include vessel collisions, capsizing, and drowning. Walking on wet boat decks increases the  
21 chance of slips, trips, and falls.

22 Cetacean capture-release health assessments create many scenarios where human health and safety  
23 may be adversely impacted. Bruises, cuts, drowning, and other physical injuries could occur from  
24 vessel collisions, fire, capsizing, running aground, and inclement weather. Entanglement in the  
25 capture net may lead to cuts, bruises, and drowning. Physical injury may occur if appendages or a  
26 person becomes caught between rafted boats. Exposure to liquid nitrogen, used for freeze branding,  
27 may occur while pouring liquid nitrogen or coming in contact with the brand. Liquid nitrogen can  
28 cause rapid freezing and tissue damage to skin, eyes, and other exposed body parts. Restraint and  
29 handling of the animal may expose personnel to zoonotic diseases. Physical injuries may result if the

1 animal thrashes around during restraint and sampling activities. Accidental needle sticks and  
2 exposure to chemicals may occur during the sampling process. Activities in water may expose  
3 individuals to harmful animals, such as venomous rays and skates, sharks, jellyfish, and sea lice.  
4 Shallow environments may have shells and other hard parts that can scrape or cut skin.

#### 5 **4.5.6.3 Alternative F3- Preferred Alternative**

6 Under Alternative F3, the new ESA/MMPA permit would be issued to include current and future  
7 biomonitoring and research activities. Effects on human health and safety from Alternative F3 would  
8 be the same as those described under Alternative F2.

### 9 **4.6 Socioeconomics**

10 This section evaluates the potential impacts on socioeconomics as a result of the alternatives.

#### 11 **4.6.1 Stranding Agreements and Response Alternatives**

##### 12 **4.6.1.1 Alternative A1- No Action**

13 Under Alternative A1 stranding response from current SA holders would end once all agreements  
14 have expired. Moderate, long-term beneficial direct effects to current stranding network members  
15 would be expected to occur under Alternative A1. Allowing SAs to expire would mean that network  
16 members would no longer respond to stranding events, leading to a reduction, if not an elimination, of  
17 costs incurred from response activities. However, businesses or individuals whose only function is  
18 stranding response would be adversely affected. Businesses would close and individuals would lose  
19 their jobs. There may also be minor to moderate indirect adverse effects to those SA holders whose  
20 response and/or rehabilitation activities attract external funding. Federal, state, and local government  
21 agencies authorized under MMPA Section 109(h) would benefit from the absence of private stranding  
22 network members. These agencies would likely compete and receive funding from the Prescott Grant  
23 program to enhance their stranding response programs.

24 Negligible adverse effects may be borne by accommodations and restaurants adjacent to stranding  
25 sites. The alternative would reduce the occurrences of temporary local beach closures associated with  
26 stranding activities. However, the elimination of SAs would reduce response activities and increase  
27 the instances of dead marine mammals left to decompose on the beach (either by not removing  
28 carcasses and/or the increased likelihood of stranded animals being left to die). Carcasses may be  
29 removed by other Federal, state, or local governments authorized under the MMPA Section 109(h).

1 Decomposing carcasses left on-site would remain in an unsightly state for longer durations without  
2 assistance in their removal, and the duration would increase for larger sized animals. The  
3 unappealing sight and smell could reduce tourism activity at that particular beach, as visitors may  
4 choose to spend their money at other beaches or alternative recreation sites located further inland.  
5 However, tourists may want to see a live stranded animal or a carcass, which could create a beneficial  
6 impact on surrounding business.

#### 7 **4.6.1.2 Alternative A2- Status Quo**

8 Under Alternative A2, the current SAs would be renewed and current stranding response activities  
9 would continue without the issuance of Final SA criteria. Minor to moderate, long-term adverse  
10 effects to stranding network members would be expected to occur under Alternative A2. Current SA  
11 holders would continue their response activities and would continue to incur operating costs  
12 associated with these activities. However, SA holders whose response activities attract external  
13 funding may see minor to moderate, indirect beneficial impacts.

14 Negligible adverse effects to tourism businesses, such as accommodations and restaurants, could be  
15 expected from Alternative A2. Some carcasses may still be left on-site to decompose naturally. The  
16 unappealing sight and smell could reduce tourism activity at that particular beach, as visitors may  
17 choose to spend their money at other beaches or alternative recreation sites located further inland.  
18 However, tourists may want to see a live stranded animal, a carcass, or the response activities, which  
19 could create a beneficial impact on surrounding business.

#### 20 **4.6.1.3 Alternative A3**

21 Under Alternative A3, SAs would be issued to any applicants after review, the new SA template  
22 would not be utilized, and the Final SA criteria would not be issued. Minor to moderate adverse  
23 effects on current stranding network members would likely occur under Alternative A3. Operating  
24 expenses for current network members may be offset by the addition of new SA holders. As the  
25 number of SA holders increases, travel time and expense should reduce, as there would likely be  
26 greater coverage for a particular geographic area. Given that the funding sources for network  
27 activities are likely finite, increased competition for funds may result in reduced opportunities for  
28 current network members. However, fundraising experience, established relationships with donors,  
29 and familiarity with competitive funding opportunities (*i.e.*, Prescott Grant Program), should provide  
30 current network members with continued access to funds.

1 New SA holders would likely bear minor to moderate adverse economic impacts due to the operating  
2 costs related to their new response activities and limited fundraising experience and opportunities.  
3 The extent of the impact on these new network members would depend on the nature of their pre-  
4 existing capacity, their authorized functions (dead animal response, live animal response, and/or  
5 rehabilitation), and their fundraising history. New SA holders cooperating within large organizations,  
6 for example, may have sufficient facilities and financial resources to ensure economic independence  
7 or fundraising success.

8 Negligible beneficial effects on tourism businesses would likely occur under Alternative A3.  
9 Maintaining the current stranding network and adding new participants would enhance  
10 responsiveness to nearby live and dead marine mammals.

#### 11 **4.6.1.4 Alternative A4- Preferred Alternative**

12 Under Alternative A4, the Final SA criteria and the new SA template would be implemented and  
13 current and future stranding response activities would occur. Alternative A4 is similar to Alternative  
14 A3, but under Alternative A4 the Final SA criteria would be implemented. Moderate to major,  
15 adverse effects to the current SA holders would be expected to occur. As the Final SA criteria are  
16 more stringent than what is currently in place, existing SA holders may need more training or may  
17 need to alter existing practices in order to meet the new criteria. However, the level of impacts  
18 would depend on the current practices of SA holders. For SA holders who would require no or few  
19 changes to meet the new criteria, impacts would be small. Similarly, larger facilities who engage in a  
20 wide variety of activities, in addition to stranding response and rehabilitation activities would bear a  
21 relatively lower burden in terms of costs. New SA holders, and current SA holders that have  
22 difficulty implementing the new SA criteria, would bear moderate to major, adverse impacts  
23 depending on their ability to take on new response and rehabilitation activities. With the addition of  
24 new SA holders, existing stranding network members may face competition for donations and other,  
25 presumably finite, sources of funds available for marine mammal stranding and rehabilitation  
26 activities.

27 Negligible beneficial effects on tourism businesses would likely occur under Alternative A4, similar  
28 to those described under Alternative A3.

1 **4.6.1.5 Alternative A5**

2 Under Alternative A5, the Final SA criteria and the new SA template would be implemented and  
3 response to threatened, endangered, or rare animals would be required. Minor to major, long-term  
4 adverse effects to SA holders would be likely to occur. These impacts are similar to those described  
5 in Alternatives A3 and A4, but they would also depend on the proportion of stranded marine  
6 mammals that are not rare, threatened, or endangered and whether or not the network member  
7 chooses to continue responding to those animals. While implementation of the Final SA criteria may  
8 increase operating costs, the impact may be offset if there was a reduction in responses to stranding  
9 events under Alternative A5. The reduction in responses could occur if new SA holders covered  
10 geographic areas previously covered by another network member.

11 Negligible beneficial effects on tourism businesses would likely occur under Alternative A5, similar  
12 to those described under Alternative A3.

13 **4.6.2 Carcass Disposal Alternatives**

14 **4.6.2.1 Alternative B1- No Action**

15 Under Alternative B1, no carcass disposal would occur and carcasses would remain on the beach to  
16 naturally decompose. Carcasses would be left wherever they naturally occurred. Removal of non-  
17 ESA listed carcasses could be conducted by Federal (not including NMFS), state, and local agencies  
18 authorized under MMPA 109(h), but this would likely be localized and limited. Minor to moderate  
19 beneficial effects are likely to occur for existing stranding network members that participate in other  
20 activities besides response and carcass disposal. The elimination of carcass disposal activities would  
21 lower operating costs for these members.

22 Carcasses left on-site to decompose would remain in an unsightly state for a longer period of time  
23 without assistance in their removal. The duration would increase for larger sized animals. Some  
24 strandings sites may be in areas of human activity, including commercial areas such as beachfront  
25 hotels, casinos, businesses, or natural areas (national parks, seashore, or NERRs). This could result in  
26 negligible, adverse impacts in terms of lost revenues, restaurants, and parks in the immediate vicinity  
27 of the carcass(es), if the public chose to avoid the area. The resulting unappealing sight and odors  
28 could reduce tourism activity at that particular beach, as visitors may choose to spend their money at  
29 other beaches or alternative recreation sites further inland. However, negligible, short-term beneficial  
30 effects on surrounding businesses may occur if people visit the area to view the carcass.

1 **4.6.2.2 Alternative B2- Status Quo**

2 Under Alternative B2, current methods of carcass disposal would continue. Negligible adverse effects  
3 on tourism activities could occur from Alternative B2. Under current response activities, some  
4 carcasses may be left on beaches. Carcasses may be left in areas of recreational and tourism  
5 activities, such as beachfront hotels or natural areas. However, carcasses would not be left on  
6 actively used beaches. Carcasses could be left on remote beaches that may be part of a national park,  
7 seashore, or NERR. The foul odors and the sight of a decomposing animal may result in visitors  
8 avoiding the area. This impact would be negligible, as visitors could still participate in activities  
9 within the area not located near the carcass. However, negligible, short-term beneficial effects on  
10 surrounding businesses may occur if people visit the area to view the carcass.

11 Stranding network participants currently authorized for dead marine mammal response would likely  
12 bear minor to moderate adverse effects due to continued time and expense associated with carcass  
13 disposal activities.

14 **4.6.2.3 Alternative B3- Preferred Alternative**

15 Under Alternative B3, current methods of carcass disposal would continue with a recommendation to  
16 transport chemically euthanized animal carcasses off-site. Alternative B3 is similar to Alternative B2,  
17 except that Alternative B3 recommends (but would not require) the removal of chemically euthanized  
18 carcasses to an off-site location. The economic impacts from Alternative B3 would be the same as  
19 those described under Alternative B2, with one exception. Chemically euthanized carcasses would be  
20 removed and towed off-site to a hazardous waste landfill. Towing animals off-site would be  
21 expensive and the cost would be incurred by the stranding network member. The adverse effect on  
22 individual members would be negligible, minor, or major, depending on the number of animals  
23 chemically euthanized. The costs of transporting the chemically euthanized carcass off-site could  
24 vary depending on the size of the animal, transport distance, or the means of transport. Some  
25 stranding network members may bear a greater cost burden if stranding events tend to involve large  
26 animals, multiple carcasses, or if the carcass needs to be transported a great distance for disposal.  
27 Adverse effects could also occur due to increased costs affiliated with rendering or incinerating  
28 activities or fees imposed by the disposal site, including the need to obtain local or state permits for  
29 beach or at sea disposal.

30 Negligible negative impacts on local tourism businesses could occur under Alternative B3.  
31 Transporting chemically euthanized carcasses off-site would reduce the instances when an unsightly

1 carcass would deter visitors from a particular location. However, other carcasses may be left at  
2 stranding sites.

### 3 **4.6.3 Rehabilitation Activities Alternatives**

#### 4 **4.6.3.1 Alternative C1- No Action**

5 Under Alternative C1, current SAs would expire, stranding response would end, and animals would  
6 not be taken into rehabilitation. Major, long-term, adverse effects on facilities that focus primarily on  
7 rehabilitation activities could occur under Alternative C1. Many facilities in this category may cease  
8 operation, unless their activities could be shifted (*e.g.*, they are able to redirect rehabilitation efforts to  
9 animals other than marine mammals). Larger facilities that also engage in other activities may  
10 experience a minor, long-term positive effect in terms of the reduced operating costs from the  
11 elimination of rehabilitation activities.

#### 12 **4.6.3.2 Alternative C2- Status Quo**

13 Under Alternative C2, current rehabilitation activities would continue, but the final Rehabilitation  
14 Facility Standards would not be implemented. Minor to moderate, adverse effects on rehabilitation  
15 facilities would be expected, as continued expenses would be incurred from rehabilitation activities.  
16 Rehabilitation facilities would operate as they currently do and therefore continue to incur supply,  
17 equipment, personnel, and maintenance expenses.

#### 18 **4.6.3.3 Alternative C3- Preferred Alternative**

19 Under Alternative C3, new SAs would be issued, rehabilitation activities would continue, and the  
20 final Rehabilitation Facility Standards would be implemented. Alternative C3 would be the same as  
21 Alternative C2, with two exceptions. Alternative C3 would issue new SAs and implement the  
22 Rehabilitation Facility Standards. Minor to major, adverse effects on rehabilitation facilities would  
23 be expected to occur from this alternative. The Rehabilitation Facility Standards would be  
24 implemented and facilities would need to upgrade to comply with the minimum standards, in order to  
25 maintain or obtain their SAs. The level of impact would depend on each facility, if they need to  
26 upgrade, and how much they would need to upgrade to meet the minimum standards. Current  
27 rehabilitation facilities were contacted to determine the estimated costs of upgrading each facility.  
28 The East Coast facility that responded to NMFS' request for information estimated that it would cost  
29 \$75,000 to upgrade its pinniped rehabilitation facilities. Of the West Coast facilities that responded,  
30 the total estimated costs to upgrade facilities ranged from \$0 (a facility where the standards were



1 already met) and \$48,000 (cetacean and pinniped facility) on the low end to \$1.9 million and \$7  
2 million (both pinniped facilities) on the high end. Excluding the facility that reported \$7 million in  
3 impacts, the average impact among the facilities that responded is estimated to be \$518,334.

#### 4 **4.6.3.4 Alternative C4**

5 Under Alternative C4, new SAs would be issued, rehabilitation activities would continue, and the  
6 final Rehabilitation Facility Standards would be implemented. Alternative C4 would be the same as  
7 Alternative C3, with the exception that the rehabilitation of non-ESA and non-rare marine mammals  
8 would be optional. Alternative C4 would adversely affect rehabilitation facilities in the same manner  
9 as Alternative C3. Alternative C4 could adversely affect facilities to a lesser extent, however, since  
10 under the rehabilitation of non-rare and non-ESA species would only be optional.

