

2018 United States Voluntary National Cetacean Conservation Report

Submitted by the Government of the United States to the International Whaling Commission's Conservation Committee at the 67th Meeting of the International Whaling Commission September 2018

1. Legal and other mechanisms

1.1. The Marine Mammal Protection Act

All cetaceans in U.S. waters are protected under the Marine Mammal Protection Act (MMPA). It is illegal for any person or vessel subject to U.S. jurisdiction to take any marine mammal, subject to certain exceptions. Take is defined in the MMPA as “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture or kill any marine mammal.” The objectives of the MMPA are to maintain the health and stability of marine ecosystems and maintain marine mammal stocks at optimum sustainable population levels, taking into account the carrying capacity of the ecosystem.

Cetacean species or stocks that are below the optimum sustainable population level are considered “depleted” under the MMPA, and cetaceans listed under the Endangered Species Act (ESA) are also considered depleted under the MMPA. The cetacean species considered depleted under the MMPA that are not listed under the ESA (see **Section 1.2**) are:

- Pantropical spotted dolphin, Pacific northeastern offshore stock
- Eastern Spinner dolphin
- Killer whale, AT1 Transient stock
- Beluga, Yakutat Bay subgroup of Cook Inlet stock
- Beluga, Sakhalin Bay-Nikolaya Bay-Amur River stock (proposed)
- Common bottlenose dolphin, Western North Atlantic Central Florida Coastal stock
- Common bottlenose dolphin, Western North Atlantic Northern Florida Coastal
- Common bottlenose dolphin, Western North Atlantic Northern Migratory Coastal
- Common bottlenose dolphin, Western North Atlantic South Carolina/Georgia Coastal stock
- Common bottlenose dolphin, Western North Atlantic Southern Migratory Coastal

Permits or other authorizations are required under the MMPA to conduct activities that are likely to result in the "taking" of a marine mammal. When applicable requirements are met, the U.S. National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) can, inter alia, authorize the take or import of cetaceans (or their parts) for scientific research, enhancing the survival or recovery of a marine mammal species or stock, commercial and educational photography, public display, and incidental take during commercial fishing operations or non-fishery activities.

The MMPA also established the Marine Mammal Commission (Commission) as an independent agency of the U.S. government. The Commission advises and makes

recommendations to both the executive and legislative branches of the U.S. government regarding measures needed to promote the policies and provisions of the Act, which are intended to conserve marine mammals and marine ecosystems. In addition, the Commission supports a research program to identify and guide marine mammal conservation measures at local, regional, national, and international levels.

The MMPA contains provisions to address the incidental mortality and serious injury of marine mammals in both domestic and foreign commercial fisheries. With respect to foreign fisheries, section 101(a)(2) of the MMPA states that the Secretary of the Treasury shall ban the importation of commercial fish or products from fish which have been caught with commercial fishing technology which results in the incidental kill or incidental serious injury of ocean mammals in excess of United States standards. In August 2016, NOAA Fisheries Service issued a final rule implementing these import provisions of the MMPA. In March 2018, NOAA Fisheries published the Final List of Foreign Fisheries under this rule. More information on the rule and the published List of Foreign Fisheries are available online at: <https://www.fisheries.noaa.gov/foreign/international-affairs/list-foreign-fisheries>.

The new rule requires nations exporting fish and fish products to the United States to be held to the same standards as U.S. commercial fishing operations. It establishes the criteria for evaluating a harvesting nation's regulatory program for reducing marine mammal bycatch and the procedures required to receive authorization to import fish and fish products into the United States. To ensure effective implementation, the rule establishes a 5 year exemption period to allow foreign harvesting nations time to develop, as appropriate, regulatory programs comparable in effectiveness to U.S. programs. By 2022, all seafood product from fisheries seeking export to the U.S. is required to have received a comparability finding that the fisheries' marine mammal protection standards are comparable in effectiveness to U.S. programs.

More information on NMFS' marine mammal protection efforts is available online at: <https://www.fisheries.noaa.gov/topic/marine-mammal-protection>.

1.2. The Endangered Species Act

In the U.S., a cetacean species deemed to be "in danger of extinction throughout all or a significant portion of its range" is protected as "endangered" under the Endangered Species Act (ESA). Cetacean species which are likely to become endangered within the foreseeable future are protected as "threatened." The ESA prohibits the taking of any endangered or threatened species, including any distinct population segment (DPS) of a species, subject to certain exceptions. Take is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Cetacean species (including DPSs), which are currently listed under the ESA include:

- Beluga whale, Cook Inlet DPS (not including Yakutat Bay animals) (endangered)
- Blue whale (endangered)
- Bowhead whale (endangered)
- Chinese River dolphin / baiji (endangered)

- False killer whale, Main Hawaiian Islands insular DPS (endangered)
- Fin whale (endangered)
- Gray whale, all stocks except the eastern North Pacific stock (endangered)
- Humpback whale (endangered Cape Verde Islands/Northwest Africa DPS, endangered Western North Pacific DPS; endangered Arabian Sea DPS, endangered Central America DPS; threatened Mexico DPS)
- Indus River dolphin (endangered)
- Killer whale, Southern Resident DPS (endangered)
- Maui dolphin (endangered)
- North Atlantic right whale (endangered)
- North Pacific right whale (endangered)
- Sei whale (endangered)
- South Island Hector's dolphin (threatened)
- Southern right whale (endangered)
- Sperm whale (endangered)
- Taiwanese humpback dolphin (endangered)
- Vaquita (endangered)

In 2016, NMFS [revised the ESA listing for the humpback whale](http://www.nmfs.noaa.gov/pr/species/mammals/whales/humpback-whale.html) to identify 14 separate DPSs. One DPS was listed as threatened, four DPSs were listed as endangered, and nine other DPSs were found to not warrant ESA listing. More information on the revised ESA listing of the humpback whale is available online at: <http://www.nmfs.noaa.gov/pr/species/mammals/whales/humpback-whale.html>.

The ESA requires the federal government to review activities that may adversely affect threatened or endangered species and their critical habitats. Accordingly, all U.S. federal agencies must consult with NMFS or the U.S. Fish and Wildlife Service on activities they directly carry out, authorize, or fund that may affect a listed species. These interagency consultations (also called “section 7” consultations), assist federal agencies to ensure that their actions do not jeopardize the continued existence of a species or destroy or adversely modify designated critical habitat. The Services document their findings in written Biological Opinions, which may authorize limited incidental "take" of ESA-listed species while specifying the amount or extent of take anticipated and the measures necessary to minimize impacts from the federal action.

For threatened or endangered marine mammals that spend time outside U.S. waters, the U.S. works with other nations to promote the recovery of the shared stocks. In particular, NMFS coordinates closely with the Canadian Department of Fisheries and Oceans on efforts to recover endangered North Atlantic right whales and Southern Resident killer whales.

