Strategic Plan
2015-19

Bottlenose dolphin

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Marine Mammal Commission
February 2014

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Background

Title II of the Marine Mammal Protection Act (MMPA) of 1972 created the Marine Mammal Commission (the Commission) as an independent federal agency to oversee activities of other federal agencies directly or indirectly affecting marine mammals and to advise those agencies of actions needed to meet the intent and provisions of the Act – i.e., to maintain healthy marine ecosystems and marine mammal populations that are integral components of marine ecosystems.

The Commission's oversight and advisory role helps ensure that domestic and international policies and actions of federal agencies are consistent with the MMPA and other legislation related to maintaining a healthy marine environment. Because many marine mammals feed at high trophic levels, are long-lived, and are subject to some adverse health impacts similar to those that affect humans, they have the potential for providing a warning about certain kinds of adverse changes to or degradation of the marine environment – that is, for some situations they can be "sentinels of the sea." Multiple human-related risk factors threaten marine mammals, including direct and indirect effects of fisheries; the introduction of anthropogenic sound, contaminants and diseases into the marine environment; harmful algal blooms, dead zones and other habitat alterations; vessel strikes; and impacts of climate change. To assist in meeting its responsibilities under the MMPA, the Commission consults with its Committee of Scientific Advisors on Marine Mammals (CSA), other federal agencies, including the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (FWS), Bureau of Ocean Energy Management (BOEM), Department of State, Navy, state agencies (e.g., various state Departments of Fish and Game, state Departments of Environmental Conservation), and affected Native American Tribes and Organizations to characterize those risk factors and identify effective means to minimize or mitigate the threats. The Commission, in consultation with its CSA, also helps develop, facilitate, and coordinate multi-agency and international research and management initiatives to promote marine mammal protection and conservation, particularly for species and populations that are endangered, threatened, depleted or otherwise of special concern. In all its work, the Commission seeks to be a source of useful information; focused and catalytic research funding; and independent, objective, and forward-looking advice and oversight.

Organizational Structure

The Commission consists of three Commissioners knowledgeable in the fields of marine ecology and resource management, appointed by the President and confirmed by the Senate, with one Commissioner designated by the President as Chairman. The nine-member CSA, composed of scientists knowledgeable in marine ecology and marine mammal affairs, is appointed by the Chairman of the Commission in consultation with the other Commissioners and Director of the National Science Foundation, the

Secretary of the Smithsonian Institution, the Chairman of the Council on Environmental Quality, and the Chairman of the National Academy of Sciences. The Commission has a full-time staff of 14 employees, including the Executive Director, who is appointed by the Chairman with the approval of the other Commissioners.

Duties under the MMPA

Title II of the MMPA specifies the duties of the Commission and its Committee of Scientific Advisors on Marine Mammals. The Commission's Strategic Goal and Objectives are based on these seven duties, as defined under section 202 of the MMPA:

(1) undertake a review and study of the activities of the United States pursuant to existing laws and international conventions relating to marine mammals including, but not limited to, the International Convention for the Regulation of Whaling, the Whaling Convention Act of 1949, the Interim Convention on the Conservation of North Pacific Fur Seals, and the Fur Seal Act of 1966;
(2) conduct a continuing review of the condition of the stocks of marine mammals, of methods for their protection and conservation, of humane means of taking marine mammals, of research programs conducted or proposed to be conducted under the authority of the Marine Mammal Protection Act, and of all applications for permits for scientific research, public display, or enhancing the survival or recovery of a species or stock;
(3) undertake or cause to be undertaken such other studies as it deems necessary or desirable in connection with its assigned duties as to the protection and conservation of marine mammals;
(4) recommend to the Secretary [of Commerce or the Interior] and other federal officials such steps as it deems necessary or desirable for the protection and conservation of marine mammals;
(5) recommend to the Secretary of State appropriate policies regarding existing international arrangements for the protection and conservation of marine mammals, and suggest appropriate international arrangements for the protection and conservation of marine mammals;
(6) recommend to the Secretary [of Commerce or the Interior] such revisions of the endangered species list and threatened species list published pursuant to section 4(c)(1) of the Endangered Species Act of 1973 as may be appropriate with regard to marine mammals; and
(7) recommend to the Secretary [of Commerce or the Interior], other appropriate federal officials, and Congress such additional measures as it deems necessary or desirable to further the policies of the Act, including provisions for the protection of the Indians, Eskimos, and Aleuts whose livelihood may be adversely affected by actions taken pursuant to the Marine Mammal Protection Act.