### 11 **4.6.4 Release of Rehabilitated Animals Alternatives**

#### 12 **4.6.4.1 Alternative D1- No Action**

13 Under Alternative D1, current SAs would expire, stranding response and rehabilitation would cease,  
14 and there would be no animals to release. Release activities would cease as stranding response and  
15 rehabilitation activities ended. Eliminating activities related to the release of rehabilitated marine  
16 mammals would eliminate the expenses related to these activities.

#### 17 **4.6.4.2 Alternative D2- Status Quo**

18 Under Alternative D2, current release activities would continue, adaptive changes to release activities  
19 would not be permitted, and the final Release criteria would not be implemented. Minor to moderate,  
20 adverse effects on rehabilitation facilities would be expected, as continued expenses would be  
21 incurred from release activities. Facilities that release more animals, larger species of marine  
22 mammals, or those that need to travel greater distance to release animals would incur a greater share  
23 of expenses.

#### 24 **4.6.4.3 Alternative D3- Preferred Alternative**

25 Under Alternative D3, new SAs would be issued, release activities would continue, adaptive changes  
26 to release activities would be permitted, and the final Release criteria would be implemented.  
27 Alternative D3 would be the same as Alternative D2, except that new SA holders could be added and  
28 the release criteria would be implemented. Minor to moderate, adverse effects may be borne by  
29 rehabilitation facilities. Costs may increase at each facility in order to comply with the release

1 criteria. However, the possible addition of rehabilitation facilities could help offset the release  
2 activities and costs for some facilities.

### 3 **4.6.5 Disentanglement Alternatives**

#### 4 **4.6.5.1 Alternative E1- No Action**

5 Under Alternative E1, there would be no disentanglement network. Minor to moderate, beneficial  
6 effects on current participants could occur from the elimination of expenses incurred from  
7 disentanglement activities.

#### 8 **4.6.5.2 Alternative E2- Status Quo**

9 Under Alternative E2, the disentanglement network would continue the current activities with no  
10 modifications or new members added. Minor to moderate, adverse effects would continue to be borne  
11 by participants engaged in disentanglement activities.

#### 12 **4.6.5.3 Alternative E3- Preferred Alternative**

13 Under Alternative E3, the disentanglement network would continue the current activities on the East  
14 Coast with modifications to the West Coast network. In addition, the Disentanglement Guidelines and  
15 training prerequisites would be implemented nationwide. East Coast participants already follow these  
16 guidelines and training prerequisites, and therefore no additional impacts would be expected. Minor  
17 to moderate, adverse effects would be borne by West Coast participants due to modifications of  
18 current operations and training expenses.

### 19 **4.6.6 Biomonitoring and Research Activities Alternatives**

#### 20 **4.6.6.1 Alternative F1- No Action**

21 Under Alternative F1, biomonitoring and research activities would not occur. No effects on  
22 socioeconomics would be expected to occur under Alternative F1.

#### 23 **4.6.6.2 Alternative F2 Status Quo**

24 Under Alternative F2, the new ESA/MMPA permit would continue the current biomonitoring and  
25 research activities. Minor to moderate, adverse effects could occur under Alternative F2 depending on  
26 the nature of current biomonitoring and research activities and the ongoing personnel and research  
27 expenses.

1 **4.6.6.3 Alternative F3- Preferred Alternative**

2 Under Alternative F3, the new ESA/MMPA permit would be issued to include current and future  
3 biomonitoring and research activities. Minor to moderate, adverse effects could occur under  
4 Alternative F3 depending on the nature of new biomonitoring and research activities and the ongoing  
5 personnel and research expenses.

Table 4-2. Summary Matrix of Impacts

| Alternatives  | Impact Area   |   |  |  |  |
|---|---|---|--|--|--|
|   | Biological Resources  | Water & Sediment Quality  | Cultural Resources   | Human Health & Safety  | Socioeconomics   |
| <b>Stranding Agreements &amp; Response</b>  |   |   |  |  |  |
| <p><b>Alternative A1- No Action</b><br/>No Action- SA's expire, stranding response would end.</p>   | <p>Moderate, adverse effects on marine mammals, as stranded animals would be removed from the population. Valuable information on marine mammal health would not be collected.</p> <p>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.</p>                                       | <p>No effects on water and sediment quality.</p>  | <p>No effects on cultural resources.</p>   | <p>Minor, short-term adverse effects as the public interact with stranded animals. Beneficial effects as response personnel no longer needed.</p>  | <p>Moderate, long-term beneficial direct effects on stranding network members, as there would be reduction, if not an elimination, of costs.</p> <p>Minor to moderate indirect adverse effects to SA holders whose activities attract external funding.</p> <p>Potential adverse effects if stranded animals reduce the visual and aesthetic such that other beach uses decrease while the stranded animal is decomposing. Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding event.</p> |
| <p><b>Alternative A2- Status Quo</b><br/>Status Quo- Current SAs would be renewed, current stranding response activities continue. Final SA criteria would not be issued.</p>                     | <p>Minor, short-term adverse effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, shellfish, and birds from equipment use or leaks on beaches/nearshore waters and the presence of responders.</p> <p>Minor to moderate, adverse effects on marine mammals would be expected from response activities and if new SAs are not issued.</p> | <p>Minor, short-term adverse effects on surrounding sand and nearshore waters could occur from equipment leaks and euthanasia solution or other environmental contaminants in tissue, blood, and other body fluids.</p> | <p>Potential minor, adverse effects on submerged cultural resources or resources buried in sand from equipment and vehicle use on beaches and nearshore waters. There would not be any effects on Alaska Natives, Native American tribes, or other aboriginal people's cultural uses of coastal resources.</p> | <p>Minor, short-term adverse effects on the public (interacting with a stranded animal) and stranding responders (e.g., physical injury and zoonotic diseases).</p>                      | <p>Minor to moderate, long-term adverse effects to stranding network members from operating costs associated with these activities.</p> <p>Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding event.</p>   |
| <p><b>Alternative A3</b><br/>SAs issued to any applicants after review, new SA template would not be utilized. Final SA criteria would not be issued. Current and future activities included.</p> | <p>Same effects on biological resources as Alternative A2. Some beneficial impacts could come from allowing new SA holders to be added, given that they have the proper experience with marine mammal response, as geographic coverage would increase and new rehabilitation facilities may be added.</p>   | <p>Same effects as Alternative A2.</p>  | <p>Same effects as Alternative A2.</p>   | <p>Same effects as Alternative A2.</p>   | <p>Minor to moderate, long-term adverse effects on network members from operating expenses. New involvement with response activities would help offset expense of these activities. Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding.</p>  |
| <p><b>Alternative A4 (Preferred)</b><br/>Final SA criteria would be implemented, new SA template would be utilized, current and future activities included.</p>                                   | <p>Same effects on biological resources as Alternative A2. Beneficial impacts from use of new techniques and tools during response activities and ability to add new SA holders.</p> <p>Long-term beneficial effects on marine mammals would be expected to occur with the implementation of SA criteria.</p>   | <p>Same effects as Alternative A2.</p>  | <p>Same effects as Alternative A2.</p>   | <p>Same effects as Alternative A2, with one exception. SA criteria would ensure that responders are experienced and have the knowledge to avoid or minimize health and safety risks.</p> | <p>Alternative A4 is similar to Alternative A3, but under Alternative A4 the Final SA criteria would be implemented. Moderate to major, adverse effects to the current SA holders would be expected to occur, as existing SA holders may need more training or may need to alter existing practices in order to meet the new criteria.</p> <p>Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding event.</p>  |

Table 4-2. Summary Matrix of Impacts (continued)

| Alternatives   | Impact Area  |  |  |  |  |
|--|--|--|--|--|--|
|  | Biological Resources   | Water & Sediment Quality   | Cultural Resources   | Human Health & Safety  | Socioeconomics   |
| <b>Stranding Agreements &amp; Response</b>   |  |  |  |  |  |
| <b>Alternative A5</b><br>Final SA criteria would be implemented, new SA template would be utilized, and response to threatened endangered or rare animals would be required. | Same effects from stranding response activities as Alternative A2, with two exceptions. Beneficial effect on threatened, endangered, or rare animals and an adverse effect on other species. Same effects from the implementation of SA criteria as Alternative A4.  | Same effects as Alternative A2.  | Same effects as Alternative A2.  | Same effects as Alternative A4.  | Minor to major, long-term adverse effects to SA holders similar to those described in Alternatives A3 and A4, but they would also depend on the proportion of stranded marine mammals that are not rare, threatened, or endangered and whether or not the network member chooses to continue responding to those animals.<br><br>Negligible adverse effects to businesses adjacent to stranding sites. Potential beneficial effects if people come to see stranding event. |
| <b>Carcass Disposal</b>  |  |  |  |  |  |
| <b>Alternative B1- No Action</b><br>No Action- SA's expire, no carcass disposal would occur, carcasses would be left where stranded.   | Potential adverse effects could occur from leaving carcasses on the beach to naturally decompose. Animal carcasses may contain contaminants, which could negatively impact the surrounding environment.<br><br>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.   | Potential adverse effects could occur from leaving carcasses on the beach to naturally decompose. Animal carcasses may contain contaminants, which could negatively impact the surrounding water and sediment quality.   | No effects on cultural resources.  | Minor, short-term adverse effects as the public interact with stranded animals. Contaminated or chemically euthanized carcasses could potentially contaminate the groundwater and/or nearshore water. Beneficial effect on personnel involved in carcass disposal, as they would no longer be exposed to risks.  | Negligible adverse impacts in terms of lost revenues, restaurants, and parks in the immediate vicinity of the carcass(es), if the public chose to avoid the area. Potential beneficial effects if people come to see stranding event   |
| <b>Alternative B2- Status Quo</b><br>Status Quo- Current methods of carcass disposal continue.   | Minor to moderate, short- and long-term adverse effects, as animal carcasses may contain persistent environmental contaminants or euthanasia solution, which could negatively impact the surrounding environment. Other adverse effects from burial, equipment use, spills of hazardous materials or wastes from equipment or vessels.<br><br>Disposal at sea might allow contaminants to re-enter the marine environment, but would provide a benefit by serving as a food source for marine organisms. | Minor, short-term adverse effects on water and sediment quality could occur from equipment leaks; euthanasia solution or other contaminants in tissue, blood, and other body fluids; spills of hazardous materials or wastes from vessels. Burial and equipment use may have a negligible impact on erosion. | Potential minor, long-term, adverse effects on submerged cultural resources or resources buried in sand from beach burial, and equipment and vehicle use on beaches and nearshore waters. There would not be any effects on Alaska Natives, Native American tribes, or other aboriginal people's cultural uses of coastal resources. | Minor and major, short- and long-term adverse effects as the public interacts with a stranded animal. Contaminated or chemically euthanized carcasses left on the beach or buried could potentially contaminate the groundwater and/or nearshore water, making it unhealthy for humans to swim near the carcass site. Workers involved in disposal could be exposed to zoonotic diseases, contaminants, and euthanasia solution. | Negligible adverse impacts in terms of lost revenues, restaurants, and parks in the immediate vicinity of the carcass(es), if the public chose to avoid the area. Potential beneficial effects if people come to see stranding event   |
| <b>Alternative B3 (Preferred)</b><br>Status Quo with the recommendation to transport chemically euthanized animal carcasses off-site.  | Same effects as Alternative B2, with one exception. Chemically euthanized carcasses would not be buried on-site, minimizing some of the adverse effects.   | Same effects as Alternative B2.  | Same effects as Alternative B2.  | Same effects as Alternative B2 with one exception. Recommended that chemically euthanized animal carcasses not be buried on the beach, which would minimize the health and safety risks associated with beach burial.  | Effects would be the same as those described under Alternative B2, except that chemically euthanized carcasses would be moved off-site and the cost would be incurred by the stranding network member. Adverse effects would be negligible, minor, or major, depending on the number of carcasses.   |

Table 4-2. Summary Matrix of Impacts (continued)

| Alternatives   | Impact Area  |  |   |   |   |
|--|--|--|---|---|---|
|  | Biological Resources   | Water & Sediment Quality   | Cultural Resources  | Human Health & Safety   | Socioeconomics  |
| <b>Rehabilitation Activities</b>   |  |  |   |   |   |
| <b>Alternative C1- No Action</b><br>No Action- Current SAs would expire, stranding response would cease, and animals would not be rehabilitated.   | Moderate, long-term, adverse effects as marine mammals would not be taken into rehabilitation and most would likely die from injuries or disease.<br><br>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.   | No effects on water and sediment quality.  | No effects on cultural resources.   | Beneficial effects would be expected as risks to rehabilitation personnel would end.  | Potential major, long-term, adverse effects on facilities that focus primarily on rehabilitation activities. Facilities may cease operation, unless their activities could be shifted. Larger facilities that engage in other activities may experience a minor, long-term positive effect in terms of the reduced operating costs from the elimination of rehabilitation activities. |
| <b>Alternative C2- Status Quo</b><br>Status Quo- Current rehabilitation activities would continue. Final Rehabilitation Facility Standards would not be implemented.   | Minor to major, short- and long-term, beneficial and adverse effects on marine mammals. Potential adverse effects from sampling, anesthesia, disease, euthanasia, and not implementing the Rehabilitation Facility Standards<br>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.  | Minor adverse effects due to use of open ocean/bay net pens and temporary pools and contamination from wastes, pathogens, etc. Rehabilitation facilities would have necessary permits for wastewater discharges. | Potential minor to major adverse effects on from the use of temporary pools and net pens, depending on where they are sited. Net pens may disturb or damage submerged cultural resources. | Minor, short-term, direct adverse effects on rehabilitation personnel, including physical injuries, exposure to chemicals, and exposure to zoonotic diseases. | Current rehabilitation facilities would continue to bear minor to major, long-term adverse effects. Rehabilitation facilities would operate as they currently do and therefore continue to incur supply, equipment, personnel, and maintenance expenses.  |
| <b>Alternative C3 (Preferred)</b><br>New SAs would be issued, rehabilitation activities continue. Final Rehabilitation Facility Standards would be implemented.  | Same effects as Alternative C2, with one exception. Rehabilitation Facility Standards would decrease the risk of disease transmission ensure a healthy environment, maximize the success of rehabilitation, and increase the potential for release to the wild. Would reduce animal pain and suffering.  | Same effects as Alternative C2.  | Same effects as Alternative C2.   | Same effects as Alternative C2, with one exception. Health and safety standards in the rehabilitation facility standards would have a beneficial effect.      | Minor to major, adverse effects on rehabilitation facilities. Facilities would need to upgrade to comply with the minimum facility standards. Level of impact would depend on each facility, if they need to upgrade, and how much they would need to upgrade to meet the minimum standards.  |
| <b>Alternative C4</b><br>New SAs would be issued, rehabilitation activities would continue. Rehabilitation of threatened endangered and rare animals would be required; response to other animals would be optional. Final Rehabilitation Facility Standards would be implemented. | Same effects as Alternative C3, with a few exceptions. Adverse effects on animals that are not rare, threatened, or endangered. These animals often serve as models for other species and this would be an indirect adverse affect on rare, threatened, and endangered species.  | Same effects as Alternative C2.  | Same effects as Alternative C2.   | Same effects as Alternative C3.   | Alternative C4 would adversely affect rehabilitation facilities in the same manner as Alternative C3. Alternative C4 could adversely affect facilities to a lesser extent, however, since under the rehabilitation of non-rare and non-ESA species would only be optional.  |
| <b>Release of Rehabilitated Animals</b>  |  |  |   |   |   |
| <b>Alternative D1- No Action</b><br>No Action- Current SAs would expire, stranding response and rehabilitation would cease, and therefore there would be no animals to release.  | Adverse effects as marine mammals would not be released back to the wild, which negatively impacts all species, but especially threatened or endangered species. Beneficial effect on wild populations, as there would not be the risk of introducing a diseased animal that could potentially infect other marine mammals.<br>No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds. | No effects on water and sediment quality.  | No effects on cultural resources.   | Beneficial effects would be expected as risks to release personnel would end.   | Beneficial effects as the end of release activities would eliminate the expenses related to these activities.   |