More information on NMFS' endangered species conservation efforts is available online at: <https://www.fisheries.noaa.gov/topic/endangered-species-conservation>.

1.3. The National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires all federal agencies to consider the effects of their activities on the human environment. Federal activities that may affect cetacean and other wildlife species, or their habitats, or other components of the human environment, must undergo an environmental analysis under NEPA. Activities that may affect cetaceans include seismic surveying, marine energy development, military exercises, coastal development (e.g., dredging, bridge construction, and port expansions), and scientific research activities.

1.4. The National Marine Sanctuaries Act

The U.S. also protects cetaceans and their habitat through the designation of national marine sanctuaries, authorized under the National Marine Sanctuaries Act. National marine sanctuaries, as well as marine national monuments, manage and protect designated areas of the nation's oceans and Great Lakes and provide habitat for multiple cetacean and other protected species. NOAA's Office of National Marine Sanctuaries serves as the trustee for the National Marine Sanctuary System encompassing more than 600,000 square miles of marine and Great Lakes waters from Washington State to the Florida Keys, and from Lake Huron to American Samoa. The network includes a system of 13 national marine sanctuaries and the Papahānaumokuākea and Rose Atoll marine national monuments. The Hawaiian Islands Humpback Whale National Marine Sanctuary, one of the 13 designated sanctuaries, was designated specifically to protect humpback whales that occur in Hawaiian waters during their breeding/calving season during the winter months. Other sanctuaries provide important habitat for other large and small cetaceans. More information on the National Marine Sanctuary System is available online at: <https://sanctuaries.noaa.gov/>

2. Current Government programs related to cetacean conservation

The U.S. conducts population abundance and distribution surveys within the US EEZ and Eastern Tropical Pacific (ETP) waters, which aid in management actions to prevent or reduce human-caused mortality and injury of various cetacean species.

2.1. Cooperation with States, Tribes, Alaska Native Organizations, and Non-Governmental Organizations

Under the ESA, NMFS enters into agreements with states that establish and maintain an "adequate and active" program for the conservation of endangered and threatened species. Once a state enters into such an agreement, NMFS provides federal funding through the Species Recovery Grants to States a competitive grant program for implementation of the state's conservation program. States use federal grant funding to support management, outreach, research, and monitoring projects with direct conservation benefits for threatened and endangered species. A separate grant program - the Species Recovery Grants to Tribes Program - supports similar conservation efforts through grants to federally recognized tribes.

NMFS also has cooperative agreements with Alaska Native organizations to conserve marine mammals and co-manage subsistence hunting of cetaceans and other marine mammals. Cooperative agreements may include federal grants to Alaska Native organizations for

collecting and analyzing marine mammal population data, monitoring the harvest of cetaceans for subsistence use, participating in cetacean research, and developing marine mammal co-management structures with government agencies.

To respond to cetacean strandings, NMFS partners with stranding network organizations in all coastal states and is developing capacity in some U.S. territories. NMFS coordinates the National Marine Mammal Stranding Network, develops best practices, assists with diagnostics and research, and provides training. In addition, NMFS provides some financial support through the John H. Prescott Marine Mammal Rescue Assistance Grant Program. The Prescott Grant Program provides grants or cooperative agreements to eligible stranding network participants for: (1) recovery and treatment (i.e., rehabilitation) of stranded marine mammals; (2) data collection from living or dead stranded marine mammals, and (3) facility upgrades, operation costs, and staffing needs directly related to the recovery and treatment of stranded marine mammals and the collection of data from living or dead stranded marine mammals. For fiscal year 2017, 33 competitive Prescott Grants were awarded in 13 states totaling \$2,830,762. For fiscal year 2018, NOAA Fisheries received 57 eligible proposals. These proposals are under review and final decisions will be made in summer 2018.

2.2. National Initiatives

National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service are responsible for developing Stock Assessment Reports (SARs) for each marine mammal stock that occurs in waters under the jurisdiction of the United States. Each stock assessment, as data availability allows, describes the stock's geographic range, abundance estimates (including a minimum population estimate), current population trends, current and maximum net productivity rates, status with respect to optimum sustainable population levels and allowable removal levels, and estimates of all annual human-caused mortality and serious injury. This information is used, among other things, to evaluate the progress of U.S. commercial fisheries in reducing the incidental mortality and serious injury of marine mammals. Three regional scientific review groups advise NMFS and the U.S. Fish and Wildlife Service on the status of marine mammal stocks, research needs for stocks, impacts to stocks, and methods to reduce mortality of marine mammals incidental to fishing operations within Alaskan waters, along the Pacific Coast (including Hawaii), and the Atlantic Coast (including the Gulf of Mexico).

NMFS also develops and implements recovery plans for cetaceans listed as “threatened” or “endangered” under the ESA. Recovery plans incorporate: 1) a description of site-specific management actions necessary to achieve recovery of the species; 2) objective, measurable criteria which, when met, would result in a determination that the species may be removed from the list; and 3) estimates of the time and costs required to achieve the plan's goal. NMFS has published final recovery plans for endangered blue, humpback, North Atlantic right, North Pacific right, fin, sperm, sei, and Southern Resident killer whales. NMFS is in the process of updating the recovery plan for endangered blue whales, and developing recovery plans for endangered Cook Inlet beluga whales and Main Hawaiian Islands insular false killer whales. All recovery plans can be found online at: <http://www.nmfs.noaa.gov/pr/recovery/plans.htm>.

2.2.1. Marine Mammal Protection Act Imports Rulemaking

In August 2016, NOAA Fisheries published a final rule implementing the fish and fish product import provisions of the Marine Mammal Protection Act (MMPA) (81 FR 54390; August 15, 2016). This rule establishes conditions for evaluating a harvesting nation's regulatory programs to address incidental and intentional mortality and serious injury of marine mammals in fisheries producing fish and fish products exported to the United States. Under this rule, fish or fish products cannot be imported into the United States from commercial fishing operations that result in the incidental mortality or serious injury of marine mammals in excess of United States standards (16 U.S.C. 1371(a)(2)). The regulations apply to any foreign nation that exports fish and fish products to the United States, either directly or through an intermediary nation. Under these provisions, nations have been given a five-year exemption period, until January 1, 2022, to come into compliance with these requirements.

As part of the five-year exemption period, NOAA Fisheries published its final List of Foreign Fisheries (LOFF) for 2017. The LOFF classifies fisheries based on the frequency of marine mammal bycatch in commercial fisheries exporting fish and fish products to the United States. The LOFF will be updated in 2020 and can be found at: <https://www.fisheries.noaa.gov/foreign/international-affairs/list-foreign-fisheries>.