In implementing its duties, the Commission plays a key role in the development of policies and strategies designed to ensure the protection of marine mammals as functioning elements of healthy marine ecosystems. The Commission coordinates with several federal agencies on science and conservation matters. Regular, ongoing activities of Commission staff, under the guidance of the Commissioners and the CSA, ensure the scientific and policy input of the Commission is reflected in a wide array of actions, including:

- reviewing permit and incidental take authorization applications, proposed regulations, National Environmental Policy Act documents, and Endangered Species Act listing proposals (more than 115 recommendation letters were submitted in FY 2013);
- developing or reviewing marine mammal policy and guidance documents;
- producing reports to Congress and relevant agencies of particular importance to the conservation of marine mammals and maintenance of healthy ecosystems;
- reviewing results of research, providing funding for research, and identifying significant gaps in research and seeking ways to close such gaps;
- participating in scientific and policy organizations and meetings, both domestic and international; and
- conducting the Commission's Annual Meeting and producing the Commission's Annual Report to Congress.

These activities, which may focus on marine mammal species or populations of the greatest concern, ensure that the Commission is meeting the duties laid out in its mandate, with a particular emphasis on the oversight of science and conservation conducted by the major federal agencies that engage in activities relating to marine mammals.

Cross-Agency Collaborations

As the independent federal agency charged with oversight of implementation of the MMPA, the Commission works closely with those agencies most directly charged with carrying out the mandate of the MMPA. These include the National Oceanic and Atmospheric Administration's NMFS and National Ocean Service (NOS), and the Department of Interior's FWS and BOEM. The Commission's interactions with these federal agencies involve support and coordination on research and stock assessments, including identification of key research priorities, coordinating this work to eliminate duplication and ensuring effective use of scarce research funds. In addition, the Commission works with federal agencies to ensure that scientific results are rigorously reviewed and used in management to develop, improve, or evaluate mitigation measures. Other federal agencies, such as the U.S. Navy and other military branches, provide financial or in-kind support for research on the impacts on marine mammals of their activities. The Commission has sought feedback on the objectives, goals, and high-level priorities of this Strategic Plan from all of these federal agencies, as well as with Congressional contacts.

Socioeconomic Considerations of the Commission Mandate

While the Commission is not a regulatory agency, it serves in an oversight role by assessing the impacts of various human activities on marine mammals and recommending mitigation and monitoring measures to minimize those impacts. As an advocate for ecosystem-based management, the Commission acknowledges that humans are part of the marine ecosystem. A healthy economy is essential to the nation's well-being, but many activities that contribute to the global economy can pose risks to marine ecosystems, including marine mammals. The Commission promotes a proactive approach for resolving potential conflicts by working with resource managers and other federal agencies to address problems before they become intractable and their resolution more costly. By exploring science-based methods to reduce operational and ecological interactions between marine mammals and various human activities,

and improving overall scientific knowledge of marine mammals, the Commission seeks to protect marine mammals while not unnecessarily constraining socially or economically beneficial activities.

In some cases, human activities stem from societal needs, such as for national defense, or provide benefits, such as maintaining marine mammals as important subsistence and cultural resources for Alaska Native communities. While it is difficult to express a value to society for defense and subsistence, it is clear that they are important to the people of the United States, and therefore the Commission needs to carry out its work in recognition of that importance. In providing recommendations for monitoring and mitigating the impacts of activities associated with resource extraction, such as offshore energy development and fishing, the Commission supports measures that are designed to reduce injury and mortality from these commercial activities. While the MMPA does not explicitly require considering economic impacts when determining possible monitoring and mitigation measures to reduce the impact on marine mammals of human activities, they are one of several factors weighed by action agencies. The offshore oil and gas industry is clearly a significant sector of the economy that generates jobs and income. Fishing – both commercial and recreational – is another economically important sector where impacts on marine mammals need to be monitored and mitigated. The Commission engages in addressing such impacts via membership in Take Reduction Teams and by providing comments on proposed regulations and National Environmental Policy Act (NEPA) documents. Marine mammal tourism (e.g., whale watching), commercial shipping and recreational cruises, sport fishing, coastal construction, and a broad range of inland activities (that impact inland water flow and quality, and therefore marine ecosystem health) are just a few of the many other human activities that can impact marine mammals and their ecosystems.

The Commission believes that both the public and the private sector should contribute to the assessment of impacts and to the development of a better understanding of marine ecosystems and required mitigation and monitoring measures. Obtaining good estimates of abundance and trends and better knowledge of the distribution of species, subspecies, and stocks is essential. Several models of collaboration and support for federal agencies from other government entities (e.g., U.S. Navy support of NMFS and BOEM research, BOEM support of NMFS research) and from the private sector (e.g., the oil and gas industry's Joint Industry Program and the Chukchi Sea Environmental Research Program) already exist. The enactment of the MMPA was a clear indication of the importance of healthy marine ecosystems and specifically of the value of marine mammals to the people of the United States. The nation's continued commitment to this goal is evidenced by the expectation that commercial activities be mitigated and monitored to ensure the maintenance of healthy marine mammal stocks.