Table 4-2. Summary Matrix of Impacts (continued)

| Alternatives  | Impact Area   |  |   |   |   |
|---|---|--|---|---|---|
|   | Biological Resources  | Water & Sediment Quality   | Cultural Resources  | Human Health & Safety   | Socioeconomics  |
| <b>Release of Rehabilitated Animals</b>   |   |  |   |   |   |
| <b>Alternative D2- Status Quo</b><br>Status Quo- Current release activities would continue. Adaptive changes to release activities would not be permitted. Final release criteria would not be implemented. | Minor, short- and long-term, adverse and beneficial effects on marine mammals. Release activities (tagging, marking, and transport) may have adverse effects. Released animal could carry a zoonotic disease and infect wild population. Adverse effects on all biological resources from equipment use, spills of hazardous materials or wastes from equipment or vessels.   | Minor, short-term, direct adverse effects could occur from spills of hazardous materials or wastes from release vessels or leaks from equipment into sand or surrounding waters. | Minor, long-term, adverse effects on cultural resources buried in sand from equipment and vehicle use on beaches. | Minor, short-term, direct adverse effects on release personnel, including physical injuries and exposure to chemicals.  | Minor to moderate, adverse effects as continued expenses would be incurred from release activities. Facilities that release more animals, larger species of marine mammals, or those that need to travel greater distance to release animals would incur a greater share of expenses. |
| <b>Alternative D3 (Preferred)</b><br>New SAs would be issued, release activities continue. Final release criteria would be implemented and would include adaptive management of release activities.         | Same effects as Alternative D2, with one exception. Release criteria would be implemented and may reduce the effects on marine mammals.   | Same effects as Alternative D2.  | Same effects as Alternative D2.   | Same effects as Alternative D2  | Minor to moderate, adverse effects as costs may increase at each facility in order to comply with the release criteria. Possible addition of facilities could help offset the release activities and their costs.   |
| <b>Disentanglement Activities</b>   |   |  |   |   |   |
| <b>Alternative E1- No Action</b><br>No Action- No disentanglement network.  | Major, long-term adverse effects on marine mammals from ending the Disentanglement Network as animals would have increased pain and suffering and would most likely die.<br><br>No significant effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds. Gear on an entangled animal may be shed and become marine debris, which could potentially harm biological resources.  | No effects on water and sediment quality.  | No effects on cultural resources.   | Beneficial effects would be expected as risks to responders would end. Potential adverse impacts on public health if individuals attempt to disentangle an animal.                                | Minor to moderate, beneficial effects on current participants could occur from the elimination of expenses incurred from disentanglement activities.  |
| <b>Alternative E2- Status Quo</b><br>Status Quo- Disentanglement network would continue current activities, no modifications or new members added   | Minor, short-term adverse effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, birds, and marine mammals from spills of hazardous materials or wastes from vessels.<br><br>Minor to major, short- and long-term, beneficial and adverse effects on marine mammals. Disentanglement would continue; new responders could not be added. Animal adverse reactions to close approaches, physical/chemical restraint, or be injured during the process. | Minor, short-term, adverse effects could occur from spills of hazardous materials or wastes from release vessels.  | No effects on cultural resources.   | Adverse effects on responders, including physical injuries, exposure to chemicals, potentially death. Potential adverse impacts on public health if individuals attempt to disentangle an animal. | Minor to moderate, adverse effects would continue to be borne by participants engaged in disentanglement activities.  |

Table 4-2. Summary Matrix of Impacts (continued)

| Alternatives   | Impact Area   |  |   |   |   |
|--|---|--|---|---|---|
|  | Biological Resources  | Water & Sediment Quality   | Cultural Resources  | Human Health & Safety   | Socioeconomics  |
| <b>Disentanglement Activities</b>  |   |  |   |   |   |
| <b>Alternative E3 (Preferred)</b><br>Disentanglement network would continue current activities on East Coast with modifications to West Coast network. The Disentanglement Guidelines and training prerequisites would be implemented. | Same effects as Alternative E2, except that new responders and techniques could be added and Disentanglement Guidelines/training would be in place to reduce adverse effects.   | Same effects as Alternative E2.  | No effects on cultural resources.   | Same effects as Alternative E2. There would be less risk under this alternative, as modifications new tools and techniques and the Disentanglement Guidelines/training could reduce safety risks. | No impacts to East Coast participants. Minor to moderate, adverse effects would be borne by West Coast participants due to modifications of current operations and training expenses. |
| <b>Biomonitoring &amp; Research Activities</b>   |   |  |   |   |   |
| <b>Alternative F1- No Action</b><br>No Action- Biomonitoring and research activities would not occur.  | Adverse effects on marine mammals as important health information would no longer be collected. No effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, and birds.   | No effects on water and sediment quality.  | No effects on cultural resources.   | Beneficial effects would be expected as risks from research activities would end.   | No effects on socioeconomics.   |
| <b>Alternative F2- Status Quo</b><br>Status Quo- New ESA/MMPA permit would continue current biomonitoring and research activities.   | Minor, short-term adverse effects on protected and sensitive habitats, SAV and macroalgae, sea turtles, fish, shellfish, other invertebrates, birds, and marine mammals from spills of hazardous materials or wastes from vessels or leaks from equipment into sand or surrounding waters.<br><br>Protected and sensitive habitats and SAV and macroalgae could be damaged by vessels/researchers. Sea turtles/birds and their nests could be disturbed/ damaged. Fish may be caught in nets or disturbed.<br><br>Minor to major, short- and long-term, adverse effects on marine mammals from close approach, tagging, marking, restraint, handling, capture, transport, sampling, and other activities. Long-term beneficial effects from collection of health information. | Minor, short-term, direct adverse effects could occur from spills of hazardous materials or wastes from release vessels or leaks from equipment into sand or surrounding waters. | Adverse effects would not likely occur. Potential effects on submerged cultural resources or resources buried in sand from equipment and vehicle use on beaches and vessel use in nearshore waters. | Minor, short-term, direct adverse effects on research personnel, including physical injuries, exposure to chemicals, and exposure to zoonotic diseases.   | Minor to moderate, adverse effects could occur depending on the nature of biomonitoring and research activities and the ongoing personnel and research expenses.                      |
| <b>Alternative F3 (Preferred)</b><br>New ESA/MMPA permit would be issued to include current and future biomonitoring and research activities.  | Same effects as Alternative F2, with other adverse effects from new research activities. The increase in research activities would have a beneficial affect on marine mammals, as more health information would be collected.   | Same effects as Alternative F2.  | Same effects as Alternative F2.   | Same effects as Alternative F2.   | Minor to moderate, adverse effects could occur depending on the nature of new biomonitoring and research activities and the ongoing personnel and research expenses.                  |



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## **5. Mitigation**

### **5.1 Introduction**

The purpose of mitigation is to avoid, minimize, or eliminate negative impacts on the affected resources from a proposed action. Mitigation measures have been developed for alternatives where a significant impact would likely occur. Measures are described under each resource area and alternative, as necessary.

### **5.2 Biological Resources**

#### **5.2.1 Stranding Agreements and Response Alternatives**

Under Alternatives A2, A3, A4, and A5, measures would be taken to avoid protected and sensitive habitats, where feasible. However, many strandings occur in protected areas, including: national parks, monuments, seashores, and forests; NMSs; NERRs; wilderness areas; fishery management areas; and state and local parks. When response activities must occur in these areas, the proper authorities would be contacted to coordinate the response activities, to determine the manner in which a response may occur (if it is permitted at all), and to minimize impacts of a response. In situations where EFH may be impacted by response activities, the appropriate NMFS EFH Coordinator would be contacted. Nesting sea turtles and birds would be avoided during responses, and response activities would be coordinated with the USFWS and/or appropriate state agency/agencies to ensure there would be no adverse impacts. Article II, Part C, Number 2 of the SA template requires stranding network participants to coordinate with Federal, state, and local officials and employees in matters supporting the purposes of their SA (see Appendix C). The SA template (Article III and Article IV, Part B, Number 4) would require SA holders to make every reasonable effort to assist in the clean-up of beach areas where activities such as necropsy or specimen collection were conducted, by removing trash and other debris, and disposing of or assisting in the disposal of offal and other waste parts from the carcass. NMFS would develop spill prevention best management practices for responders to use to reduce the incidence of spills from equipment, euthanasia solution, etc. These measures would help protect the surrounding biological resources, particularly when the response was conducted in a sensitive area.

Capture and restraint procedures would be performed or directly supervised by qualified personnel and if possible, an experienced marine mammal veterinarian would be present to carry out or provide direct on-site supervision of all activities involving the use of anesthesia and sedatives. Only

1 personnel experienced in capture and sampling techniques would be used to complete the activities as  
2 quickly as possible. For pinnipeds, responders would carry out activities efficiently, such that the  
3 total time they are occupying beach haul-out areas, and total number of times a site is disturbed, are  
4 minimized. Response to stranded pinnipeds in a rookery situation would not be authorized under a  
5 SA, but would only be performed under the authority of the MMHSRP ESA/MMPA permit in  
6 coordination with the Permit Holder/PI. Experienced personnel would be used during capture and  
7 restraint to complete the activities as quickly as possible.

8 To prevent interactions with Florida manatees or sea turtles during on-water capture activities, vessel  
9 personnel would be informed that it is illegal to intentionally or unintentionally harm, harass, or  
10 otherwise “take” manatees or sea turtles. Netting activities would cease if a manatee or sea turtle is  
11 sighted in the vicinity of the vessel. If a manatee or sea turtle is accidentally captured, the vessel  
12 would immediately be stopped and either turned off or put in neutral. Tension on the net would be  
13 released to allow the animal the opportunity to free itself. Caution would be exercised when  
14 attempting to assist the animal in freeing itself. The appropriate USFWS Field Office and NMFS  
15 PR1 would be contacted immediately to report any incidents.

16 Tagging animals for immediate release would be performed or directly supervised by qualified  
17 personnel. Pinniped flipper tags would be placed appropriately, so animals would not walk on or be  
18 irritated by them. The tag and/or instrument size and weight would be kept to the minimum needed to  
19 collect the desired data to minimize the potential for increased energetic costs of or behavioral  
20 responses to larger tags. Tag placement would be selected so that it will not interfere significantly  
21 with an animal’s ability to forage or conduct other vital functions.

22 Potential adverse impacts from euthanasia would be minimized by the measures described below.  
23 Under Article IV, Part A, Number 1 of the SA template (Appendix C), euthanasia of animals would  
24 only be performed by the attending veterinarian or by a person acting on behalf of the attending  
25 veterinarian (*i.e.*, under direct coordination or supervision). Euthanasia procedures would follow  
26 approved guidelines, such as those listed in the 2000 Report of the AVMA on Euthanasia (AVMA  
27 2001) or the CRC Handbook of Marine Mammal Medicine (Greer *et. al* 2001). Persons using  
28 controlled drugs would comply with all applicable Federal and state laws and regulations. This would  
29 include DEA regulations and any applicable state veterinary practice laws and regulations. Stranding  
30 network members would be authorized to euthanize ESA-listed species under the MMHSRP  
31 ESA/MMPA permit. In addition to the previous measures, euthanasia of ESA-listed species would  
32 require authorization and coordination with the appropriate NMFS regional stranding coordinator.

1 Potential impacts from the transport of animals to rehabilitation facilities could be minimized by  
2 following the APHIS “Specifications for the Humane Handling, Care, Treatment, and Transportation  
3 of Marine Mammals” (9 CFR Ch 1, Subpart E). If a commercial vehicle is used to transport an  
4 animal, these standards should be complied with. The “Live Animal Regulations” published by the  
5 International Air Transport Association (IATA) may also be used to minimize transport impacts  
6 (IATA 2006). Both sets of standards have specifications for containers, food and water requirements,  
7 methods of handling, and care during transit.

8 The Marine Mammal Oil Spill Response Guidelines (Appendix L) would be followed to prevent any  
9 potential impacts during response. The guidelines include information on data collection and chain-  
10 of-custody procedures. Stranding responders would work with the Federal On-Scene Coordinator  
11 (FOSC) for oil spill response and consult with NMFS on appropriate response measures.

12 Potential impacts from hazing would be minimized by using visual observations during the use of all  
13 acoustic deterrents. If a change in animal behavior is observed (other than moving away from the  
14 sound), the acoustic deterrent source would be shutdown. Procedures for the use of acoustic  
15 deterrents around ESA-listed species would be developed. Procedures for hazing killer whales are  
16 currently being drafted. Airguns would not be used around mysticetes to minimize any potential  
17 injuries. Seal bombs would not be used in the vicinity of an oil spill. Additional mitigation for  
18 hazing threatened and endangered species may be included as conditions of the ESA/MMPA permit.

19 The MMHSRP would follow all mitigation measures for response to threatened and endangered  
20 species set forth by NMFS PR1 as conditions of their ESA/MMPA permit.