The LOFF classifies fisheries based on the frequency of marine mammal bycatch in commercial fisheries exporting fish and fish products to the United States. In order to develop the LOFF, NMFS identified harvesting nations with such commercial fishing operations and classified those fisheries based on their frequency of marine mammal interactions as either "exempt" or "export" fisheries. "Export fisheries" are foreign commercial fishing operations that have more than a remote likelihood of incidental mortality and serious injury of marine mammals in the course of its commercial fishing operations. "Exempt fisheries" are foreign commercial fishing operations that have a remote likelihood of, or no known, incidental mortality and serious injury of marine mammals in the course of commercial fishing operations. It is critical that harvesting nations review and understand the implications of the LOFF and the requirements of the MMPA import provisions.

After receipt of the LOFF, harvesting nations have until July 31, 2019 to submit a progress report to NMFS detailing their efforts to develop and implement regulatory programs for reducing incidental mortality and serious injury of marine mammals in these fisheries. Guidance for submitting a progress report will be provided early in 2019. NMFS will use information from this progress report to revise and publish an updated draft and final LOFF in 2020. All harvesting nations must apply for a comparability finding for all fisheries included in the LOFF by March 1, 2021. To continue exporting fish and fish products from these fisheries to the United States after January 1, 2022, all nations must have a comparability finding for all fisheries listed on the LOFF. The conditions to receive a comparability finding for export and exempt fisheries are set out in the rule in section 216.24(h)(6)(iii). Both exempt and export fisheries must obtain a comparability finding. Failure to receive a comparability finding for any fishery on the

LOFF will result in import prohibitions for the fish and fish products from that fishery beginning in January 2022.

2.3. Research

The U.S. Government conducts and sponsors a wide variety of cetacean conservation research. Research projects include, inter alia: surveys to assess population abundance and population dynamics; satellite tagging to ascertain cetacean movement patterns and habitat use; behavioral studies; biopsy collections to provide tissue samples for genetic research on population structure; fisheries bycatch mitigation efforts (including research on fishing gear modification and acoustic deterrent devices); studies on the impacts of anthropogenic noise; and studies to assess the effectiveness of ship strike reduction strategies. In addition, NMFS partners with scientists worldwide to conduct health assessment studies of wild marine mammal populations to develop baseline data, monitor trends, and investigate the impacts of disease, natural toxins, and pollution, depending on funding availability.

2.4. Marine Mammal Commission

The Marine Mammal Commission (Commission) is an independent agency of the U.S. government charged by the Marine Mammal Protection Act (MMPA) to further the conservation of marine mammals and their environment. The Commission works to ensure that marine mammal populations are restored and maintained as functioning elements of healthy marine ecosystems. It provides science-based oversight of domestic and international policies and actions of other U.S. federal agencies with regulatory authority for, or whose actions may affect marine mammals and their ecosystems. The Commission's role is unique as it is the only U.S. government agency that provides comprehensive oversight of all science, policy, and management actions affecting marine mammals.

Marine Mammal Bycatch in the Indian Ocean – In September 2017, the Commission worked with the Indian Ocean Tuna Commission (IOTC) Secretariat, to devote part of that organization's meeting to fisheries interactions involving marine mammals. As a result, an IOTC working group adopted a resolution that recommends, among other things, that the IOTC collaborate with the International Whaling Commission (IWC) and others to build capacity for marine mammal bycatch mitigation. As a follow-up action, the Commission provided funding to support the development and printing of a cetacean identification guide for the Indian Ocean.

Commissioner Dr. Michael Tillman and the IWC – Marine Mammal Commissioner Dr. Michael Tillman chairs the IWC Aboriginal Subsistence Whaling Working Group. Most recently, in April 2018, he chaired the working group meeting at the Inupiat Heritage Center in Barrow, Alaska.

Marine Mammal Co-Management Review in Alaska – In 2017, the Marine Mammal Commission received a grant from the North Pacific Research Board to support a project to identify essential components of and impediments to effective co-management of marine mammals in Alaska. The Commission is working with Alaska Native partners, including the

Alaska Eskimo Whaling Commission, other federal agencies, and co-management stakeholders on the project. Focus group meetings and interviews were conducted in seven different Alaskan communities, including villages engaged in aboriginal subsistence whaling, in the summer of 2018.

Vaquita Conservation Efforts – The Commission continues to play a leading role in the international fight to save the most endangered marine mammal on earth, the vaquita, from extinction. The Commission actively participates in the International Recovery Team for the Recovery of the Vaquita (CIRVA), the Consortium for Vaquita Conservation, Protection, and Rescue (Vaquita CPR), and in the IWC Scientific Committee’s Sub-committee on Small Cetaceans. The Commission has also supported efforts to develop "vaquita-friendly" fishing gear and economic alternatives to gillnet fisheries for the communities of the upper Gulf of California.

Small Grants Program – With a relatively modest budget, the Commission’s Grants and Research program fills a unique niche in marine mammal research funding, focused primarily on novel, low-cost projects. The Commission currently is supporting 23 active research grants, including five new projects for Fiscal Year 2018. Commission grants often target community-driven conservation approaches to eliminate, manage, or mitigate threats to marine mammals. Recent examples of grants involving cetaceans include: supporting the analysis of existing acoustic data to assess the occurrence and distribution of North Pacific right whales and an evaluation of the use of pingers to reduce bycatch of Franciscana dolphins in artisanal fisheries in Argentina.

Commission Annual Meetings in 2017 and 2018 – Each year, the Commission holds an annual meeting in different regions of the country to examine matters of local interest, as well as priority national and global issues. In 2017, the Commission held its annual meeting in Falmouth, Massachusetts, with a major review of obstacles to recovery of the North Atlantic right whales. In 2018, the Commission met in Seattle, Washington, to consider Pacific Northwest and Alaskan marine mammal science and management issues, including West Coast large whale entanglements, status of and threats to Southern Resident killer whales, and Cook Inlet beluga whales.

Critically Endangered North Atlantic Right Whale – In response to the loss of seventeen critically endangered North Atlantic right whales in 2017, the Commission heightened its attention on the need for additional actions to protect this species. Efforts by the Commission included (1) providing expertise and seed funding to advance new technologies to reduce bycatch, like the development of ‘ropeless’ fishing gear, (2) recommending supplementary federal conservation measures, and (3) participating as a member of the Atlantic Large Whale Take Reduction Team (ALWTRT).

Take Reduction Team Participation – The MMPA directs the National Marine Fisheries Service (NMFS) to prepare and implement take reduction plans for fisheries that frequently or occasionally kill or seriously injure marine mammals at levels high enough raise conservation concerns. NMFS uses Take Reduction Teams (TRTs) to recommend measures for inclusion in take reduction plans and to monitor their effectiveness. Commission

representatives participate on all TRTs, including those focused on reducing cetacean bycatch, such as the ALWTRT, the Pacific offshore cetacean TRT, and the Hawaiian false killer whale TRT.