The Strategic Plan

Vision

Global marine mammal populations are restored and maintained as functioning elements of healthy marine ecosystems for future generations, with human activities managed to minimize impacts on those populations and systems.

Mission
To ensure consistency with the MMPA and other relevant mandates to protect and conserve marine mammals, the Commission provides independent, science-based oversight of domestic and international policies and actions of federal agencies addressing human impacts on marine mammals and their ecosystems.

Strategic Goal
Ensure the protection and conservation of marine mammals as functioning elements of healthy marine ecosystems through science-based mitigation and monitoring of anthropogenic impacts on marine mammal populations and their ecosystems.

In implementing its mandate under the MMPA, the Commission provides oversight of the multiple federal agencies that address marine mammal protection and conservation through monitoring and mitigation of activities that impact these mammals. The Commission provides input on draft environmental assessments and impact statements, proposed rules, permit and authorization documents, and general policy development with regard to marine mammals. Although not a regulatory agency, the Commission's comments must be taken into consideration by the relevant action agencies. Should the agency choose not to follow the Commission's recommendations, they must provide a rationale for taking a different course of action. The Commission's input is viewed by a broad array of federal agencies and private sector partners as based on the best available science and focused on the primary purpose of the MMPA – i.e., the protection and conservation of marine mammals and the ecosystems of which they are a part.

Strategic Objectives
During the next five years, the Commission's regular, ongoing activities and high priority projects will focus on five primary Strategic Objectives. Each Strategic Objective reflects specific elements of the duties under the MMPA mandate and will serve as the basis for High Priority Projects elaborated in this document. Note that as an oversight agency with no regulatory authority, the Commission must rely on working closely with other federal agencies and state, local, and tribal governments to ensure tangible progress towards the strategic objectives during the next five years.

Background and justification for each of these Strategic Objectives are provided in the following section, with a link to the corresponding seven duties of the Commission under the MMPA, as well as the High Priority Projects that are germane to that objective. The Commission recognizes that it is increasingly challenging for government agencies, including the Commission, to harness the financial and human resources to fully address all of the issues surrounding marine mammals. Depending upon budgets in the fiscal years 2015-2019, additional and/or expanded High Priority Projects may allow the Commission to enhance efforts to fulfill its Strategic Objectives.

Strategic Objective #1: Marine mammal populations in the Arctic are maintained as viable functioning elements of their ecosystems through management measures that address direct and indirect effects of climate change and the ensuing economic, scientific, and other activities in the region.

MMPA Duties 1, 2, 4, and 7; High Priority Project #1

The Arctic warrants special attention because its marine mammals, ecosystems and dependent coastal communities are profoundly impacted by climate change. Decreases in sea-ice area, thickness, and duration are significantly altering the habitats of a number of marine mammal species (e.g., polar bear, walrus, ringed seal) that depend on sea ice and its snow cover for resting, molting, hunting, reproduction, and refuge from predators. Of additional concern is that Arctic species likely will be indirectly impacted by effects of climate change (e.g., ecosystem shifts, coastal erosion, ocean acidification, pathogen survival and transmission), and by a variety of increasing or new human activities in the region (e.g., shipping, energy production, commercial fishing, coastal development). Adequately addressing these many challenges in the Arctic will require increased efforts to collect and analyze data for marine mammal stock assessments and to better understand marine ecosystems, as well as to assess the impacts of human activities. Commercial development, which promises greater economic opportunities for many Alaskans, requires careful management, in consultation with Alaska Natives, so as not to compromise the subsistence and cultural value of marine mammals to these communities. In addition, to maintain the livelihoods of Alaska Native Communities and ensure the sustainability of their hunts for subsistence purposes, accurate and timely data are needed on harvest numbers, including marine mammals struck and lost.

Strategic Objective #2: Scientifically robust mitigation and monitoring measures are developed, refined, and implemented in order to prevent, minimize, or mitigate the impacts of offshore oil and gas and renewable energy activities on marine mammals and their ecosystems.