## 21 **5.2.2 Carcass Disposal Alternatives**

22 Under Alternatives B2 and B3, stranding network members would contact and coordinate with  
23 Federal, State, and/or local agencies prior to carcass disposal. Article II, Part C, Number 2 of the SA  
24 template requires stranding network participants to coordinate with Federal, state, and local officials  
25 and employees in matters supporting the purposes of their SA (see Appendix C). Beach burial and  
26 disposal in State waters would only occur after state and/or local authorities have given permission to  
27 conduct such activities. If necessary, stranding network members would obtain a permit to conduct  
28 these disposal activities. Burial in shoreline areas may be restricted for the protection of sensitive  
29 habitats, such as nesting shorebirds, vegetation, or dunes. Burial would not occur in wetland areas.  
30 Carcasses may be buried in upland areas where body fluids would not likely leach into groundwater.

1 Burial would also be deep enough so that carcasses would not be dug up by scavengers or uncovered  
2 by wave action.

3 If carcasses are known or assumed (based upon test results or prior knowledge of the species) to have  
4 contaminant levels that meet or exceed the definition of hazardous waste under EPA, state, and/or  
5 local regulations, they would be taken to an EPA-designated hazardous waste landfill for proper  
6 disposal.

7 Non-toxic carcasses may be disposed in Federal waters without a permit. At-sea disposal of carcasses  
8 that are known to be hazardous waste may require EPA approval and a permit. These carcasses  
9 would be disposed of in an EPA designated ocean dumping site. All EPA dumping sites are managed  
10 to avoid or minimize impacts to the marine environment. Materials used to sink carcasses would be  
11 chosen to avoid or minimize any impacts to the marine environment.

12 During carcass disposal and removal activities, measures would be taken to avoid protected and  
13 sensitive habitats. When these areas cannot be avoided, the proper authorities would be contacted to  
14 coordinate the disposal activities and minimize impacts. In situations where EFH may be impacted  
15 by response activities, the appropriate NMFS EFH Coordinator would be contacted. Activities would  
16 also be coordinated with State and/or local agencies to avoid or minimize impacts to nesting sea  
17 turtles or birds.

### 18 **5.2.3 Rehabilitation Activities Alternatives**

19 If NMFS selects Alternative A3 or A4 for SAs and response, it would implement the Final SA criteria  
20 (Appendix C) as mitigation for Alternatives C3 and C4. Under the SA criteria (Part C, Number 3) the  
21 rehabilitation facility should have and maintain an attending veterinarian experienced in marine  
22 mammal care that would be willing to assume responsibility for diagnosis, treatment, and medical  
23 clearance for release or transport of marine mammals in rehabilitation. Also, the attending  
24 veterinarian should provide a schedule of veterinary care that includes a review of the husbandry  
25 records; visual and physical examinations of all marine mammals in rehabilitation; and a periodic  
26 visual inspection of the facilities, protocols, Standard Operating Procedures, and case records. All  
27 documentation of the attending veterinarian's experience would be submitted to NMFS for review  
28 prior to issuing an SA. Under Part C, Number 4 of the SA criteria the rehabilitation facility should  
29 have sufficient physical and financial resources to maintain appropriate animal care. The stranding  
30 network participant would have to submit a facility operation manual to NMFS for review prior to the  
31 issuance of an SA. All operations would be consistent with NMFS and other applicable Federal and

1 State policies, guidelines, directives, regulations, and laws. Facilities would be reviewed by NMFS  
2 for compliance with their SA every 3 years, and may be put on probation, suspended, or have their  
3 SA terminated for any violations or non-compliance.

4 Veterinary medical care standards (Sections 1.7 [for cetaceans] and 2.7 [for pinnipeds] in the  
5 standards) would ensure that veterinarians and other personnel have the appropriate knowledge and  
6 experience to properly care for and treat marine mammals. Veterinarians must have: arrangements to  
7 obtain and store medications required for the animals housed at the rehabilitation facility; access to a  
8 list of expert veterinarians to contact for assistance; and a minimum skill level to treat species most  
9 commonly encountered at the facility. Veterinary care would comply with any applicable state  
10 veterinary practice laws and regulations for the state in which the facility is located. Examples of the  
11 recommended standards for veterinarians include: completion of a course offering basic medical  
12 training with marine mammals; one year of clinical experience working with the marine mammal(s)  
13 most frequently admitted to the facility; one year of clinical veterinary experience post graduation;  
14 and membership in the International Association for Aquatic Animal Medicine.

15 Potential adverse impacts under Alternative C3 and C4 from disease transmission would be  
16 minimized by measures in the Rehabilitation Facility Standards. Under Section 1.4 (cetaceans) and  
17 Section 2.4 (pinnipeds), quarantine facilities would be available and quarantine protocols would be in  
18 place for all incoming animals. Minimum quarantine standards include, but are not limited to: having  
19 separate filtration and water flow systems; providing sufficient space or solid barriers between animal  
20 enclosures to prevent direct contact; and maintaining equipment and tools strictly dedicated to the  
21 quarantine area. An evaluation and written veterinarian approval would be required before placing  
22 animals together after the quarantine period has been met. Standards include measures to reduce the  
23 spread of disease from open ocean/bay pens. Standards also include measures to prevent disease  
24 transmission from domestic and wild terrestrial animals to marine mammals and vice versa. All  
25 quarantine standards are described in Section 1.4 (for cetaceans) and Section 2.4 (for pinnipeds) of  
26 the standards.

27 Handling and restraint procedures would be performed or directly supervised by qualified personnel  
28 and if possible, an experienced marine mammal veterinarian would be present to carry out or provide  
29 direct on-site supervision of all activities involving the use of anesthesia and sedatives. Only  
30 personnel experienced in handling and sampling techniques would be used in order to complete the  
31 activities as quickly as possible.

1 Potential adverse impacts from euthanasia under Alternative C3 and C4 would be minimized by the  
2 measures described below. Under Article IV, Part A, Number 1 of the SA template (Appendix C)  
3 and Section 9.0 of the Rehabilitation Facility Standards, euthanasia of animals would only be  
4 performed by the attending veterinarian or by a person acting on behalf of the attending veterinarian  
5 (*i.e.*, under direct authorization or supervision). Persons administering the euthanasia should be  
6 knowledgeable and trained to perform the procedure, and competent in the performance of the  
7 technique. Each facility would have a written euthanasia protocol signed and periodically reviewed  
8 by the attending veterinarian. Euthanasia procedures would follow approved guidelines, such as  
9 those listed in the 2000 Report of the AVMA on Euthanasia (AVMA 2001) or the CRC Handbook on  
10 Marine Mammal Medicine (Greer *et. al* 2001). Persons using controlled drugs would comply with all  
11 applicable Federal and state laws and regulations. This would include DEA regulations and any  
12 applicable state veterinary practice laws and regulations. In addition to the measures listed above,  
13 rehabilitation personnel would require further authorization to euthanize ESA-listed species under the  
14 MMHSRP ESA/MMPA permit. Euthanasia of ESA-listed species would require authorization and  
15 coordination with the appropriate NMFS regional stranding coordinator.

16 The Marine Mammal Oil Spill Response Guidelines (Appendix L) would be followed to ensure that  
17 rehabilitation facilities that accept oiled animals are properly equipped to handle their care. The  
18 guidelines specify housing requirements and considerations, including ventilation, quarantine, water  
19 supply, and waste water. The guidelines include information on data collection and chain-of-custody  
20 procedures. Rehabilitation facilities would work with the FOSC for oil spill response and consult  
21 with NMFS on appropriate rehabilitation measures.

#### 22 **5.2.4 Release of Rehabilitated Animals Alternatives**

23 If NMFS selects Alternative A3 or A4 for SAs and response, it would implement the Final SA criteria  
24 (Appendix C) as mitigation for Alternative D3. Under the SA criteria (Part C, Number 3) the  
25 rehabilitation facility should have and maintain an attending veterinarian, on staff or consulting,  
26 experienced in marine mammal care that would be willing to assume responsibility for diagnosis,  
27 treatment, and medical clearance for release. All documentation of the attending veterinarian's  
28 experience would be submitted to NMFS for review prior to issuing an SA. Part C, Number 4 of the  
29 SA criteria requires the rehabilitation facility to have sufficient physical and financial resources to  
30 maintain appropriate animal care, including release activities.

1 Potential adverse impacts under Alternative D3 from disease transmission would be minimized by  
2 measures in the release criteria (Appendix C). Animals would be medically cleared by the attending  
3 veterinarian and their assessment team before a release determination is made. The medical  
4 assessment would include a hands-on physical examination. A review of the animal's complete  
5 history, including all stranding information, diagnostic test results, and medical and husbandry  
6 records would also occur. NMFS would require some diagnostic testing to determine the risk to the  
7 health of wild marine mammal populations. Additional testing would be required if the animal was  
8 part of a UME. These procedures would minimize the potential for disease transmission from a  
9 released animal to the wild population.

10 Additional measures to minimize the potential for disease transmission from rehabilitated ice seals  
11 (bearded, ringed, ribbon, and spotted seals) would be implemented in the NMFS Alaska Region.  
12 NMFS would not authorize responders to transport stranded ice seals beyond the geographic areas  
13 where they strand for the purposes of rehabilitation and release back to the wild. NMFS would  
14 review the following situations on a case-by-case basis: 1) an ice seal out-of-habitat; 2) ice seals as  
15 part of an official UME; and 3) stranded spotted seals in Bristol Bay, AK. NMFS would work with  
16 Alaska Native organizations (co-managers of these species) to determine the best possible solution for  
17 those ice seals. After consultation with these organizations, NMFS may re-evaluate this policy at any  
18 time, particularly with regard to changes in the status of ice seal populations and their habitat.

19 Other potential impacts to released animals would be mitigated by the release criteria. In addition to  
20 a medical assessment, behavioral and developmental assessments would be conducted before a  
21 release determination. Developmental clearance would reasonably ensure that the animal has attained  
22 a sufficient age to be nutritionally independent, including the ability to forage and hunt. Behavioral  
23 clearance would include an assessment of an animal's breathing, swimming, diving, locomotion on  
24 land (pinnipeds) foraging, and hunting abilities. An evaluation of an animal's visual and auditory  
25 functions should be conducted if possible. Any behavioral conditioning must be eliminated prior to  
26 release such that the association of food rewards with humans is diminished.

27 Handling and restraint procedures necessary for release would be performed or directly supervised by  
28 qualified personnel and if possible, an experienced marine mammal veterinarian would be present to  
29 carry out or provide direct on-site supervision of all activities involving the use of anesthesia and  
30 sedatives. Only personnel experienced in handling and sampling techniques would be used to  
31 complete the activities as quickly as possible. The veterinarian would also provide emergency  
32 procedures if necessary. For pinnipeds, personnel would carry out release activities efficiently, to

1 minimize the total time spent on the rookery/haul-out. Experienced personnel would be used during  
2 handling and restraint to complete the release activities as quickly as possible. Potential impacts from  
3 the transport of animals from rehabilitation facilities to release sites could be minimized by following  
4 the APHIS “Specifications for the Humane Handling, Care, Treatment, and Transportation of Marine  
5 Mammals” (9 CFR Ch 1, Subpart E). If a commercial vehicle is used to transport an animal, these  
6 standards should be complied with. The “Live Animal Regulations” published by the IATA may also  
7 be used to minimize transport impacts (IATA 2006). Both sets of standards have specifications for  
8 containers, food and water requirements, methods of handling, and care during transit.

9 The weight and dimensions of the instrument package relative to the animal’s size and mass, and  
10 duration of attachment, are important considerations in choosing a tag (Wilson and McMahon 2006).  
11 The tag size would be kept to the minimum needed to collect the desired data to minimize the  
12 potential for increased energetic costs of or behavioral responses to larger tags, but ensuring an  
13 adequate battery life to sustain the tag over the expected tag attachment duration (tags are expected to  
14 fall off after the failure of a corrodible link or the molt of a pinniped). Tag placement should be  
15 selected that will not interfere significantly with an animal’s ability to forage or conduct other vital  
16 functions. Pinniped flipper tags would be placed appropriately, so animals would not walk on or be  
17 irritated by them. A local anesthetic or analgesic would be administered prior to tagging or freeze  
18 branding an animal to minimize pain during application.

### 19 **5.2.5 Disentanglement Alternatives**

20 Under Alternative E3, impacts to all biological resources from a potential hazardous material spill  
21 would be mitigated by the implementation of training prerequisites and the Disentanglement  
22 Guidelines. The use of trained personnel and proper equipment and protocols would reduce the  
23 potential for spills.

24 Disentanglements of ESA-listed cetaceans and pinnipeds would be authorized under the MMHSRP  
25 ESA/MMPA permit, with express consent of the Permit Holder/PI. The MMHSRP would follow all  
26 mitigation measures set forth by NMFS PR1 as conditions of their ESA/MMPA permit, and all  
27 activities will be conducted in consultation with and with the consent of the Permit Holder/PI. For  
28 large whale disentanglements, responders would approach animals gradually, with minimal noise to  
29 reduce any reaction. Responders would approach at slow speeds, avoid making sudden changes in  
30 speed or pitch, and avoid using reverse gear. Additional caution would be taken when approaching  
31 mothers and calves. Only responders with extensive experience operating vessels near large whales



1 would be involved in the vessel approaches. Responders would only include those individuals who  
2 have been sufficiently trained in large whale disentanglement according to the Disentanglement  
3 Guidelines (Appendix C). NMFS should develop more comprehensive guidelines for large whale  
4 disentanglement, as the current guidelines focus primarily on criteria for responder levels. Additional  
5 guidelines should include general protocols, policies, and procedures. NMFS should develop a  
6 database or other way to track qualifications of personnel.

7 Small cetacean and pinniped disentanglement activities would be authorized under an SA. Only  
8 personnel experienced in small cetacean capture techniques would perform rescue activities. For  
9 disentanglements of pinnipeds on beach sites, responders would carry out activities efficiently, to  
10 minimize disturbance and the amount of time responders occupy the haul-out.

11 For both small cetacean and pinniped disentanglements, NMFS should develop standard  
12 disentanglement protocols for these species and a training program similar to the Large Whale  
13 Disentanglement Network. In addition, NMFS may develop an additional Article or multiple Articles  
14 to be incorporated into the SA to authorize certain facilities (with personnel that have been trained  
15 and certified) to conduct capture/rescue and disentanglement activities.