3. Current threats to cetacean conservation and management measures taken/proposed

3.1. Fisheries interactions

Interaction with fishing gear can incidentally injure and kill cetaceans and is a leading human-related cause of mortality and serious injury for multiple cetacean species (including North Atlantic right whales and harbor porpoise in the Atlantic Ocean, bottlenose dolphins in the Atlantic Ocean and Gulf of Mexico, humpback whales in the Eastern Pacific Ocean, and false killer whales in the Pacific Ocean). NMFS works with the fishing industry and other experts to develop or modify fishing gear and practices to minimize bycatch. The MMPA requires NMFS to reduce the incidental mortality and serious injury of marine mammals in commercial fishing operations to insignificant levels approaching a zero mortality and serious injury rate. NMFS publishes an annual List of Fisheries classifying each commercial fishery based on whether it has frequent (Category I), occasional (Category II), or a remote likelihood of or no known (Category III) incidental mortality and serious injury of marine mammals. Fishermen operating in Category I or II fisheries must register with NMFS, carry an observer if requested, and comply with any applicable take reduction plan regulations.

NMFS develops and implements take reduction plans to reduce the mortality and serious injury of strategic marine mammal stocks that interact with Category I and II fisheries to a zero mortality and serious injury rate. A strategic stock is one which is listed as “threatened” or “endangered” under the ESA, is declining and likely to be listed under the ESA, is listed as depleted under the MMPA, or has direct human-caused mortality which exceeds the stock's "Potential Biological Removal (PBR) level" (defined as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population). NMFS convenes stakeholder-based Take Reduction Teams, which consist of a balance of representatives from the fishing industry, fishery management councils, State and Federal resource management agencies, the scientific community, and conservation organizations to prepare take reduction plans. Once a take reduction plan becomes effective, the team meets periodically to monitor the implementation and effectiveness of the plan. There are currently seven active take reduction teams.

In 2004, NMFS published a report titled, “Evaluating Bycatch: A National Approach to Standardized Bycatch Monitoring Programs.” The report describes a National Bycatch Strategy for monitoring bycatch in U.S. fisheries. The U.S. subsequently released a National Bycatch Report; the most recent update was published in 2016 and is based on data from 2010, 2011, 2012, and 2013. The National Bycatch Report provides a comprehensive quantification of bycatch estimates in U.S. commercial fisheries and may provide a basis for setting bycatch management goals in the future. The 2016 report discusses impacts of bycatch on protected species, including cetaceans, in U.S. federal and select state commercial

fisheries where data and estimation procedures are available to support the development of bycatch estimates. The 2016 National Bycatch Report can be found online at <http://www.st.nmfs.noaa.gov/observer-home/first-edition-update-2>. During 2018, the National Bycatch Report is being updated to include bycatch during 2014 - 2017 and a National Bycatch Reduction Strategy Implementation Plan is being developed for 2018 - 2022.

3.2. Marine Debris Interactions

Marine debris is one of the most widespread pollution problems facing the global ocean today with millions of tons of debris entering the ocean annually. Marine debris can injure and kill cetaceans through entanglement in, and ingestion of, debris. In a study of marine debris ingestion it was found that 26 species of cetaceans are confirmed to ingest marine debris. A similar study, found that, in the U.S., nine species of cetaceans are confirmed to entangle in marine debris. These two types of interactions often occur with two different types of debris – entanglement normally occurs with derelict (lost or abandoned) fishing gear, while ingestion normally involves smaller consumer related debris. The NOAA Marine Debris Program leads national efforts to remove and prevent both types of debris from the marine environment. The NOAA Marine Debris Program conducts marine debris removal efforts through its Community-based Marine Debris Removal Grant Program. Projects funded through this program have removed thousands of tons of consumer debris as well as thousands of nets, pots, lines, and buoys from U.S. marine and coastal waters. In addition to this effort, the NOAA Marine Debris Program and other divisions of NOAA lead annual large scale marine debris removal missions from the Northwestern Hawaiian Islands where the large majority of debris is derelict fishing gear.

The NOAA Marine Debris Program works to prevent marine debris through its Prevention through Education and Outreach Grant Program. Projects funded through this program aim to educate people about marine debris and to drive behavior changes that will reduce and prevent marine debris. These projects can range from working with the restaurant industry to reduce single-use disposables to implementing an outreach campaign with fishermen and recreational crabbers to educate them on how to prevent gear loss and report lost gear. The NOAA Marine Debris Program is also part of Fishing for Energy, a public-private partnership focused on preventing derelict fishing gear by providing free gear disposal and recycling to the fishing community and providing gear recycling to derelict gear removal projects. Through this effort over 3 million tons of gear have been diverted, or recovered, from the marine environment and recycled.

Through the combination of removal and prevention, the NOAA Marine Debris Program is working towards a global ocean free from the harmful impacts of marine debris, including those of entanglement in and ingestion by cetaceans.

3.3. Marine Acoustics

Anthropogenic underwater sound has the potential to cause adverse effects on cetaceans and cetacean populations. To better assess these potential impacts, NMFS recently finalized technical guidance for assessing acoustic effects of anthropogenic sound on marine mammal

hearing. More information is available online at <http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm>.

In addition, through its various consultation and authorization responsibilities, NOAA works with other federal agencies, including the U.S. Bureau of Ocean Energy Management and the U.S. Navy, and with various industries to establish plans to monitor and mitigate the impacts of noise on cetaceans and their habitats. NOAA also has partnered with the U.S. Coast Guard to work within the International Maritime Organization (IMO) to address the issue of commercial shipping noise and its contribution to the ambient acoustic environment (i.e., voluntary guidelines for vessel quieting MEPC.1/Circ.833, approved by IMO 7 April 2014). NOAA Fisheries Ocean Acoustics Program funds research to improve understanding of the potential impact of sound on marine mammals and other species and habitats. Finally, for the past two years, NOAA has chaired the Interagency Task Force on Ocean Noise and Marine Life, which, operating under the National Ocean Council's Subcommittee on Ocean Science and Technology, is supporting work with federal partners to address scientific issues relating to marine anthropogenic sound.

In 2010, NOAA committed to improving the tools used by the agency to manage underwater noise impacts more comprehensively, including to better address cumulative impacts to cetaceans. This commitment led to two phases. Phase 1, or "CetSound" developed two mapping tools, CetMap and SoundMap, which aimed to improve our ability to visualize cetacean density and distribution, and man-made underwater noise, respectively, and culminated in a large stakeholder symposium to discuss management applications of these tools. Phase 2 began in 2013 and engaged offices across NOAA in developing an agency-wide Ocean Noise Strategy, which seeks to ensure that NOAA is more comprehensively addressing noise impacts to aquatic species and their habitat over the next 10 years.