MMPA Duties 2, 3 and 7; High Priority Project #3

Routine oil and gas operations – which generate sound from seismic surveys, drilling, and support activities (including increased vessel traffic), and may discharge drilling mud, cuttings, and contaminated water into the marine environment – can have a harmful effect on marine mammals. The potential severity of effects associated with these activities is highly variable and, for sound-generating activities, oftentimes is context-specific. The development, refinement, and implementation of both general and project- or site-specific mitigation measures are critical for preventing injuries and minimizing harm from these activities. In addition, many lessons from the Deepwater Horizon oil spill and response efforts need to be incorporated into future planning and actions for offshore oil and gas development. That spill event illustrated the enormous challenge of responding to spills in deep-water environments, the potential adverse effects of response and cleanup efforts, and the complex nature of interactions between spilled oil, dispersants, and the biophysical properties of surrounding waters. As with previous spills, that event demonstrated the difficulty of assessing and assigning injuries and other impacts in the absence of adequate baseline information, particularly for marine mammals. Perhaps most importantly, the event highlighted the difficulty that will be faced in responding to spills under even more difficult environmental and logistical conditions, such as in the Arctic. Offshore renewable energy projects, including those derived from wind, waves, tides, and currents, will present different challenges. The Commission's main concern for marine mammals with regard to offshore renewable energy is the sound generated by pile-driving during construction. Further research is needed regarding the potential for disturbance of marine mammals from high-resolution geophysical surveys used to assess the suitability of

sites for offshore renewable energy development, and from the operation, maintenance, and decommissioning of renewable energy facilities.

Strategic Objective #3*:* Marine mammal strandings are more thoroughly investigated and analyzed to improve understanding of the factors causing mortality and affecting the health of marine mammals, determine the efficacy of measures such as ship speed reduction to reduce mortality, and elucidate the relationships between marine mammal health and human health and ecosystem services.

MMPA Duties 2 and 3; High Priority Project #4

Before the passage of the MMPA, large numbers of marine mammals were killed for commercial use (i.e., for food, oil, clothing, and other products). The thousands of commercially harvested animals allowed carcass-based studies of reproduction and health, which, along with catch statistics, formed much of the basis for management measures. The MMPA stopped commercial harvests and, subsequently, biologists have relied more on studies of both stranded and free-ranging animals to assess species' ranges, movement patterns, habitat use, overall health, demographics, foraging ecology, and, perhaps most importantly, threats (e.g., fishery interactions, ship strikes, contaminants, pathogens, harmful algal blooms, human-generated sound). Information from stranded animals is valuable, as it helps identify, characterize and quantify threats, and it can be used to detect trends in human-related deaths and the adequacy of measures implemented to reduce harm to marine mammals, as well as the marine environment. In particular, information from marine mammal strandings has been critical to investigating and understanding unusual mortality events (UMEs) that occur in all U.S. coastal regions, the most recent substantial ones occurring along the U.S. east coast, in Alaska, and in the Gulf of Mexico. Congress recognized the importance of the science and management of strandings in enacting Title IV of the Act (Marine Mammal Health and Stranding Response) that followed from the bottlenose dolphin die-off along the U.S. east coast in 1988-89. Increases in the number of UMEs reflect the need for further research and restoration activities in nearshore marine environments and for more research on the relationships among human health, coastal development, and ecosystem services. When a marine mammal stranding occurs in a populated coastal area, public concerns are raised over the causes of such strandings and the potential for human health impacts, whether direct (i.e., sick and dying mammals on the beach transmitting disease to humans) or indirect (i.e., implications for water quality or seafood safety).

Strategic Objective #4: Anthropogenic threats to marine mammals, particularly those most vulnerable to extinction, are identified and reduced in the coastal and fresh waters of other nations and on the high seas worldwide, through bilateral and multilateral scientific and conservation efforts and sharing of expertise.

MMPA Duties 1 and 5; High Priority Project #2

- Multilateral mechanisms for science and stewardship in the Antarctic have been strong since the establishment of the Antarctic Treaty and later the Convention for the Conservation of Antarctic Marine Living Resources, but it is not clear if they are keeping pace with the impacts of various human activities, whether direct (e.g., fishing, tourism) or indirect (e.g., climate change, competition between krill fisheries and krill predators, such as marine mammals). The efforts to

establish a marine protected area in the Ross Sea demonstrate the continued willingness of many countries to take significant multilateral measures towards protection of this highly productive marine ecosystem, which sustains large numbers of Antarctic marine mammals. The Commission continues to have a strong interest in the conservation of the Antarctic ecosystem and its marine mammals.