## 16 **5.2.6 Biomonitoring and Research Alternatives**

17 The following mitigation measures are for actions proposed under Alternatives F2 and F3.

### 18 **5.2.6.1 Existing Mitigation Measures in NMFS PR1 Permits**

19 The MMHSRP would follow all mitigation measures set forth by NMFS PR1 as conditions of their  
20 ESA/MMPA permit. All NMFS PR1 marine mammal permits contain conditions intended to  
21 minimize the potential adverse effects of the research activities on the animals. These conditions are  
22 based on the type of research authorized, the species involved, information in the literature and from  
23 researchers themselves about the effects of particular research techniques and the responses of  
24 animals to these activities. Specifically, the following conditions would be stated as requirements in  
25 the MMHSRP's ESA/MMPA permit:

- 26 • ***General Approach Measures, Including Precautionary Measures for Young and Females***  
27 ***with Young.*** Researchers would exercise caution when approaching animals and must retreat  
28 from animals if behaviors indicate the approach may be interfering with reproduction,  
29 feeding, or other vital functions. For females with young, researchers would immediately  
30 terminate efforts if there is any evidence that the activity may be interfering with pair-

1 bonding or nursing and would not position the research vessel between the female and  
2 calf/pup. Researchers may not biopsy sample or tag cetacean calves less than six months of  
3 age or females attending calves less than six months of age.

- 4 • **Photography and Filming.** The Permit Holder/PI and all researchers/CIs working under the  
5 proposed permit would obtain prior approval by NMFS PR1 for non-research related use of  
6 photographs, video, and/or film that were taken to achieve the research objectives, that such  
7 activities would not influence the conduct of research in any way, and any film approved for  
8 use would include a credit, acknowledgement, or caption indicating that the research was  
9 conducted under a permit issued by NMFS under the authority of the MMPA and/or ESA.
- 10 • **Research Personnel.** The Permit Holder/PI would ultimately be responsible for all activities  
11 of any individual who is operating under the authority of the proposed permit. Addition of  
12 CIs would be approved by the Permit Holder/PI after reviewing their qualifications and  
13 research plans. All research personnel would be required to serve a research function and  
14 would be qualified to perform that function.
- 15 • **Reporting Conditions.** An annual report would be submitted and reviewed by NMFS PR1  
16 for each year the permit is valid. For each marine mammal part taken, imported, exported, or  
17 affected, the annual report would include: a description of the part and its assigned  
18 identification number; source, collector, country of origin, and authorizing government  
19 agency (for imported samples) for each sample reported; a summary of the research analysis  
20 conducted on the samples; and a description of the disposition of any marine mammal parts.  
21 For live animal activities, the report would include a description of the species, numbers of  
22 animals, locations of activities, and types of activities for: live captures; stranding  
23 response/disentanglement of marine mammals and endangered/threatened species; specimen  
24 collections; euthanasia (including reason for euthanasia and the drugs used); and incidental  
25 harassment during activities. The report would include descriptions of the animals' reactions,  
26 measures taken to minimize disturbance, research plans for the forthcoming year, and an  
27 indication as to when or if any results have been published or otherwise disseminated during  
28 the year. At the end of the proposed permit, a final report would be submitted that includes:  
29 a reiteration of the objectives, a summary of the research results and how they pertain to or  
30 further the research goals stated in the permit application and NMFS conservation plans; and  
31 an indication of where and when the research results would be published.
- 32 • **Research in Cooperation with Commercial Vessels.** The permit specifically would not  
33 authorize the conduct of research activities aboard or in cooperation with commercial marine

1 mammal viewing vessels or aircraft while they are engaged in such commercial activity.  
2 Further, the permit would not authorize cooperation with any vessel or aircraft carrying any  
3 non-essential passengers (*i.e.* not essential for the conduct of the research) who either pay a  
4 fee in return for being allowed onboard the vessel or aircraft, or who, prior to or after the trip,  
5 give “donations” to the PI, CI(s) or Research Assistant(s).

6 • **Research Coordination.** The Permit Holder/PI would be required to notify the appropriate  
7 NMFS Regional office at least two weeks in advance to coordinate the dates and locations of  
8 the authorized activities. The permit holder would also be required to coordinate with other  
9 researchers conducting the same or similar studies on the same species, in the same locations,  
10 and at the same time.

11 • **Import/Export of Marine Mammal Parts.** No animal would be harassed or killed for the  
12 express purpose of providing specimens to be obtained and/or imported under the proposed  
13 permit actions. Parts imported under the authority of the proposed permit would be taken in a  
14 humane manner, and in compliance with the ESA, MMPA, Fur Seal Act, and any applicable  
15 foreign law. Importation of marine mammal parts is subject to the provisions of 50 CFR  
16 parts 14, 216, and 222. Any specimen(s) of species listed in the Appendices to CITES would  
17 be accompanied by valid CITES documentation from the exporting country, and, in the case  
18 of Appendix-I species, from the USFWS.

19 • **Biological Samples.** All specimen materials collected or obtained under this authority would  
20 be maintained according to accepted curatorial standards. After completion of initial research  
21 goals, any remaining samples would be deposited into a *bona fide* scientific collection which  
22 meets the minimum standards of collection curation and data cataloging as established by the  
23 scientific community.

24 • **Additional Required Permits.** The Permit Holder/PI would be required to obtain appropriate  
25 authorizations needed from other state or Federal agencies and would be reminded that the  
26 NMFS PR permit does not provide authorization for requirements under another state or  
27 Federal agencies’ jurisdiction. This would include obtaining necessary permits for research  
28 conducted in a NMS, national park, foreign country, etc.

### 29 **5.2.6.2 Mitigation Measures Common to Specific Research Activities**

30 A number of “good practice or protocol” measures are commonly followed by qualified, experienced  
31 personnel to minimize the potential risks associated with some of the research activities under the  
32 proposed permit actions. Consistent with the NMFS PR1 issuance criteria requiring personnel

1 authorized to take marine mammals under a permit to have qualifications commensurate with their  
2 duties, only qualified, experienced personnel would be allowed to perform intrusive procedures such  
3 as remote biopsy sampling and attachment of intrusive tags. Efforts would be made to avoid  
4 duplicate sampling of known animals through sharing of sighting and photo-identification  
5 information among permit holders. The following outlines common mitigation measures associated  
6 with specific research activities and/or species.

7 ***Mitigation for Close Approach, Vessel and Aerial Surveys.*** To minimize disturbance and ensure  
8 adequate opportunities for photo-identification, tagging, and sampling, the researchers would  
9 approach animal(s) gradually from behind or alongside, rather than head on. An approach is defined  
10 as a continuous sequence of maneuvers involving a vessel, aircraft, or researcher's body in the water,  
11 including drifting, directed toward an animal(s) for the purposes of conducting authorized research  
12 which involves one or more instances of coming closer than 100 yards (91.4 m) to a large whale(s) or  
13 50 yards (45.7 m) to a small cetacean (s), seal(s), or sea lion(s). Researchers would approach at slow  
14 speeds, avoid making sudden changes in speed or pitch, and avoid using reverse gear. The amount of  
15 time spent in close proximity to an animal(s) would be limited to the minimum necessary to meet  
16 research objectives. Whenever possible, four-stroke engines would be used, as they are quieter than  
17 two-stroke engines. Researchers would leave the vicinity of an animal(s) if the animal(s) shows a  
18 response to the presence of the research vessel or aircraft. Approaches to an individual animal would  
19 be limited and efforts to approach an individual would be discontinued if the animal displays  
20 avoidance behaviors, such as a change in its direction of travel or departures from normal breathing  
21 and/or dive patterns. Only personnel with extensive experience operating vessels and aircraft near  
22 animals would be involved in close approaches.

23 If manatees are encountered during vessel surveys or other vessel activities, researchers would obey  
24 all speed zones and manatee no entry zones. If manatees are observed prior to an encounter, care  
25 would be taken to slowly maneuver away from the direction of the animals. If a manatee is  
26 encountered while on the water, a minimum distance of 50 ft (15.2 m) would be maintained at all  
27 times. If a manatee(s) approaches, vessel engines would be placed in neutral until the animal has  
28 passed. If manatees are located during aerial surveys, altitudes would be increased to 1,000 ft (300  
29 m), and surveys would cease if the manatees appear to be affected by the over flight. The USFWS'  
30 Jacksonville Office and NMFS PR1 would be contacted immediately to report any injuries that occur  
31 as a result of authorized research.

1 ***Mitigation for Capture, Restraint, and Handling.*** These procedures would be performed or directly  
2 supervised by qualified personnel and an experienced marine mammal veterinarian would be present  
3 to carry out or provide direct on-site supervision of all activities involving the use of anesthesia and  
4 sedatives. Only personnel experienced in capture and sampling techniques would be used in order to  
5 complete the activities as quickly as possible. The precautionary measures for young and females  
6 with young described above would be followed during cetacean capture/release activities. During  
7 capture/release activities, female animals determined to be in late-term pregnancy (late 2nd and 3rd  
8 trimester) will be tagged with a roto-tag so they can be avoided in subsequent sets, and then  
9 immediately released.

10 Pinniped research activities would be carried out efficiently, to minimize the total time researchers are  
11 occupying the rookery/haul-out and the total number of times a site is disturbed. Stays on rookeries  
12 longer than five hours are justified only when it prevents additional disturbance of the site on  
13 subsequent days. To avoid respiratory distress, ischemia (restricted blood flow), or nerve damage,  
14 animals would be positioned properly (*i.e.*, ventrally recumbent) during anesthesia (Dierauf 1990).  
15 Respiration and pCO<sub>2</sub> (measure of carbon dioxide in the blood) would be monitored and oxygen  
16 administered, as needed to avoid prolonged breath holding during gas anesthesia, which can result in  
17 cardiac hypoxia (lack of oxygen to the heart muscle). Qualified personnel would be prepared to  
18 control or assist ventilations when using sedatives. An emergency kit would be readily available to  
19 respond to complications or emergencies. The animal's body temperature would be closely  
20 monitored and steps would be taken to avoid hypo- and hyperthermia. Drug doses would be  
21 calculated on the researcher's best estimate of an animal's lean body mass and metabolic rate.

22 To prevent interactions with Florida manatees or sea turtles during capture activities, vessel personnel  
23 would be informed that it is illegal to intentionally or unintentionally harm, harass, or otherwise  
24 "take" manatees or sea turtles. Netting activities would cease if a manatee or sea turtle is sighted in the  
25 vicinity of the vessel. If a manatee or sea turtle is accidentally captured, the vessel would  
26 immediately be stopped and either turned off or put in neutral. Tension on the net would be released  
27 to allow the animal the opportunity to free itself. Caution would be exercised when attempting to  
28 assist the animal in freeing itself. The appropriate USFWS Field Office and NMFS PR1 would be  
29 contacted immediately to report any incidents.

30 ***Mitigation for Attachment of Tags and Scientific Instruments.*** Pinniped flipper tags would be  
31 placed appropriately, so animals would not walk on or be irritated by them. Care would be taken  
32 when attaching scientific instruments to pinnipeds to prevent thermal burns. The correct proportions

1 of epoxy hardener and resin catalyst would be used to prevent a “hot” mix and the minimum practical  
2 amount of epoxy would be used to prevent burning the animal. To minimize the risk of infections  
3 from implantable tags, appropriate instrument sterilization and sterile surgery techniques would be  
4 used.

5 Measures to minimize the effects of attaching scientific instruments to cetaceans would include the  
6 use of stoppers to reduce the force of impact and limit the depth of penetration of the tips of  
7 subdermal tags. Arrow tips would be disinfected between and prior to each use, to minimize the risk  
8 of infection and cross-contamination. Suction cup mounted tags would be placed behind a cetacean’s  
9 blowhole so that there is no risk of any migration of the suction cup resulting in obstruction of the  
10 blowhole. A take would be considered to have occurred with any attempt made to tag an animal from  
11 a crossbow, air gun, or pole, even if that attempt is unsuccessful. No tagging takes would occur on  
12 large cetacean calves less than six months of age or females accompanying such calves. For small  
13 cetaceans, no tagging would occur for calves less than one year of age.

14 The tag and/or instrument size and weight would be kept to the minimum needed to collect the  
15 desired data to minimize the potential for increased energetic costs of or behavioral responses to  
16 larger tags. Tag attachment methods would be minimally invasive, to minimize potential pain or  
17 infection. Tag placement would be selected so that it will not interfere significantly with an animal’s  
18 ability to forage or conduct other vital functions. All tagged animals should receive follow-up  
19 monitoring, including visual observations where feasible, to evaluate any potential effects from  
20 tagging activities.

21 ***Mitigation for Marking.*** After freeze branding, the skin would be returned to normal temperature as  
22 quickly as possible using water.

23 ***Mitigation for All Sampling Procedures.*** These procedures would be performed or directly  
24 supervised by qualified personnel and an experienced marine mammal veterinarian would be present  
25 to carry out or provide direct on-site supervision of all activities involving the use of anesthesia and  
26 sedatives. A marine mammal veterinarian or other qualified personnel would monitor the physiologic  
27 state of each animal (*e.g.*, by monitoring respiratory rate and character, heart rate, body temperature,  
28 and behavioral response to handling and sampling procedures). Animals that are physically  
29 restrained but continue to struggle or show signs of stress would be released immediately to minimize  
30 the risk that continued stress would lead to capture myopathy.

1 **Mitigation for Biopsy Sampling.** During cetacean biopsy sampling, a take would be considered to  
2 have occurred with any attempt made to biopsy dart an animal from a crossbow, air gun, or pole, even  
3 if that attempt is unsuccessful. In addition, no biopsy sampling takes would occur on large cetacean  
4 calves less than six months of age or females accompanying such calves. For small cetaceans, no  
5 biopsy sampling would occur for calves less than one year of age. Sterile, disposable biopsy punches  
6 would be used to minimize the risk of infection and cross-contamination. Where disposable  
7 equipment is not available, liquid chemical sterilants would be used with adequate contact times (as  
8 indicated on the product label) to affect proper sterilization. Instruments would be rinsed with sterile  
9 water or saline before use on animals. Care would be taken to avoid contact of equipment  
10 disinfectants with an animal's skin, and disinfectant agents would be changed periodically to avoid  
11 growth of resistant strains of microorganisms.

12 **Mitigation for Blood Sampling.** The volume of blood taken from individual animals at one time  
13 would not exceed more than 0.5-1 percent of its body weight, depending on taxa (Dein et al. 2005).  
14 Qualified researchers should not need to exceed three attempts (needle insertions) per animal when  
15 collecting blood. If an animal cannot be adequately immobilized for blood sampling, efforts to  
16 collect blood would be discontinued to avoid the possibility of serious injury or mortality from stress.  
17 Sterile, disposable needles would be used to minimize the risk of infection and cross-contamination.  
18 Where disposable equipment is not available, liquid chemical sterilants would be used with adequate  
19 contact times (as indicated on the product label) to affect proper sterilization. Instruments would be  
20 rinsed with sterile water or saline before use on animals. Care would be taken to avoid contact of  
21 equipment disinfectants with an animal's skin, and disinfectant agents would be changed periodically  
22 to avoid growth of resistant strains of microorganisms.