Successful implementation of the Strategy would achieve four overarching goals:

- Science: NOAA and federal partners are filling shared critical knowledge gaps and building understanding of noise impacts over ecologically-relevant scales.
- Management: NOAA's actions are integrated across the agency and minimizing the acute, chronic and cumulative effects of noise on marine species and their habitat.
- Decision Support Tools: NOAA is developing publically available tools for assessment, planning and mitigation of noise-making activities over ecologically-relevant scales.
- Outreach: NOAA is educating the public on noise impacts, engaging with stakeholders & coordinating with related efforts internationally.

To support the Strategy, NOAA drafted a Roadmap document, intended to serve as a high-level guide. It summarizes the status of the science to support the Ocean Noise Strategy's goals, details relevant NOAA management and science capacities, and recommends cross-agency actions that could be taken to achieve more comprehensive management of noise impacts. Fundamentally, the Roadmap serves as an organizing tool to rally the multiple NOAA offices that address ocean noise impacts around a more integrated and comprehensive approach. A series of key goals and recommendations are presented that would enhance

NOAA's ability to manage both species and the places they inhabit in the context of a changing acoustic environment. The Strategy's Roadmap was finalized in September 2016. NOAA is now continuing to work towards achieving the Ocean Noise Strategy's goals, including through established Strategy projects, such as maintenance of a coordinated network of acoustic monitoring sensors throughout the U.S. EEZ and establishment of a federal long-term passive acoustic data archive, and through implementation planning to support expanded activity, as recommended by the Roadmap. More information on the Ocean Noise Strategy can be found online at <http://cetsound.noaa.gov/ons>.

The U.S. Bureau of Ocean Energy Management (BOEM) has been sponsoring research on ocean sounds since the early 1980s when it explored the effects of industrial sounds on large whale species in the Pacific Ocean. The agency has funded controlled exposure experiments on behavioral responses of sperm whales to air gun sounds in the Gulf of Mexico and humpback whales in Australia. Current research focuses on sound field mapping; ambient noise measurements; methods to detect, classify and locate marine life near sound sources; improvements in mitigation; quieting technologies; and effects of sound on prey species. Along with other federal and academic partners, BOEM has begun to examine the even more complex issue of cumulative effects from chronic exposure to anthropogenic sounds.

In 2014, BOEM sponsored a workshop on Quieting Technologies for Reducing Noise During Seismic Surveying and Pile Driving. The workshop brought together experts from Europe and North America to examine current and emerging technologies that have the potential for reducing noise generated during ocean activities and examined technologies that have potential for quieting noise from geological and geophysical exploration, pile driving, and support vessel operations.

3.4. Ship Strike Reduction

Ship strikes are a significant threat to large whales. In the U.S., vessel collisions are one of the leading human-caused sources of mortality for the endangered North Atlantic right whale. To address this threat, NOAA has developed regulatory and non-regulatory measures to reduce ship strikes, including modification of vessel operations, education and outreach programs, and research and monitoring activities. Stranded large whales are examined externally and internally whenever logistically feasible to assist in diagnosis and appropriate quantification of ship strikes.

In December 2008, the U.S. implemented vessel speed restrictions to reduce the threat of ship collisions with North Atlantic right whales, and to minimize the risk of serious injury or death should a collision occur. These regulations require ships 65 feet or longer to travel 10 knots or less in certain areas along the U.S. East Coast at certain times of year. Studies have shown that these regulations have been highly effective at reducing the number of ship collisions with North Atlantic right whales. NMFS also establishes temporary voluntary speed limits at other times when the presence of a group of three or more right whales is confirmed. In these areas, mariners are expected, but not required, to either avoid these areas or travel through them at 10 knots or less. NOAA has developed and distributed a Compliance Guide for Mariners for this rule. NMFS monitors vessel operations in these

management areas for the purposes of enforcing and evaluating the effectiveness of the regulations.

The U.S. Coast Guard and NMFS have established other protective measures to reduce the threat of vessel collisions with North Atlantic right whales, including International Maritime Organization-endorsed (a) Area To Be Avoided (2009) for the waters of Great South Channel; (b) two modifications (in 2007 and 2009) to the Traffic Separation Scheme (TSS) that services Boston, Massachusetts; and (c) two Mandatory Ship Reporting systems in key right whale aggregation areas (1999). In addition, the U.S. established a set of recommended vessel routes in four locations off the U.S. East Coast in November 2006. Information on these measures and the vessel speed restrictions is available at:

<http://www.nmfs.noaa.gov/pr/shipstrike/>.

The U.S. submitted proposals to the IMO to amend the existing TSS in the Santa Barbara Channel and for the approach to San Francisco to reduce the likelihood of ship strike deaths and serious injury to blue and other whales. Backed by a 2011 U.S. Coast Guard Port Access Route Study that concluded that the burden imposed on shipping by the proposed amendment is minimal while the potential benefits to large whales, particularly blue whales, may be significant, the IMO approved both measures and they went into effect on June 1, 2014. The width of the Santa Barbara Channel TSS separation zone was reduced from 2 nautical miles to 1 nautical mile by moving the inbound lane shoreward, decreasing the co-occurrence of vessels and blue and fin whales. New lanes were added to, and existing lanes were modified in, the San Francisco TSS which will serve to reduce the risk of marine casualties, reduce the likelihood of ship strikes with cetaceans, and avoid interaction between fishing and commercial vessels.

Starting in 2014, two National Marine Sanctuaries on the U.S. West Coast (Gulf of the Farallones and Cordell Bank) have implemented a Dynamic Management Area voluntary vessel speed restriction of 10 knots or less in the three shipping lanes approaching San Francisco Bay, based on whale sightings, locations, behaviors, and seasonal trends. A seasonal voluntary vessel speed restriction is currently in place in 2016 and Automatic Identification System (AIS) data for the area is continuously collected. Since 2008, Channel Islands National Marine Sanctuary (also on the U.S. West Coast) and NMFS have implemented a voluntary vessel speed restriction program seasonally to correspond with the arrival and departure of blue, fin and humpback whales.

Based on AIS data that showed limited cooperation with these voluntary speed reduction requests, in 2014 the Channel Islands National Marine Sanctuary, in partnership with local agencies and NGOs, launched a trial incentive program to slow ships down in the Santa Barbara Channel. Seven global shipping companies participated in 2014 and agreed to slow 27 transits to 12 knots or less from July through November in the Traffic Separation Scheme. This trial program not only demonstrated the willingness of shipping companies to participate in a voluntary, non-regulatory, non-port program, but also set the stage for a larger-scale program in 2016. Currently underway, the vessel speed reduction program is largely modeled off the 2014 trial, but has been expanded spatially to include a whale-

safer transit zone south of the Channel Islands, and to provide financial incentives for more than 65 transits to date.