- Commercial activities by U.S.-based enterprises in the waters of other nations and/or on the high seas can have negative impacts on marine mammals in many corners of the world, particularly through extractive activities such as offshore energy development and fishing. In certain cases, these activities affect marine mammal stocks that straddle and/or occur part of the time in U.S. waters. Also, these activities may involve the extraction of resources that are exported to the United States, whether or not under U.S.-based production, and therefore impacts on marine mammals are linked to U.S. import demand. For example, U.S. imports of seafood (over 85 percent of total U.S. seafood consumption) should not become an incentive for fisheries that have high levels of bycatch mortality and other ecosystem impacts on marine mammals.
- In the developing world, bycatch in large and small-scale commercial and artisanal fisheries is a ubiquitous and often unregulated source of mortality of freshwater, coastal, and pelagic species of cetaceans, pinnipeds, and sirenians. Direct taking of marine mammals, including for consumption or for bait, remains a significant source of mortality. Incidental and intentional mortality, combined with environmental degradation, has led to the endangerment of many coastal and freshwater species and populations. In some cases, there is considerable uncertainty about the status of these populations due to lack of survey data or other scientific information. It is therefore nearly impossible to accurately assess the impacts of any direct or indirect takes.

Strategic Objective #5: Understanding of human impacts on marine mammals and their ecosystems, and the management of those impacts, is improved through enhanced scientific research, policy analysis, and information dissemination.

All MMPA Duties and High Priority Projects

Human activities have a profound effect, both directly and indirectly, on a broad range of marine mammal species.

- Fishing is considered to be the most serious threat to many marine mammals, through direct (e.g., bycatch mortality) or indirect (e.g., competition for prey) impacts. The MMPA imposes an extensive research and management framework on NMFS and FWS to address these fishery impacts, and considerable progress has been made toward managing direct fishery interactions. The management framework is based on methods to estimate the ability of marine mammal populations to sustain human-related mortality (i.e., the potential biological removal (PBR) of each marine mammal stock), assessment of the numbers of animals taken, and take reduction efforts based on structured consultations among fishery managers, scientists, conservationists, and fishermen. In many cases, the lack of resources to collect fishery bycatch data (e.g., fishery observer programs), to assess the abundance and trends of marine mammal stocks (e.g., marine mammal surveys), and to test the effectiveness of mitigation efforts has resulted in poor or dated management information, particularly PBR estimates. The uncertainty and lack of data create a

need for precautionary fishery bycatch measures that may be more restrictive than necessary. Lack of data and research has also limited progress in assessing the ecological effects of fishing on marine mammals and marine ecosystems, which are often much more challenging to assess and mitigate.

- Most marine mammals depend primarily on hearing for many of their activities, including feeding, reproduction, predator avoidance, and migration. This makes it particularly important to understand the effects of introducing human-generated sound into the marine environment. Underwater, low-frequency sound can travel and be detected thousands of kilometers from the source. Major sources of human-generated sound include commercial shipping, military sonar, geophysical surveys (e.g., for mapping) and coastal development (e.g., pile driving and removal). In the past decade, concerns regarding introduction of sound into the marine environment have led to a marked increase in studies related to potential effects from sound. The main concerns with regard to such sounds are that they may injure marine mammals (in extreme cases, leading to death), alter behavior in ways that affect an animal's ability to survive and reproduce (e.g., decreased foraging efficiency, change in habitat-use patterns, disruption of mother-offspring bonds), or mask important sounds on which marine mammals depend (e.g., conspecific calls for communication, or sounds for detecting predators or prey).
- Ship strikes are a growing source of injury and mortality to whales. Despite some progress in addressing this problem through ship speed and routing restrictions, little is known about the factors that determine the degree of risk to different populations or how best to mitigate that risk. In addition to commercial shipping and other vessel activity, vessel presence and potential for ship strikes will increase with expansion of offshore oil and gas as well as renewable energy development.
- Improved understanding and mitigation of the effects of point and non-point source environmental contamination, harmful algal blooms, and epizootic diseases will contribute to maintaining marine mammal health and preventing population-level impacts.
- Unobserved mortality, whether from vessel strikes, entanglement, or other factors, continues to be a key issue. Although few methods have been developed to estimate the magnitude of unobserved mortality, current estimates of the share of deaths actually observed range from zero to 17 percent.
- Finally, climate change is a necessary "backdrop" to virtually any effort to assess marine mammal status and threats. Marine mammal scientists have already observed impacts of climate change on some marine mammals, both at the individual and population level. Some of these impacts may result in wider or modified distributions (e.g., more gray whales are now ranging further north through the Bering Straits and eastward into the Beaufort Sea than they did historically). Other impacts include habitat alterations (e.g., displacement of walruses from benthic food sources due to declining sea ice) and changes in the abundance and distribution of prey (e.g., declining availability of prey for young monk seals in the Northwest Hawaiian Islands).

High Priority Projects

In addition to its regular activities (correspondence, Annual Report, Annual Meeting, etc.), the Commission undertakes a number of High Priority Projects that serve as performance goals and

contribute to its strategic goals and objectives. The High Priority Projects currently planned for FY 2015-2019 are described below. As budgets, priorities, and events unfold over the next five years, the Commission will consider additional projects and/or modifications to the projects listed below. Progress on these projects will be documented in various Commission communications, including the annual Performance Assessment Review submitted to the Office of Management and Budget.