23 **Mitigation for Ultrasound Sampling.** Rectal and vaginal transducer probes will be well lubricated  
24 during sampling. Care will be taken to avoid introducing foreign matter into the vaginal canal.  
25 Sedation may be used to minimize animal discomfort. Ultrasound procedures on cetaceans will take  
26 place in water as often as possible.

27 **Mitigation for Incidental Mortality.** To ensure that the total number of observed mortalities does not  
28 exceed permitted levels, the Permit Holder/PI would notify NMFS PR1 of research-related mortalities  
29 by phone as soon as possible after the incident, preferably within 24-72 hours. Within two weeks of  
30 the incident, unless other arrangements have been made, the Permit Holder/PI must submit a written  
31 report that includes a complete description of the events surrounding the incident and identification of  
32 steps that will be taken to reduce the potential for additional incidents.

1 ***Mitigation for Exposure to Playbacks and Other Acoustic Research.*** A particular playback trial  
2 would be suspended if the exposed cetaceans show strong reactions, as indicated by sustained  
3 breaching and other activities commonly associated with stressed or agitated cetaceans. Other  
4 mitigation for this research would be included as conditions of the ESA/MMPA permit.

5 ***Additional Mitigation for USFWS Marine Mammal Species.*** If sea otters, walrus, or manatees are  
6 injured or killed during research activities, research would be suspended. A report would be sent to  
7 the USFWS, Division of Management Authority, the appropriate USFWS Field Office, and NMFS  
8 PR1.

### 9 **5.2.6.3 Mitigation Measures for Other Biological Resources**

10 Measures would be taken to avoid protected and sensitive habitats during research projects. If  
11 activities would occur within the boundaries of a federally protected area, the appropriate personnel  
12 would be notified. Notification would include specific dates, locations, and participants involved in  
13 the activities. If necessary, permits would be obtained to conduct research in these areas.

14 Nesting sea turtles and birds would be avoided during activities. If necessary, activities would be  
15 coordinated with the appropriate State agency/agencies to ensure there would be no adverse impacts.

## 16 **5.3 Water and Sediment Quality**

### 17 **5.3.1 Stranding Agreements and Response Alternatives**

18 The SA template (Article III and Article IV, Part B, Number 4) would require SA holders to make  
19 every reasonable effort to assist in the clean-up of beach areas where their activities, such as necropsy  
20 or specimen collection, contributed to the soiling of the site. NMFS would develop spill prevention  
21 best management practices for responders to use to reduce the incidence of spills from equipment,  
22 euthanasia solution, etc. These measures would help protect the surrounding environment, including  
23 water and sediment quality.

### 24 **5.3.2 Carcass Disposal Alternatives**

25 Carcass burial on beaches and disposal in State waters would only occur after state and/or local  
26 authorities have given permission to conduct such activities. Stranding network members, in  
27 coordination with NMFS (if necessary), would obtain any permits necessary and follow any  
28 conditions or mitigation set forth in the permits. Approval from state and/or local authorities would  
29 ensure that impacts to water and sediment quality would be minimal. The SA template (Article III



1 and Article IV, Part B, Number 4) would require SA holders to make every reasonable effort to assist  
2 in the clean-up of beach areas where their activities, such as necropsy or specimen collection,  
3 contributed to the soiling of the site. These measures would help protect the surrounding  
4 environment, including water and sediment quality.

5 If carcasses are known or assumed (based upon test results or prior knowledge of the species) to have  
6 contaminant levels that meet or exceed the definition of hazardous waste under EPA, state, and/or  
7 local regulations, they would be taken to an EPA-designated hazardous waste landfill for proper  
8 disposal.

9 Non-toxic carcasses may be disposed in Federal waters without a permit. Disposal of carcasses that  
10 are known to be hazardous waste at sea may require EPA approval and a permit. These carcasses  
11 would be disposed of in an EPA designated ocean dumping site. All EPA dumping sites are managed  
12 to avoid or minimize impacts to the marine environment. Materials used to sink carcasses would be  
13 chosen to avoid or minimize any impacts to the marine environment.

### 14 **5.3.3 Rehabilitation Activities Alternatives**

15 Rehabilitation facilities would have any required NPDES, state, and local permits, for facility  
16 discharges directly to surface waters. Facilities discharging to POTWs would have any necessary  
17 effluent discharge permits and a pretreatment plan in place to meet municipal wastewater treatment  
18 standards. Water used in temporary pools would be discharged into a sewer drain, where available,  
19 and would be taken to a wastewater treatment plant. No mitigation measures are in place for water  
20 drainage into nearshore waters or the use of net pens. The development of a monitoring plan is  
21 recommended to determine impacts and potential mitigation measures.

### 22 **5.3.4 Release of Rehabilitated Animals Alternatives**

23 If hazardous materials or wastes were discharged during release activities, stranding network  
24 members would notify the appropriate Federal, state, or local authorities.

### 25 **5.3.5 Disentanglement Alternatives**

26 If hazardous materials or wastes were released during disentanglement activities, responders would  
27 notify the appropriate Federal, state, or local authorities.

1 **5.3.6 Biomonitoring and Research Alternatives**

2 If hazardous materials or wastes were released during biomonitoring and research activities,  
3 personnel would notify the appropriate Federal, state, or local authorities.

4 **5.4 Cultural Resources**

5 **5.4.1 Stranding Agreements and Response Alternatives**

6 Under Alternatives A2, A3, A4, and A5, potential damage to cultural resources during stranding  
7 response may be avoided by contacting the appropriate SHPO or other local authorities prior to any  
8 major land disturbance. Known cultural resources would be avoided during transport and removal  
9 activities. If cultural resources are discovered during response operations, all work would cease and  
10 the SHPO would be contacted.

11 Stranding response on Native American/Alaska Native lands would be coordinated with the Tribal  
12 Historic Preservation Officer (THPO), Native American tribes, Alaska Natives, or other aboriginal  
13 peoples to accommodate cultural uses of marine mammals. Responders would also be sensitive to the  
14 fact that tribal cultures often involve ceremonial, medicinal, or subsistence uses of plants, animals  
15 (including marine mammals), and specific geographic locations. These measures would be taken to  
16 minimize or eliminate any potential impacts on Alaska Natives, Native American tribes, or other  
17 aboriginal people's cultural uses of coastal resources.

18 The SA template (Article III and Article IV, Part B, Number 4) would require SA holders to make  
19 every reasonable effort to assist in the clean-up of beach areas where their activities, such as necropsy  
20 or specimen collection, contributed to the soiling of the site. These measures would help protect the  
21 surrounding environment, which may include undiscovered cultural resources.

22 **5.4.2 Carcass Disposal Alternatives**

23 Under Alternatives B2 and B3, potential damage to cultural resources would be avoided by contacting  
24 the appropriate SHPO or other local authorities before selecting a beach burial site. The proximity of  
25 cultural resources to a site may change the method of carcass disposal, if necessary. Known cultural  
26 resources would be avoided during transport and removal activities. If cultural resources are  
27 discovered during burial operations, all work would cease and the SHPO would be contacted.

28 Carcass disposal on Native American/Alaska Native lands would be coordinated with the THPO,  
29 Native American tribes, Alaska Natives, or other aboriginal peoples to accommodate cultural uses of

1 marine mammals. Responders would also be sensitive to the fact that tribal cultures often involve  
2 ceremonial, medicinal, or subsistence uses of plants, animals (including marine mammals), and  
3 specific geographic locations. These measures would be taken to minimize or eliminate any  
4 potential impacts on Alaska Natives, Native American tribes, or other aboriginal people's cultural  
5 uses of coastal resources.

### 6 **5.4.3 Rehabilitation Activities Alternatives**

7 If cultural resources are discovered during activities under Alternatives C2 and C3, all activities  
8 would cease and the SHPO/THPO would be contacted. Known cultural resources would be avoided  
9 during rehabilitation activities.

### 10 **5.4.4 Release of Rehabilitated Animals Alternatives**

11 If cultural resources are discovered during release activities under Alternatives D2 and D3, all  
12 activities would cease and the SHPO/THPO would be contacted. Known cultural resources would be  
13 avoided during release activities.

### 14 **5.4.5 Disentanglement Alternatives**

15 No mitigation measures are necessary, as impacts would not be expected under the disentanglement  
16 alternatives.

### 17 **5.4.6 Biomonitoring and Research Alternatives**

18 Under Alternatives F2 and F3, impacts to cultural resources during biomonitoring and research  
19 activities would be avoided by contacting the appropriate SHPO/THPO or other local authorities prior  
20 to any projects that may disturb or damage resources. Known cultural resources would be avoided  
21 during research activities. If cultural resources are discovered during these activities, all work would  
22 cease and the SHPO/THPO would be contacted.

## 23 **5.5 Human Health and Safety**

### 24 **5.5.1 Stranding Agreements and Response Alternatives**

25 For Alternatives A4 and A5, the SA template (Article II, Part C, Number 5) recommends Stranding  
26 Network participant organizations to take precautions against injury or disease to any network  
27 personnel, volunteers, and the general public when working with live or dead marine mammals. The  
28 SA template also requires the stranding network participant to notify the NMFS Regional coordinator

1 within 24 hours of detecting and/or confirming any zoonotic diseases in an animal which could affect  
2 human health. In addition, the SA template (Article III and Article IV, Part B, Number 4) would  
3 require SA holders to make every reasonable effort to assist in the clean-up of beach areas where their  
4 activities, such as necropsy or specimen collection, contributed to the soiling of the site. NMFS  
5 would develop spill prevention best management practices for responders to use to reduce the  
6 incidence of spills from equipment, euthanasia solution, etc. These measures would help protect the  
7 surrounding environment and public health.

8 All SA holders engaged in stranding response would have a health and safety plan for personnel and  
9 volunteers that is presented to and reviewed by NMFS as part of their application for a new or  
10 renewal SA. Measures that may be utilized by SA holders to reduce health and safety risks during  
11 responses include, but are not limited to, the use of protective clothing, face protection, and eye  
12 protection. Other elements that may be included in a health and safety plan where feasible are: the use  
13 of life jackets and wet or dry suits during water responses; rotation of responders to minimize the  
14 amount of exposure and reduce fatigue; availability of first-aid kits and facilities for clean-up; and  
15 training for responders in first-aid and CPR. A proper first-aid kit and a person trained in the  
16 treatment of drug accidents should be present if etorphine or paralytic agents are used for euthanasia.

17 Risks from the consumption of marine mammal meat would be reduced by continuing to inform  
18 Alaska Natives on the potential for contaminants and disease. This is currently done by NMFS  
19 through the co-management process with Alaska Natives.

20 Marine mammal oil spill response guidelines have been developed for the MMHSRP (Appendix L).  
21 The guidelines would serve as mitigation for impacts under Alternatives A2, A3, A4, and A5.  
22 Personnel involved in spill response activities would have to comply with all applicable worker health  
23 and safety laws and regulations. The primary Federal regulations are the OSHA standards for  
24 Hazardous Waste Operations and Emergency Response (HAZWOPER) (29 CFR 1910.120). Oil spill  
25 response personnel may be required to have HAZWOPER training, depending on the extent of their  
26 involvement and state regulations. Recommended training for response includes first-aid, Cardio  
27 Pulmonary Resuscitation (CPR), the Incident Command System (ICS), aircraft and boating safety,  
28 and general oil spill response. Recommended personal protective equipment includes full eye  
29 protection, oil resistant clothing, gloves, ear protection, and respiratory protection. The Material  
30 Safety Data Sheet (MSDS) for the spilled material would be reviewed and all recommended  
31 precautions would be followed. Response personnel would be periodically monitored to determine

1 exposure. Marine mammal stranding network members would be responsible for training and  
2 certifying their employees and volunteers.

### 3 **5.5.2 Carcass Disposal Alternatives**

4 For Alternatives B2 and B3, the SA Template (Article II, Part C, Number 5) recommends Stranding  
5 Network participant organizations to take precautions against injury or disease to any network  
6 personnel, volunteers, and the general public when working with live or dead marine mammals. The  
7 SA template also requires the Stranding Network participant to notify the NMFS Regional  
8 coordinator within 24 hours of detecting and/or confirming any diseases of concern in an animal  
9 which could affect human health. Response workers would be required to have sufficient protection  
10 against infection with zoonotic pathogens, contaminants, and other risks associated with handling  
11 decomposing carcasses. Workers would be required to wear, as necessary, protective clothing,  
12 gloves, face masks and safety goggles. Equipment used to move and dispose of carcasses would be  
13 cleansed and disinfected to reduce the risk of zoonotic pathogens or other possible contaminants. The  
14 marine mammal oil spill response guidelines (Appendix L) would serve as mitigation for impacts  
15 under Alternatives B2 and B3. These mitigation measures would be the same as those discussed  
16 above for oil spill response to stranded animals.

17 The burial or disposal at sea (in state waters) of a carcass would only occur after state and/or local  
18 authorities have given permission to conduct such activities. Stranding network members would  
19 obtain any permits necessary to conduct carcass burial on beaches or other suitable locations and  
20 disposal in state waters. This would include any permits or coordination with the State's health  
21 department, to ensure that public health and safety would be protected.

### 22 **5.5.3 Rehabilitation Activities Alternatives**

23 For Alternatives C3 and C4, the SA template (Article II, Part C, Number 5) recommends Stranding  
24 Network participant organizations to take precautions against injury or disease to any network  
25 personnel, volunteers, and the general public when working with live or dead marine mammals. The  
26 SA template also requires the stranding network participant to notify the NMFS Regional coordinator  
27 within 24 hours of detecting and/or confirming any diseases of concern in an animal which could  
28 affect human health. The implementation of the Rehabilitation Facility Standards would also serve as  
29 mitigation for Alternatives C3 and C4. Section 10 of the standards would require health and safety  
30 plans that identify all of the safety issues that may be a factor when working closely with wild marine  
31 mammals. Plans would include specific information for the direct handling of all species seen at the

1 facility. Personnel would be trained to identify potential zoonotic diseases and prevent their  
2 transmission from animal to human. Staff would be trained to properly handle contaminated  
3 equipment and proper sanitation techniques (Section 4).

4 Rehabilitation facilities would follow OSHA regulations regarding personnel protective equipment  
5 (29 CFR 1910, subpart I). Safety equipment would be provided, including eye protection, protective  
6 clothing, and eye flushing stations. OSHA regulations (29 CFR 1910, subpart D) provide measures to  
7 reduce slips, falls, and other physical injuries in the workplace. Protocols for appropriate handling of  
8 chemicals would be available, including all MSDS. Hazardous materials and toxic substances would  
9 be handled and stored according to OSHA regulations (29 CFR 1910, subpart H and subpart Z). A  
10 proper first-aid kit and a person trained in the treatment of drug accidents would be present if  
11 etorphine or paralytic agents were used for euthanasia.