Whale Alert is a free mobile app (supported by a cloud-based data infrastructure) designed to provide comprehensive and immediate information to mariners relative to large whale conservation and management. Its goal is to reduce the threat of collisions between large whales and ships. Information, including the operating ship's location, speed restriction zones to protect whales, International Maritime Organization sanctioned Areas to be Avoided and Traffic Separation Schemes, recommended routes, acoustic whale detections, short term whale aggregations and, in some areas, individual whale sightings are visualized on raster nautical charts that can be updated in near-real time. Mariners and other users can input whale sightings or report distressed or injured whales to authorities through Whale Alert, assisted by an easy to use whale identification guide. Now active on the east and west coasts of the U.S. (including Alaska), and in eastern and western Canadian waters, Whale Alert has world-wide applications, including expansion to cover additional taxa and species needing protection. Whale Alert is the product of partnerships among a network of government agencies, NGOs, and shipping and technology companies with the common goal of reducing ship strikes of whales. Whale Alert can be downloaded from: whalealert.org.

4. Whale Watching

This section outlines U.S. domestic efforts related to whale watching.

4.1. Research

The U.S. regularly conducts research on the impacts of vessels on marine mammals directly with government scientists, in collaboration with University scientists, and by providing funding, through grants, to support research of independent scientists and graduate students. This research occurs through regular assessments of marine mammal population abundance and trends, studies on the impacts of human activities on marine mammals, and directed research on the impacts of whale watching activities. This information is used to assess the potential effects of ecotourism activities, including whale watching, on those populations. The U.S. uses existing and ongoing research efforts to inform management of whale watching activities, including regional voluntary viewing guidelines and regulations (described in Section 4.4).

4.2. Assessment (Monitoring)

The U.S. conducts population abundance and distribution surveys throughout its waters, assessing the health of cetacean populations, and managing human-caused injury and mortality. As described in section 2.3, NMFS develops annual Stock Assessment Reports (SAR) for cetaceans that occur in U.S. waters. These annual reports assist in assessing the status of stocks. Further, as described in section 4.1, the U.S. regularly collaborates with independent scientists, increasing the chance that the U.S. is able to detect adverse impacts on populations through current and ongoing research studies. This information is used, among other things, to evaluate the progress of U.S. management of human interactions with

marine mammals, including vessel interactions (through viewing guidelines and/or regulations).

NMFS makes all SARs and the information from its research and monitoring programs easily accessible to the public online at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>.

NMFS maintains websites like <https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines#overview> dedicated to providing information on whale watching in the region, the status of species most popular to the whale watching industry, and information on viewing guidelines and regulations.

4.3. Development

The U.S. works regularly with the whale watching industry to assist in the development of a sustainable industry that operates in a manner that is not detrimental to marine mammals. For example, NOAA Fisheries and Canada's Department of Fisheries and Oceans collaborated with commercial whale watch companies and conservation groups to establish the "Be Whale Wise" campaign to foster responsible viewing of killer whales in the Pacific Northwest. The campaign took on greater importance once regulations were promulgated in 2011 that established a 200-yard approach restriction to killer whales.

In addition, the NMFS collaborated with partners in the U.S. Office of National Marine Sanctuaries, Whale and Dolphin Conservation, Dolphin Ecology Project, and commercial tour operators to launch the "Dolphin SMART" program in 2007. This program is a voluntary recognition and education program encouraging responsible viewing by commercial businesses operating in the Florida Keys National Marine Sanctuary and portions of the Gulf of Mexico. By becoming a "Dolphin SMART" operator and maintaining participation, businesses gain a competitive edge by offering customers an enhanced tour, while demonstrating their commitment to dolphin conservation. The "Dolphin SMART" program was so successful in Florida, NMFS launched "Dolphin SMART-Hawaii" in 2011.

NMFS also partnered with Whale and Dolphin Conservation and NOAA Stellwagen Bank National Marine Sanctuary to develop a program similar to Dolphin SMART called "Whale SENSE" to engage the whale watching industry and foster guideline compliance when viewing humpback, fin, minke, and sei whales in the U.S. Mid-Atlantic and New England. Since its launch in 2009, the Whale SENSE program has gained momentum and credibility within the whale watching industry, expanding in the U.S. and gaining international recognition. The program was expanded to Alaska in 2015.

Businesses participating in the "Dolphin SMART" and "Whale SENSE" programs are provided with outreach materials for their customers, including educational brochures, posters, and a flag and/or sticker decal to display on their vessels and identify themselves as participants in the program.

4.4. Management

NMFS prohibits viewing of marine mammals in a manner that can cause “harassment” of the animal, including feeding or attempting to feed an animal. Whale watching in the U.S. is managed mainly through viewing guidelines or regulations that include region-specific information for local species and habitats. These guidelines or regulations can be found online at <https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines#guidelines-&-distances> .

NMFS develops and provides multiple training and education tools for industry practitioners and the public, include brochures, posters, and websites. These viewing guidelines or regulations, which vary by region and species, promote a “Code of Conduct” that recommends approach distances for vessels and aircraft, methods for vessel and aircraft approach, speed limits for vessels in areas with high numbers of cetaceans, advises against swimming with marine mammals in the wild, prohibits feeding marine mammals in the wild, and recommends maximum viewing time limits. In addition, NMFS and the NOAA's National Marine Sanctuary Program have developed a broad-based “Ocean Etiquette” program to promote ocean stewardship by providing the public with guidance on minimizing impacts to marine life and habitats, as well as other initiatives such as the “Dolphin SMART” and “Whale SENSE” programs discussed in Section 4.3.

Unmanned aircraft systems – also known as model aircraft or drones - are rapidly emerging as a new way to obtain unique views of wildlife and natural landscapes, and whale watch operators are beginning to incorporate this technology into their activities. However, unmanned aircraft systems can be disruptive to both people and animals if not used safely, appropriately, or responsibly. Scientists and wildlife managers are concerned that acute or chronic disturbances of wildlife can significantly impact the animals’ health and fitness by disrupting migratory patterns, breeding, feeding, and sheltering. As a result, NMFS developed guidance when flying unmanned aircraft systems, which is available online at <https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines#guidelines-&-distances>. Additionally, NMFS recently presented an overview of known impacts of unmanned aircraft systems on cetaceans to the 2016 scientific committee meeting.