High Priority Project #1:

Promote and help coordinate research, monitoring, conservation efforts, and federal policies regarding marine mammals in the Arctic; and provide guidance on domestic and international marine mammal-related research and other activities planned or underway in the Arctic.

Problem: As noted under Strategic Objective #1 above, Arctic marine mammals and their ecosystems are profoundly impacted by climate change and the consequent increase in human activities (e.g., energy resource extraction, shipping, fishing). Habitat changes are adversely affecting or predicted to affect ice-dependent species, most notably the polar bear, walrus, and ice seals (i.e., for Alaska, ringed, spotted, ribbon, and bearded seals). The same factors will have potentially severe effects on Alaska Natives who depend on marine mammals for subsistence and maintenance of their culture. Furthermore, baseline conditions in the Arctic must be better understood before offshore energy development and other human activities (e.g., commercial shipping and fishing) expand further in this region. Recent efforts to assess and minimize the impacts of the Deepwater Horizon oil spill in the Gulf of Mexico highlighted information gaps and the importance of having adequate baseline information against which to assess impacts and the effectiveness of response actions to address these impacts. Considerable research is needed to support responsible development in the Arctic Ocean that does not compromise the conservation of Arctic marine mammals or negatively affect Alaska Natives' subsistence and cultural heritage associated with those marine mammals. Many studies of marine mammals are underway in the Arctic and should be well coordinated and managed under clear overarching priorities and goals.

Contributing agency program: The Commission will work with the many U.S. federal agencies regarding science and policy issues related to marine mammals in the Arctic, including the National Oceanic and Atmospheric Administration (NOAA), National Science Foundation, FWS, Department of State, U.S. Geological Survey, BOEM, as well as others with a particular interest in these matters, such as Alaska Native organizations, the State of Alaska, and the North Slope Borough and international organizations including the Arctic Council and the International Whaling Commission. In addition, discussions should include the non-governmental organizations that are engaged in the Arctic. The United States will assume the two-year chairmanship of the Arctic Council beginning in 2015, offering an excellent opportunity for increased collaboration in Arctic activities in the domestic and international arenas.

To promote and facilitate identification, cooperative planning and conduct of needed research, monitoring and conservation programs in the Arctic, this project will require the Commission, in consultation with the CSA and relevant collaborators to:

- participate in Arctic science meetings to understand ongoing research, help identify gaps, and prioritize research and conservation needs;
- assist in identifying needed baseline research to support impact assessment and inform mitigation and monitoring efforts for industry activities;
- support research to understand shifting marine mammal distributions and ecological relationships due to climate change in the Arctic;
- participate in the development of federal and international strategic plans for Arctic marine mammal and ecosystem research; and
- develop and provide recommendations to the responsible science and regulatory agencies for research, monitoring, and regulatory priorities and allocation of funds and logistical support.

High Priority Project #2:

Develop global priorities for marine mammal research and conservation. Such priorities will help maximize U.S. government effectiveness and influence the efforts of other nations to protect marine mammals, enable the recovery of endangered and depleted species and populations, and maintain healthy marine ecosystems.

Problem: While federal efforts focus primarily on marine mammal species and populations that occur, at least in part, in U.S. waters, marine mammals and marine (and freshwater) ecosystems also face a wide range of human-related threats at the global level (i.e., in foreign and international waters). Numerous marine mammal populations outside U.S. waters have been poorly studied and many are declining as a direct or indirect consequence of the same human activities that affect populations in U.S. waters (e.g., fishing, shipping, sound, contaminants, harmful algal blooms, directed taking). Maximizing the benefits of existing international resources requires setting research and conservation priorities for marine mammals and ecosystems on a global basis in order to complement and set in context the Commission's ongoing commitments to improve the conservation of species of special concern in U.S. waters.

Contributing agency programs: To develop priorities the Commission will review available assessments, enlist experts from other agencies (including NMFS), organizations, and nations to complete targeted assessments of marine mammal taxa, and/or support such assessment efforts by others (e.g., IUCN Specialist Groups). The Commission will also leverage scientific expertise from the Scientific Committee of the International Whaling Commission and the Society for Marine Mammalogy.