12 The marine mammal oil spill response guidelines would serve as mitigation for impacts under  
13 Alternatives C2, C3, and C4. Personnel involved in the rehabilitation of oiled marine mammals  
14 should have HAZWOPER training. Training on the ICS, first-aid, CPR, crisis management, marine  
15 mammal oil spill response, and hazard communication are recommended. Recommended personal  
16 protective equipment includes full eye protection, oil resistant clothing, gloves, ear protection, and  
17 respiratory protection. The MSDS for the spilled material would be reviewed and all recommended  
18 precautions would be followed. Rehabilitation personnel and facilities would be periodically  
19 monitored to determine exposure. Facilities would have adequate ventilation to protect against the  
20 toxic effects of volatile agents. Marine mammal stranding network members would be responsible  
21 for training and certifying their employees and volunteers.

#### 22 **5.5.4 Release of Rehabilitated Animals Alternatives**

23 For Alternatives D2 and D3, the SA template (Article II, Part C, Number 5) recommends Stranding  
24 Network participant organizations to take precautions against injury or disease to any network  
25 personnel, volunteers, and the general public when working with live marine mammals. Under  
26 Alternatives D2 and D3, all SA holders involved in the release of rehabilitated animals would have a  
27 health and safety plan. All release personnel would be trained appropriately to avoid or minimize  
28 health and safety hazards.

### 1 **5.5.5 Disentanglement Alternatives**

2 Under Alternatives E2 and E3, safety measures utilized by responders would include immersion suits,  
3 life jackets, helmets, and a small closed knife that is available to cut lines and gear in an emergency  
4 situation. Typically, a standby vessel (usually a USCG or NOAA vessel) would accompany the  
5 responders in case additional assistance is required. Experienced responders would not attempt  
6 disentanglement, or would end an attempt, if it was too dangerous. Under Alternative E2, training  
7 would be required for East Coast responders in order to be certified for disentanglement. Under  
8 Alternative E3, training would be required for responders nationwide in order to be certified for  
9 disentanglement. Training would depend upon their level of involvement (see Appendix C,  
10 Disentanglement Guidelines). The appropriate training would ensure that responders know the  
11 potential safety risks and the methods to avoid or minimize these risks. While these safety measures  
12 may reduce some risks, there would always be potential for adverse effects on human health and  
13 safety.

### 14 **5.5.6 Biomonitoring and Research Alternatives**

15 Safety protocols have been developed for health assessment studies. The use of life vests would be  
16 required, in order to comply with NOAA's Small Boat Safety Program and policies (NAO 209-125).  
17 Gloves and other protective clothing would be used during sampling. Gloves and protective eyewear  
18 would be required during the use of liquid nitrogen. It is recommended that at least one emergency  
19 medical technician would be present for health assessment activities conducted in water or offshore.  
20 If possible, USCG personnel would accompany the research vessels to assist in an emergency and to  
21 keep other vessels away from the site.

22 Health and safety plans would be developed for all permitted research actions. Only experienced  
23 personnel would be conducting research, which would reduce health and safety risks. NOAA's Small  
24 Boat Safety Program and policies (NAO 209-125) and policies on NOAA employees on non-NOAA  
25 vessels (NAO 209-115, as applicable) would be followed to reduce risks during vessel operations.  
26 NOAA's Aviation Safety Policy (NAO 209-124) would be followed to minimize hazards during  
27 aircraft operations.

28 For diagnostic testing and specimen analyses, each individual laboratory should have a Chemical  
29 Hygiene Plan, as described in 29 CFR 1910.1450. A Chemical Hygiene Plan would contain work  
30 practices, policies, and procedures that ensure a safe environment. Researchers would receive  
31 training on the hazards of chemicals used in the laboratory and be provided with the proper

1 equipment for their safe handling, including respiratory protection. These measures would eliminate  
2 most of the risks associated with laboratory work.

## 3 **5.6 Socioeconomics**

### 4 **5.6.1 Stranding Agreements and Response Alternatives**

5 Stranding network members may be able to use available funds from the Prescott Grant Program to  
6 help offset costs incurred by response activities.

### 7 **5.6.2 Carcass Disposal Alternatives**

8 Stranding network members may be able to use available funds from the Prescott Grant Program to  
9 help offset costs incurred by carcass disposal activities.

### 10 **5.6.3 Rehabilitation Activities Alternatives**

11 To minimize the impacts of implementing the Rehabilitation Facility Standards, NMFS would  
12 provide a reasonable process for facilities to be upgraded to meet the minimum standards.  
13 Substandard facilities may be improved using funds that may be available through the Prescott Grant  
14 Program. Prescott funds may also be used to improve facilities that meet the minimum standards,  
15 with the goal to achieve or exceed the recommended standards.

### 16 **5.6.4 Release of Rehabilitated Animals Alternatives**

17 Stranding network members may be able to use available funds from the Prescott Grant Program to  
18 help offset costs incurred by release activities.

### 19 **5.6.5 Disentanglement Alternatives**

20 Disentanglement training expenses would be covered by the MMHSRP. This would eliminate most  
21 expenses associated with training.

### 22 **5.6.6 Biomonitoring and Research Alternatives**

23 Some biomonitoring and research expenses would be covered by the MMHSRP, eliminating some of  
24 the socioeconomic impact to personnel.



## 6. Cumulative and Other Impacts

### 6.1 Resource Specific Cumulative Impact Analysis

A cumulative impact is defined as the incremental impact of the Proposed Actions and alternatives when added to past, present, and reasonably foreseeable actions. Reasonably foreseeable future actions consist of activities that have been approved and can be evaluated with respect to their impacts. Cumulative impacts can result from individually minor, but collectively significant, actions occurring over a period of time.

The cumulative impacts analysis considers past, present, and planned or reasonably foreseeable programs and projects that could affect each resource area and may add to the incremental impacts of the Proposed Actions and alternatives in the action area. Because the size of the action area is extensive, local projects will not be analyzed; instead general threats to each resource area will be analyzed. Future, reasonably foreseeable MMHSRP actions that are not fully analyzed in the PEIS are listed in Table 6-1. For the purposes of this PEIS, only those resources identified in Section 3.0 that might be impacted by the Proposed Actions and alternatives will be discussed in this section.

**Table 6-1. Reasonably Foreseeable MMHSRP Actions**

| MMHSRP Action   | Description  | Timeline                                  |
|---|--|---|
| <b>Standards for Rehabilitation Facilities/Release Criteria</b> | Currently, these standards and criteria can only be implemented as guidelines. A proposed rule would be written to make these into regulations for all future rehabilitation facilities and activities. At a minimum, an EA would be prepared to assess any impacts associated with the proposed rule that have not been addressed in this PEIS, including a Regulatory Impact Review.   | 1-2 years<br>(after release of this PEIS) |
| <b>Rehabilitation Facility Inspection Program</b>               | The NMFS' MMHSRP has an interagency agreement with APHIS to plan and possibly implement an inspection program for rehabilitation facilities, based upon the Standards for Rehabilitation Facilities.   | 2008-2009                                 |
| <b>Public Viewing Guidelines</b>                                | Public viewing at rehabilitation facilities is only allowed under MMPA regulations (50 CFR 216.27 (c)(5)) if the NMFS Regional Director or the NMFS Office of Protected Resources Director has specifically authorized the activities and they are conducted in a matter consistent with the requirements applicable to public display. Public viewing guidelines would be developed by NMFS and may be included in the Rehabilitation Facility Standards and any associated regulations. At a minimum, an EA would be prepared to assess any impacts associated with the proposed guidelines. | Undetermined                              |

**Table 6-1. Reasonably Foreseeable MMHSRP Actions (continued)**

| <b>MMHSRP Action</b>                                   | <b>Description</b>   | <b>Timeline</b> |
|--|--|-----------------|
| <b>Human Interaction Handbook and Data Sheet</b>       | A human interaction handbook and data sheet will undergo necessary clearance procedures and will be used by the National Stranding Network.  | 2009            |
| <b>Workshop on Candidates for Rehabilitation</b>       | The NMFS' MMHSRP will hold a workshop regarding decisionmaking during response activities to determine animals that are good rehabilitation candidates. Guidelines to determine good rehabilitation candidates would be developed. | 2009            |
| <b>Disentanglement Network- Use of Divers in Water</b> | A workshop is being planned regarding the use of divers for disentanglement activities. The workshop attendees would include national and international professionals involved in disentanglement activities.                      | 2009            |
| <b>Research on Humane Chemical Euthanasia</b>          | NMFS will continue to support and fund research on humane methods of chemical euthanasia. This includes research regarding the environmental impacts of chemical euthanasia solutions.   | Continuous      |

1

2 **6.1.1 Biological Resources**

3 The response, rehabilitation, and release activities of the MMHSRP would have a beneficial  
 4 cumulative effect on marine mammals. The MMHSRP would continue to rehabilitate and return  
 5 animals to the wild that would have died otherwise. Returning threatened and endangered animals  
 6 back to the wild would have a large impact on the survival of these species. With the implementation  
 7 of the release criteria, the threat of releasing diseased animals would be eliminated or minimized.  
 8 Without the release criteria, a potential cumulative adverse impact could occur if diseased animals  
 9 were released and infected wild populations. The MMHSRP, combined with other NMFS activities,  
 10 would have beneficial cumulative impacts on all marine mammals. Other NMFS activities include:  
 11 the North Atlantic Right Whale Ship Strike Reduction Strategy; Marine Mammal Conservation Plans;  
 12 ESA Recovery Plans; Take Reduction Plans; and issuance of incidental harassment authorizations,  
 13 Incidental harassment authorizations require implementation of mitigation so that activities that may  
 14 unintentionally take marine mammals are subject to standards that achieve a negligible impact on  
 15 species or stocks and the least practicable adverse effect on marine mammals.

16 Research activities of the MMHSRP, combined with all other past, present, and future marine  
 17 mammal research authorized by permits from the NMFS PR1, could have cumulative adverse impacts  
 18 on marine mammals. All research activities include takes of marine mammals. Activities have the  
 19 potential to interrupt mating, feeding, and diving behaviors as well as injure or kill animals. Takes  
 20 may be occurring on the same individual or group of animals and could be disrupting essential

1 behaviors. NMFS PR1 currently has 193 scientific research and enhancement permits issued for  
2 marine mammals. Of these permits, 35 are general authorizations for Level B Harassment (Swails  
3 pers.comm.). However, the MMHRSP activities and other permitted research activities could result  
4 in cumulative beneficial impacts on marine mammals. The information gained from these activities  
5 may lead to ways to protect and conserve all marine mammals and increase those animals that are  
6 declining.

7 The Standards for Rehabilitation Facilities and release criteria cannot be enforced unless they are  
8 incorporated into regulations. These regulations would have beneficial cumulative impacts on marine  
9 mammals. By law, Stranding Network participants would have to adhere to these regulations.  
10 Participants who are in violation of these regulations could be put on probation, suspended, or have  
11 their SA terminated, according to the Final SA Criteria (Appendix C). The rehabilitation facility  
12 regulations would ensure that rehabilitated animals would have the appropriate veterinary care in a  
13 healthy environment, maximizing the success rate of rehabilitation. The release criteria regulations  
14 would ensure that only healthy animals are released back to the wild, minimizing potential impacts to  
15 the wild population and ensuring a better survival rate for the released animal.

16 The Rehabilitation Facility Inspection program would complement the rehabilitation facility  
17 regulations. Facilities would be inspected to ensure compliance with the regulations. NMFS would  
18 send a qualified individual to each rehabilitation facility to document existing facilities and to advise  
19 each facility of their areas of weakness. Once the Standards have been approved, inspections will be  
20 carried out on a rotating 1-3 year interval to ensure compliance. This program along with other  
21 MMHSRP activities would have beneficial cumulative impacts on marine mammals.

22 Currently, public viewing of animals in rehabilitation is only allowed under MMPA regulations (50  
23 CFR 216.27(c)(5)) if the NMFS Regional Director or the NMFS Office of Protected Resources  
24 Director has specifically authorized the activities and they are conducted in a matter consistent with  
25 the requirements applicable to public display. NMFS would clarify the definition of public viewing  
26 for animals undergoing rehabilitation in 50 CFR 216.27(c)(5) to differentiate it from permanently  
27 captive animals on public display. NMFS would establish guidelines that govern when public  
28 viewing of rehabilitating marine mammals would be authorized. NMFS would work with APHIS to  
29 develop public viewing guidelines that ensure the requirements of the MMPA and the Animal  
30 Welfare Act are met. The guidelines would be designed to protect animal health and to ensure that  
31 the potential for a successful rehabilitation would not be compromised. At a minimum, an EA would  
32 be prepared to assess any impacts associated with the proposed guidelines. The guidelines would be

1 available for review by the MMC, current rehabilitation facilities, and the public. Significant  
2 cumulative effects on marine mammals would not be expected from this activity.

3 The NMFS' MMHSRP will hold a workshop regarding decisionmaking during response activities to  
4 determine which animals are good rehabilitation candidates. Guidelines would be developed for  
5 stranding responders to use to determine good rehabilitation candidates on the beach. These  
6 guidelines would minimize the number of animals brought into rehabilitation facilities that are poor  
7 candidates for successful rehabilitation and release. The workshop would also address criteria for  
8 making immediate disposition determinations (*e.g.*, beach release and relocation and release).  
9 Cumulative effects on marine mammals would not be expected from this activity.

10 A human interaction handbook and data sheet have been developed by the Cape Cod Stranding  
11 Network and the Virginia Aquarium Stranding Response Team. These documents will undergo  
12 necessary clearance procedures and be used by the National Stranding Network. These materials will  
13 be used to provide stranding network personnel with the tools needed to evaluate marine mammals  
14 for signs of human interaction and to collect human interaction data consistently in all NMFS  
15 jurisdictional regions. Cumulative effects on marine mammals would not be expected from this  
16 activity.

### 17 **6.1.2 Water and Sediment Quality**

18 The MMHSRP's activities would not likely add to the cumulative effects on water and sediment  
19 quality from other activities. Sewage outfalls, agricultural runoff, stormwater runoff, industrial  
20 operations, shipping operations, and coastal development all have an effect on water and sediment  
21 quality. The potential impacts from the MMHSRP's activities would be negligible compared to these  
22 impacts.

### 23 **6.1.3 Cultural Resources**

24 For the preferred alternatives, the adoption of mitigation measures that would include contact with the  
25 appropriate SHPO, where warranted, and special release considerations for ice seals, the MMHSRP's  
26 activities would be expected to have only minor potential for impacts on cultural resources, and  
27 would not incrementally contribute to a cumulatively significant impact to these resources.