While the majority of whale watching in the U.S. is managed through voluntary guidelines, whale watching is managed under MMPA and regulations specifically for humpback whales in Alaska and Hawaii, endangered North Atlantic right whales, and endangered Southern Resident killer whales. Regulations for humpback whales in Hawaii and Alaska prohibit, with some exceptions, vessels from approaching within 100 yards (300 feet or 91.4 m) of any humpback whale, including placing a vessel in the path of an oncoming humpback whale so that the whale surfaces within 100 yards (300 feet or 91.4 meters) of the vessel. It is also prohibited to disrupt the normal behavior or prior activity of a whale by any other act or omission. In Alaska, the regulations also require vessels to operate at a slow, safe speed when near a humpback whale. In Hawaii, aircraft are also prohibited within 333 yards (1,000 feet or 308.4 m) of any humpback whale. In Alaska, the U.S. National Park Service has additional regulations that prohibit the operation of a vessel within one-quarter nautical mile of a humpback whale and limits the speed of cruise ships to 13 knots in Glacier Bay National

Park. Glacier Bay National Park also limits the number of cruise ships allowed in parts of the park when humpback whales are present.

The critically endangered status of North Atlantic right whales has prompted regulations that prohibit anyone from approaching (including by interception) within 500 yards (1,500 feet or 460 m) of a right whale by vessel, aircraft, or any other means. When within 500 yards (1,500 feet or 460 m) of a right whale, a vessel must steer a course away from the right whale and immediately leave the area at a slow safe speed, and any aircraft must take a course away from the right whale and immediately leave the area at a constant airspeed.

The effects of vessels, including physical interference and sound, are potential contributing factors in the decline of the endangered Southern Resident killer whale population in the Pacific Northwest. NMFS issued regulations to protect the whales that prohibit vessels from approaching killer whales in the Pacific Northwest closer than 200 yards (600 feet or 183 m), intercepting the whales, or positioning vessels in their path. The regulations apply to all types of boats, including motor boats, sailboats, and kayaks.

In addition, broader regulations under the MMPA prohibit anyone from engaging in “the negligent or intentional operation of an aircraft or vessel, or the doing of any other negligent or intentional act which results in disturbing or molesting a marine mammal; and feeding or attempting to feed a marine mammal in the wild.”

5. Reporting systems for cetacean /mortality/injuries/strandings

5.1. Fisheries bycatch reporting

All U.S. fishing vessel owners or operators must report all incidental mortalities and injuries of marine mammals that occur during commercial fishing operations under the Marine Mammal Authorization Program. In addition, NMFS’s Regional Fishery Observer Programs, Marine Mammal Health and Stranding Response Program, and Large Whale Entanglement Response Programs document and report marine mammal mortalities and injuries incidental to commercial fishing operations. Information on marine mammal mortalities and injuries collected under these programs provides the basis for determining whether the incidental mortality and serious injury of marine mammals in commercial fishing operations has been reduced to insignificant levels approaching a zero mortality and serious injury rate, as required by the U.S. Marine Mammal Protection Act.

5.2. Marine Mammal Health and Stranding Response Program

The MMPA was amended in 1992 to formally establish the Marine Mammal Health and Stranding Response Program (MMHSRP) to:

Facilitate collection and dissemination of reference data on the health of marine mammals and to assess health trends of marine mammal populations in the wild;
Correlate marine mammal health with available data on physical, chemical, and biological environmental parameters; and

Coordinate effective responses to unusual mortality events (UMEs).

The MMHSRP has several components including:

- National Marine Mammal Stranding Network;
- Marine Mammal Unusual Mortality Event Response and Investigation Program;
- John H. Prescott Marine Mammal Rescue Assistant Grant Program;
- National Marine Mammal Archiving Program;
- National Marine Mammal Entanglement Response Program;
- Marine Mammal Biomonitoring, Surveillance, and Investigation Program;
- Marine Mammal Analytical Quality Assurance Program; and
- Information Management Program.

The National Marine Mammal Stranding Network consists of over 120 organizations, including other federal agencies, nonprofit organizations, aquaria, universities, and state and local governments, partnered with NMFS to investigate marine mammal strandings. The MMHSRP oversees the activities of the national stranding response networks through a national coordinator and six regional coordinators. Every rescue and detailed study of stranded marine mammals yields information on species, sex, length, location, and any evidence of human interaction, as well as tissues and specimens for use in scientific research, for determining the causes of strandings and mortalities, for educational purposes, for life history investigations, and for biological or health research needs. With these data, along with data from other sources, NMFS and its partners gain insight into the causes of strandings, the health and health trends of cetacean populations, and the identification of factors that may impact the health of wild marine mammal populations.

The MMHSRP also oversees the activities of the National Marine Mammal Entanglement Response Program through a national coordinator and regional coordinators, and a network of trained and authorized partners. Every response to entangled marine mammals, particularly large whales, prioritizes documentation that allows NMFS and its partners to gain insight into the mechanics and consequences of large whale entanglements that may impact the health of wild whale populations. Responses also fulfill an animal welfare need by attempting to free whales from life-threatening and debilitating entanglements when possible.

In addition to the collection of health and disease information from stranding and entanglement response activities, NMFS works with partners to evaluate the health and disease status of marine mammals in the wild through live capture release studies, bycatch monitoring programs working with fisheries observers, subsistence monitoring programs, and assessments of free-swimming animals, including photogrammetry and remote biopsies.

In 2017 and 2018 energies were focused on day to day stranding and entanglement responses, emergency response efforts as emergencies have arisen, continuing UME responses to on-going cetacean events, responding to 3 new large whale UMEs along the Atlantic coast, continued participation in Natural Damage Resource Assessments, and post-Deep Water Horizon Oil Spill restoration planning and monitoring and adaptive

management. As a follow up to the cetacean oil spill response guidelines, the program has focused on the development of cetacean disaster response plans completing the Arctic plan (from the Canadian border to the Bering Straits) and have plans under development for the Gulf of Mexico, Pacific Islands, and Gulf of Alaska (Kodiak and Cook Inlet). The group has been working to develop cetacean monitoring and assessment studies to evaluate the impacts of coastal restoration projects addressing storm surge, flood control, coastal erosion, river diversion for sedimentation, and sea level rise. The team has focused closely on the impacts or responses of bottlenose dolphins to freshwater exposures as a result of extreme weather events or anthropogenic activities. Finally, the group continues to develop guidelines for cetacean rehabilitation facilities, large whale entanglement response, and cetacean health assessments. Of note as the follow up to the death of a large whale entanglement responder in the summer of 2017, the US did initiate a shutdown of all large whale entanglement responses nationwide, underwent a review of the circumstances underlying the death, developed immediate refresher training for additional safety measures, and implemented an enhanced communication response for large whales. The team held a national large whale entanglement response workshop to review close calls and entanglement operations, training, safety, and capacity building. In addition, team members participated in the IWC Global Whale Entanglement Response Network meeting in June 2018. Finally, the team participated in development of information for IWC workshops on Harmful Algal Blooms, Population Consequences of Multiple Stressors, and Cetacean Tagging.