This project will require the Commission to:

- complete a global assessment of all baleen whales (i.e., mysticetes);
- identify and summarize relevant information on the world's 25 most threatened species, subspecies, or populations of toothed cetaceans (i.e., odontocetes) – dolphins, porpoises, and toothed whales;
- provide support (technical, funding) to IUCN Specialist Groups for updating Red List status assessments of cetaceans, pinnipeds, and sirenians;

- integrate or encourage others to integrate species-based assessments into broader analyses of the major threats to marine mammals and changes in those threats over time and by region, and to identify the species and populations most in need of research, monitoring, and conservation, including those that occur both inside and outside U.S. jurisdiction; and
- provide information on global marine mammal conservation priorities to Congress, U.S. agencies, and marine mammal research and conservation organizations globally.

High Priority Project #3:

Promote, facilitate, and encourage the development of comprehensive, long-term monitoring programs for marine mammals to better understand potential impacts of offshore energy activities.

Problem: The individual and cumulative impacts of offshore energy development on the survival and reproduction of marine mammal populations are largely unknown, despite the long history of energy development activities on the U.S. Outer Continental Shelf. A comprehensive assessment of those impacts depends on the availability of (1) baseline information on the abundance, distribution, stock structure, movement patterns, demographics, and health of marine mammal populations; (2) environmental and oceanographic conditions at energy development locations; and (3) better information regarding the impacts of energy-related activities, such as sound associated with geophysical surveys, drilling, pile driving, and support activities, and exposure to oil and other contaminants from both routine discharges and catastrophic spills. Collecting baseline information is challenging because environmental conditions vary from year to year due to both natural perturbations and human activities. Understanding this variability requires a long-term commitment of effort and resources to monitoring marine mammal populations before, during, and after energy development activities. If such information is not collected, insufficient knowledge will be available from which to gauge adverse effects associated with energy development and for responsible conservation of the trust resources within marine ecosystems. Comprehensive, long-term monitoring programs are a key part of the development of a more robust regulatory framework by NMFS, BOEM, and FWS for authorizing marine mammal takes associated with offshore energy activities.

Contributing agency program: The Commission will identify high-priority data gaps and strategies for addressing them in coordination with the regulatory agencies, the oil and gas and renewable energy industries, non-governmental organizations, and the scientific research community.

This project will require the Commission and relevant partners to:

- convene a workshop in FY15 or FY16 to identify the high-priority data gaps for assessing the status and trends of marine mammal populations in at least one active offshore energy area and develop a framework for addressing those gaps over a multi-year timeframe. The workshop will evaluate both traditional and new or recently developed data collection methods and platforms, including vessel and aerial surveys, passive acoustic monitoring, photo-identification and biopsy surveys, health assessments of free-ranging animals, examinations of stranded animals, and

activity-dependent data collection by protected species observers and industry-contracted scientists;

- highlight the need to include specific data collection activities in federal agency research and planning documents, industry research and monitoring programs, and industry monitoring requirements that are part of incidental take authorizations issued under MMPA and the Outer Continental Shelf Lands Act; and
- expand this approach and develop similar strategies for long-term monitoring of marine mammal populations in other offshore energy areas.

High Priority Project #4:

Promote and facilitate development of a national coordinated marine mammal health monitoring system as a component of the Integrated Ocean Observing System (IOOS).

Problem: A recent rise in reported diseases in marine organisms and marine mammal stranding events has raised concerns that ocean health is deteriorating. This rise has important implications not only for marine organisms, but also for human food safety and public health. The Marine Mammal Health and Stranding Program of NMFS, including the Prescott Program, addresses stranding response and data collection and sharing. However, there are no consistent, integrated long-term data sets that link the information obtained from strandings with other critical ocean indicators to assess the spatial and temporal changes in marine mammal health and the environmental factors contributing to those trends. Marine mammals can be sentinels of ocean health and some of their diseases are transmissible to humans – for example two strains of influenza virus detected in seals on both the east and west coasts of North America, *Brucella* spp. detected in bottlenose dolphins in the Gulf of Mexico, and *Coxiella burnetti* detected in marine mammals in Washington state and the Pribilof Islands.

Contributing agencies and programs: The project requires cooperation with NMFS's Marine Mammal Health and Stranding Response Program, the NOAA-led IOOS Program Office, and the non-federal IOOS Regional Associations. The project will integrate existing marine mammal health and stranding data, initially at a regional level, and ultimately at a national level under IOOS.

This project will require the Commission and relevant partners to create a near real-time data distribution and archiving system to incorporate marine mammal health and mortality information from California into IOOS, including mechanisms to quantify use of the data through this system. This will allow the systematic collection of data on marine mammal health and mortality for California through collaborations with NOAA, FWS, and California Department of Fish and Wildlife, and incorporate those data into IOOS through CeNCOOS, one of the west coast Regional Associations (non-federal partners of IOOS). This California trial will be evaluated (including limitations of the approach and data available), and a report will be prepared on trends detected in marine mammal health and stranding patterns.