1    **6.1.4 Human Health and Safety**

2    Currently, public viewing of animals in rehabilitation is only allowed under MMPA regulations (50  
3    CFR 216.27 (c)(5)) if the NMFS Regional Director or the NMFS Office of Protected Resources  
4    Director has specifically authorized the activities and they are conducted in a matter consistent with  
5    the requirements applicable to public display. NMFS would establish guidelines that govern when  
6    public viewing of rehabilitating marine mammals would be authorized. At a minimum, an EA would  
7    be prepared to assess any impacts associated with the proposed guidelines. The guidelines would be  
8    designed to protect human health; therefore significant cumulative effects on public health and safety  
9    would not be expected.

10   The MMHSRP is in the process of planning a workshop to discuss the use of divers in the water  
11   during disentanglement activities. The workshop would likely be held sometime in 2007. Workshop  
12   attendees will include national and international professionals involved with disentanglement. Other  
13   countries have used divers to disentangle animals and the workshop will discuss the potential ways  
14   this could be implemented in the U.S. If the Disentanglement Network would decide to use divers in  
15   the water, a major amendment to the MMHSRP's ESA/MMPA permit would be necessary. This  
16   would require at minimum, an EA to analyze the impacts on human health and safety, biological  
17   resources, and any other resource that may be affected.

18   **6.1.5 Socioeconomics**

19   The Rehabilitation Facility Standards and release criteria cannot be enforced unless they are  
20   incorporated into regulations. The PEIS has taken a general look at potential impacts of requiring  
21   rehabilitation facilities to comply with the standards. However, at minimum, an EA would be  
22   necessary to fully assess the socioeconomic impacts of making these standards into regulations. An  
23   EA would be prepared to assess any impacts associated with the proposed rule that have not been  
24   addressed in this PEIS, including a Regulatory Impact Review. This action is anticipated to happen  
25   within one to two years after the release of this PEIS.

26   Release of pinnipeds on the West Coast could have an adverse cumulative impact. Pinniped conflicts  
27   with commercial and recreational fisheries are ongoing. California sea lions and harbor seals remove  
28   catch and damage gear in all types of fisheries, including gillnet, purse seine, trap and live bait  
29   fisheries. Along the West Coast, seals and sea lions have taken threatened and endangered salmon  
30   passing through the fish ladders. The conflict has resulted in economic losses for some commercial  
31   fisheries and impaired the recovery of salmon stocks. Recreational fishers frequently move their

1 boats when sea lions are present, and incur additional fuel costs and loss of fishing time. The release  
2 of pinnipeds would add individuals to already growing populations and could contribute to an  
3 increase in interactions with the commercial and recreational fisheries, causing more economic losses.  
4 Space conflicts between pinnipeds and humans have occurred at harbors and beaches, such as  
5 Children's Pool in La Jolla, California. More animals hauled out on beaches may deter beach  
6 visitors, and impact revenue gained from beachgoers. Currently no released pinnipeds have been  
7 documented in any of these conflicts. Released pinnipeds or their offspring could be involved in  
8 future conflicts, which may have an adverse cumulative impact on socioeconomics.

9 The NMFS' MMHSRP will hold a workshop regarding decisionmaking during response activities to  
10 determine animals that are good rehabilitation candidates. Guidelines would be developed for  
11 stranding responders to use to determine good rehabilitation candidates on the beach. These  
12 guidelines would minimize the number of animals brought into rehabilitation facilities that are poor  
13 candidates for successful rehabilitation and release. This action would likely reduce expenditures of  
14 resources on non-releasable animals and may be a beneficial impact for rehabilitation facilities.

## 15 **6.2 Unavoidable Adverse Impacts**

16 Unavoidable adverse impacts on marine mammals would occur from the MMHSRP's activities.  
17 During response and rehabilitation activities, animals may still exhibit adverse reactions, sustain  
18 injuries or die, despite the best efforts made by Stranding Network participants and the proposed  
19 mitigation measures. Disentanglement activities would always require a vessel close approach, which  
20 may produce adverse reactions from animals. However, these activities would be conducted to help  
21 animals, and the long-term beneficial impacts would outweigh the short-term adverse impacts.  
22 Research activities would impact marine mammals even with the proposed mitigation measures.  
23 Animals may have adverse reactions to research activities, or may be injured or die despite the use of  
24 best available science and techniques.

25 Unavoidable impacts on human health and safety would occur from the MMHSRP's activities. Even  
26 with the proposed mitigation measures, there would still be a risk to marine mammal personnel safety  
27 and public safety. Some risk would always be present when working with wild animals, as their  
28 behavior is unpredictable. Disentanglement activities would always be dangerous, due to animal  
29 behavior and working on the open ocean. Public safety would be impacted, as there would be a lag  
30 time between when an animal is reported and when a Stranding Network participant gets to the scene.

1 Between this time, people could still come in contact with the animal, risking physical injuries or  
2 potential zoonotic diseases.

### 3 **6.3 Irreversible and Irretrievable Commitment of Resources**

4 Irreversible commitments of resources are actions which disturb either a non-renewable resource or a  
5 renewable resource to the point that it can only be renewed over a long period of time (*i.e.* decades).  
6 Irretrievable commitments are losses of resources that occur for a shorter period of time. For the  
7 alternatives, most resource commitments are neither irreversible nor irretrievable. Many potential  
8 adverse impacts are short-term and temporary. Others may have a longer effect that can be reduced  
9 through the proposed mitigation measures in Section 5.

### 10 **6.4 Relationship Between Short-term Uses and Long-term** 11 **Productivity**

12 This NEPA required consideration addresses the question of whether the alternatives would be  
13 providing short-term benefits at the cost of future generations. Based on the analyses presented under  
14 Section 4, Environmental Consequences, no long-term loss of productivity would be expected. The  
15 MMHSRP's response, rehabilitation, release, and research activities would contribute to the long-  
16 term productivity of marine mammals.

17

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## 9. Glossary

**Biotoxin-** A poisonous substance produced by a living organism (*e.g.* brevetoxin, saxitoxin).

**Brucellosis-** An infectious disease caused by the bacteria of the genus *Brucella* and may be passed to humans by contact with infected animals or animal products. Human symptoms include fever, sweats, headaches, back pain, and physical weakness.

**Caliciviruses-** Marine mammals may have the calicivirus San Miguel Sea Lion Virus, which causes skin lesions (skin vesicles) in marine mammals and potential premature births. In humans, caliciviruses cause hepatitis, diarrhea, and hemorrhaging.

**Cetacean-** A marine mammal of the order Cetacea, including whales, dolphins, and porpoises.

***Clostridium* spp.-** Large genus of Gram-positive bacteria with four main species that can cause diseases in humans. Food poisoning, gangrene, colitis, and death may result from infections.

**Conspecific-** Members of the same species.

**Critical habitat-** Specific areas within the geographical area occupied by the species at the time of listing (under the ESA), if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and specific areas outside the geographical area occupied by the species if the agency (USFWS or NMFS) determines that the area itself is essential for conservation.

**Delphinid-** Marine mammals of the family Delphinidae, including the killer whale (*Orcinus orca*), bottlenose dolphin (*Tursiops truncatus*), and the long-finned pilot whale (*Globicephala melas*).

**Depleted species-** Defined by the MMPA as any case in which: (a) the Secretary of Commerce, after consultation with the Marine Mammal Commission and the Committee of Scientific Advisors on Marine Mammals, determines that a species or population stock is below its optimum sustainable population; (b) a State determines that such species or stock is below its optimum sustainable population; or (c) a species or population stock is listed as a threatened species or endangered species under the ESA.

**Distinct Population Segment (DPS)**- A vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species. Distinct population segments may be listed as threatened or endangered under the ESA.

**Endangered species**- Defined under the ESA as “any species which is in danger of extinction throughout all or a significant portion of its range.”

**Endocarditis**- Inflammation of the inner lining of the heart due to an infection.

**Epizootic**- An outbreak of disease in an animal population.

***Erysipelothrix rhusiopathiae***- A pathogenic bacteria that causes systemic disease which typically causes red, hard patches on the skin, with swelling and pain. More severe cases can result in acute septicemia and death.

**Essential Fish Habitat (EFH)**- Defined under the Magnuson-Stevens Fishery Conservation and Management Act as waters and substrate that are necessary to the fish species for spawning, breeding, feeding, or growth to maturity.

**Etorphine (Immobilon®)**- A powerful synthetic narcotic analgesic related to morphine used in veterinary medicine for tranquilizing large animals (e.g. elephants). It is a controlled class II drug under the Drug Enforcement Administration.

**Evolutionary Significant Unit (ESU)**- A Pacific salmon population or group of populations that is substantially reproductively isolated from other conspecific populations and that represents an important component of the evolutionary legacy of the species.

**Exsanguination**- The fatal process of total blood loss which may be used as a mode of euthanasia in marine mammals.

**Fomites**- Substances that absorb, hold, and transport infectious disease agents

**Gastroenteritis**- Inflammation of the stomach and large and small intestines caused by a virus, resulting in vomiting or diarrhea.

**Giardiasis**- A diarrheal illness caused by a one-celled, microscopic parasite, which lives in the intestines and is passed in the stool. It is found in drinking and recreational waters.

**Harassment-** Under the 1994 amendments to the MMPA, harassment is statutorily defined as any act of pursuit, torment, or annoyance which: has the potential to injure a marine mammal or marine mammal stock in the wild (Level A Harassment); or has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild (Level B Harassment).

**Harmful algal bloom (HAB)-** A diverse array of blooms of both microscopic and macroscopic marine algae which produce: toxic effects on humans and other organisms; physical impairment of fish and shellfish; nuisance conditions from odors and discoloration of waters or habitats.

**Humane-** In the context of euthanasia is defined by the MMPA means “that method of taking which involves the least possible degree of pain and suffering practicable to the mammal involved.”

**Hyperthermia-** An acute condition which occurs when the body produces or absorbs more heat than it can dissipate; also referred to as heat stroke or sunstroke.

**Hyponatremia-** Low blood sodium. In marine mammals it is manifested by anorexia, followed by uncoordinated or spastic movements progressing to a generalized muscle quivering over the entire body, especially the flippers.

**Hypothermia-** Condition in which body temperature drops below the level required for normal metabolism and/or bodily function to take place.

**Immunosuppression-** State in which the ability of the body’s immune system to fight infections or disease is decreased.

**Leptospirosis-** An infectious disease caused by the bacteria of the genus *Leptospira* that affects humans and animals. Causes tubular necrosis (kidney disorder) in marine mammals. Human symptoms include high fever, severe headache, muscle ache, chills, and vomiting.

**Morbillivirus-** A highly contagious and lethal genus of virus (Family Paramyxoviridae) that has been responsible for more significant marine mammal die-offs due to infectious disease than any other pathogen to date.

***Mycobacterium spp.***- A genus of bacteria that includes many pathogens known to cause serious diseases. In marine mammals, may cause dermal abscesses and pulmonary tuberculosis (infection of the lungs). In humans, may cause skin lesions, pulmonary tuberculosis, and skin tuberculosis.

***Mycoplasma (Seal Finger)***- Bacteria which may cause mycoplasmal pneumonia (infection of the lungs) in marine mammals. In humans, may cause skin lesions and infection may progress to arthritis, cellulitis (inflammation of the connective tissue of the skin), or tenosynovitis (inflammation of the fluid-filled sheath that surrounds the tendon).

***Mysticete***- A whale that has baleen (plates of keratinized tissue that hang from the upper jaw) instead of teeth (suborder Mysticeti). Examples include the humpback whale (*Megaptera novaeangliae*), gray whale (*Eschrichtius robustus*), and minke whale (*Balaenoptera acutorostrata*).

***Odontocete***- Toothed whales (suborder Odontoceti). Examples include the sperm whale (*Physeter macrocephalus*), beluga whale (*Delphinapterus leucas*), harbor porpoise (*Phocoena phocoena*), and bottlenose dolphin (*Tursiops truncatus*).

***Otariid***- Sea lions and fur seals (family Otariidae). Examples include the Steller sea lion (*Eumetopias jubatus*) and the Northern fur seal (*Callorhinus ursinus*).

***Pathology***- The scientific study of the nature of disease and its causes, processes, development, and consequences.

***Persistent Organic Pollutant (POP)***- Chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in fatty tissue of living organisms, and are toxic to humans and wildlife.

***Phocid***- True or earless seals (family Phocidae). Examples include the Hawaiian monk seal (*Monachus schauinslandi*), and the harbor seal (*Phoca vitulina*).

***Pinniped***- Marine mammals in the suborder Pinnipedia with all four limbs modified into flippers, including seals, sea lions, and walruses.

***Polychlorinated Biphenyls (PCBs)***- A group of toxic, carcinogenic organic compounds previously used for industrial purposes.

**Polycyclic Aromatic Hydrocarbon (PAH)-** Chemical compounds that consist of fused aromatic rings; many are known or suspected carcinogens.

**Rehabilitation-** Treatment of beached and stranded marine mammals taken with the intent of restoring the marine mammal's health and, if necessary, behavioral patterns.

**Salmonellosis-** Infection caused by the bacteria *Salmonella* with symptoms including fever, abdominal cramps, and diarrhea.

**Seal poxvirus-** Virus in pinnipeds which causes skin nodules which may ulcerate, spread rapidly, and persist for months. In humans, may cause swollen, red skin nodules.

**Septicemia-** Disease caused by the spread of bacteria and their toxins in the bloodstream, also known as blood poisoning.

**Shigellosis-** Disease caused by a group of bacteria (*Shigella*) with symptoms including diarrhea, fever, and stomach cramps

**Stranding-** Defined under the MMPA as “an event in the wild in which (A) a marine mammal is dead and is (i) on a beach or shore of the United States; or (ii) in waters under the jurisdiction of the United States (including any navigable waters); or (B) a marine mammal is alive and is (i) on a beach or shore of the United States and is unable to return to the water; (ii) on a beach or shore of the United States and, although able to return to the water, is in need of apparent medical attention; or (iii) in the waters under the jurisdiction of the United States (including any navigable waters), but is unable to return to its natural habitat under its own power or without assistance.”

**Take-** Defined under the MMPA as “to harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect.” Defined under the Endangered Species Act as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.”

**Threatened species-** Defined under the Endangered Species Act as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”

**Unusual mortality event (UME)-** Defined under the Marine Mammal Protection Act as “a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response.”



**West Nile Virus-** Virus spread by mosquitoes that causes encephalitis (inflammation/swelling of the brain).

**Zoonotic-** Any infectious disease that can be transmitted from animals to humans.

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