Based on the results of this trial, the Commission and its partners will explore possible expansion of the system developed for California to include the contiguous west coast and consider including health and stranding information from other marine mammals under the jurisdiction of agencies other than NMFS

(sea otters, walruses, manatees) and other marine species such as sea birds. The Commission will lead an interagency workshop to develop a national strategy for marine mammal health and mortality mapping using information from the west coast study to guide the effort. The health mapping data will be used to illustrate the role of marine mammals as ecosystem sentinels by integrating health data and information on threats (e.g., ships and other sound sources).

High Priority Project #5:

Identify improvements to marine mammal stock assessments by facilitating the development of estimation methods that account for unobserved serious injuries and deaths of whales due to entanglements in fishing gear or ship strikes.

Problem: The number of large whales that are seriously injured or killed by entanglement in fishing gear or by being struck by ships appears to be growing. The mitigation and conservation actions taken by NMFS are in large part determined by the magnitude of those injuries and deaths relative to the agency's estimates of the PBR level for each stock of whales. NMFS's estimates of how many whales are seriously injured or killed by entanglement or ship strike are based on strandings, at-sea observations, and reports from fisheries observers, fishermen, and other mariners. Experts agree, however, that those figures typically are underestimated. In most cases, the true number of whales killed or seriously injured is probably much greater than the number detected because of the loss of carcasses due to sinking and scavenging, the failure to discover stranded whales in remote areas, and the difficulty of detecting and assessing injuries at sea. For example, a recent study of 14 species of whales and dolphins in the Gulf of Mexico estimated that the number of dead animals detected was on average just 2.0 percent of the likely total mortality (natural plus human-caused) in those species. The estimated detection rate for sperm whales, the only large, common whale species in that study, was 3.4 percent. In addition, researchers estimated that over the course of a two-year unusual mortality event along the Pacific coast just 4 to 14 percent of the carcasses of gray whales that died were detected. These studies, and several others, suggest that the actual total mortality rate for large whales is much greater than the rate at which deaths are detected. If so, it is likely that in many cases, the impacts of fishing and ship strikes on large whales are substantially underestimated (i.e., the actual human-caused mortality rate is much greater than the rate at which human-caused deaths are detected), and consequently agencies are not mitigating those impacts adequately. It is clear that new approaches are required if the impacts of fishing, ship traffic, and other anthropogenic mortality factors on large whales are to be assessed accurately.

Contributing agency program: The Commission will work closely with NMFS, the lead research and conservation agency responsible for the large whales; states; academic scientists; and the relevant industries to improve marine mammal stock assessments through the development of estimation methods that account for unobserved serious injuries and deaths due to entanglement in fishing gear or ship strikes.

This project will require the MMC and relevant partners to:

- collaborate with NMFS to develop methods to estimate accurately the total numbers of human-caused serious injuries and deaths of large whales through workshops focusing on process descriptions and modeling;
- provide seed funding, as available, for research and synthesis of existing data on population dynamics of large whales including data on entanglement and ship strike rates; and
- collaborate with NMFS regarding the incorporation of the serious injury and mortality estimates into its stock assessments and into mitigation and conservation actions.

Major Management Priorities

The Commission continues to strive for increased effectiveness and efficiency in accomplishing its most critical mission. Personnel and financial resources are dedicated to the highest-priority work as mandated by Congress and as developed through regular strategic planning and prioritization exercises. High-priority performance goals are established under the leadership of the three Commissioners, in consultation with the Committee of Scientific Advisors. Those goals are meant to reflect the most critical issues facing the agencies responsible for implementing the MMPA. The goals are also informed by Commission efforts to establish research priorities to guide federal funding for marine mammal research and conservation, particularly in times of flat or declining agency budgets. For example, the Commission's Survey of Federally Funded Research seeks to identify redundancies and/or gaps in scientific activities, in an effort to ensure the most effective use of limited funds.

In addition to the high-priority goals mentioned above, the Commission will achieve operational efficiencies through the following management-focused priority actions:

- reduce and realign administrative staff from three to two full-time equivalent positions so that more staff effort is available for core programs;
- streamline tasks and reduce costs by using available technology, (i.e., use of desktop publishing software, video conferencing) and sharing resources with other federal agencies (e.g. library services);
- reduce costs of publications through on-line publishing rather than printing hard copies of the Annual Report to Congress, the Survey of Federally Funded Research, and other reports;
- make optimal use of detailees, interns, and fellows;
- encourage public-private collaboration as appropriate, including Foundations and NGOs, particularly for covering travel costs of partners who are critical to successful workshops and meetings; and
- promote a policy, as appropriate, that makes Commission research funding contingent upon matching funds or in-kind support.