The National Marine Mammal Tissue Bank was established in collaboration with the U.S. National Institute of Standards and Technology and provides protocols and techniques for the long-term storage of tissues from marine mammals for retrospective contaminant analyses. Since 1987, tissue samples have been contributed from several sources, including the stranding network, fisheries bycatch, health assessment studies and legal subsistence hunts. The Tissue Bank uses a network of trained partners to collect tissues from specific indicator species (including pilot whales, harbor porpoises, Atlantic white-sided dolphins, pygmy sperm whales, bottlenose dolphins, rough-toothed dolphins, common dolphins, beluga whales, and bowhead whales), animals from mass-stranding events, and from UMEs. Recently, the Tissue Bank has expanded to include banking of samples for additional purposes such as infectious disease and biotoxin detection or studies from the Natural Resource Damage Assessment investigation and several UMEs.

NMFS leads the investigations of UMEs, which are declared when a stranding event or disease outbreak is unexpected, involves a significant die-off of any marine mammal species, and demands an immediate response. A Working Group on Marine Mammal Unusual Mortality Events comprised of experts in marine mammal health, conservation medicine, biology, toxicology, and marine science, aids NMFS and the Stranding Network in conducting thorough investigations of such unusual stranding events. As of July 2018, the program has investigated marine mammal 65 UMEs in the U.S. with three events declared in 2017-18 and one under consultation in August 2018. Currently the program has several active investigations as shown in the table available online at <http://www.nmfs.noaa.gov/pr/health/mmume/>.

Over the last several years, NMFS's collaborations with partners including the U.S. Centers for Disease Control and Prevention, state laboratories, and academic institutions have documented new viruses, new bacterial diseases, and new fungal diseases in cetaceans in the wild. Detection and response to emerging infectious diseases continues along all coasts of the U.S.

Finally the MMHSRP continues to support training, capacity building, and response assistance for marine mammal health issues in other countries. In 2017 and 2018 the MMHSRP continued the partnership with NOAA Fisheries' Office of Science and Technology, the International Fund for Animal Welfare, the Woods Hole Oceanographic Institution, and The Marine Mammal Center (with input from additional experts) to develop an international stranding response training toolkit and provide training when requested. The program also participated in the development of the IWC Stranding Initiative and is a member of the IWC GWERN program.

6. International cooperation activities

6.1. International Research and the U.S. International Marine Mammal Action Plan

The U.S. Government, through the NMFS, the U.S. Marine Mammal Commission, and other Federal agencies, undertakes a number of research projects on cetaceans in U.S. waters and overseas. NMFS also collaborates with non-U.S. scientists on a wide variety of cetacean research activities. Generally, these efforts include collaboration on assessments of stock status and genetic structure, bycatch assessments and mitigation efforts, evaluations of the impacts of human-made sound, assessments of contaminant loads in tissues, and capacity building and training efforts on a variety of topics – most notably training and development of observer and stranding response networks. In October, 2012, NMFS released the International Marine Mammal Action Plan to fulfill the U.S.'s international obligations to protect and conserve marine mammals, reduce the impacts of human activities on marine mammals, and ensure that the agency's efforts are coordinated in a strategic fashion. The Action Plan includes seven strategic priorities to improve research and understanding of marine mammal biology, advance the conservation and management of marine mammals globally, and increase cooperation and collaboration with national and international partners. The International Marine Mammal Action Plan can be viewed at http://www.nmfs.noaa.gov/ia/species/marine_mammals/immap.pdf.

6.2. Workshops or collaborative initiatives

Since the 2016 IWC meeting, the U.S. has worked with international partners to reduce bycatch of marine mammals through gear modification and to support collaborative initiatives to better understand and mitigate serious injuries and mortalities of marine mammal.

6.2.1. Best Practices for Collecting Marine Mammal Abundance Data Aboard Oceanic Surveys Workshop

In August 2015, the Executive Secretariat of the Pacific Action Plan Southeast with the cooperation of NMFS convened this workshop to teach best practices for collecting data to estimate marine mammal abundance on oceanic surveys planned for the Pacific coast of South America. Marine mammal observers and other interested parties from Chile, Peru, Ecuador, and Colombia attended. Systematic marine mammal data collection is lacking in this region and the ultimate goal is to place marine mammal observers on regularly occurring oceanographic cruises conducted in the EEZs of these four countries.

6.2.2. International Workshop on Whale Entanglement Prevention

In May 2016, NMFS and New England Aquarium's Consortium for Wildlife Bycatch Reduction convened an international workshop to consider fixed fishing gear and aquaculture. The workshop evaluated and provided recommendations on existing and potential efficacy of different prevention techniques to reduce large whale entanglement and identified research priorities for the development of promising solutions to entanglement prevention.

6.2.3. Vaquita

The U.S. has strong interest in the conservation of all cetaceans, especially those that are considered critically endangered by the IWC. In May 2016 NMFS's Southwest Fisheries Science Center assisted Mexico in efforts to analyze data on the trends of the vaquita population in the northern Gulf of California collected using shipboard surveys and a passive acoustic monitoring array in the Upper Gulf of California. Following initial analyses, which showed evidence of a startling acceleration in the decline of the vaquita, a group of experts reviewed the findings of the monitoring program. The panel confirmed that the decline was real. Subsequently, the Seventh Meeting of the International Committee for the Recovery of the Vaquita (CIRVA) in May 2016, reported to Mexico's Secretary of the Environment the findings of the surveys and provided recommendations for additional action.

For many years, the U.S. Marine Mammal Commission and the NMFS have provided support to Mexico for efforts to develop and deploy fishing gear that does not entangle the critically depleted vaquita, as an alternative to using gillnets. This support has been used to design and test alternative fishing gear as well as to promote market incentives for the sale and purchase of shrimp harvested with alternative, "vaquita-safe" fishing gear.

In July 2016, President Obama and President Enrique Peña Nieto committed to intensify bilateral cooperation to protect the critically endangered vaquita, including through the following actions: (1) Mexico will make permanent a ban on the use of gillnets in all fisheries throughout the range of the vaquita in the upper Gulf of California; (2) Both countries will increase cooperation and enforcement efforts to immediately halt the illegal fishing for and illegal trade in totoaba swim bladders; (3) Both countries will redouble efforts, in collaboration with international experts, to develop alternative fishing gear to gillnets that does not result in the entanglement of vaquita and establish "vaquita-

safe” fisheries; and (4) Both countries will establish and implement a long-term program to remove and permanently dispose of illegal and derelict fishing gear from vaquita habitat in the upper Gulf of California.

6.2.4. *Western Gray Whales*

Multiple NOAA scientists are currently serving on the International Union for Conservation of Nature (IUCN) Western Gray Whale Advisory Panel (WGWAP). This panel provides independent scientific and technical advice to decision makers in industry, government and civil society with respect to the potential effects of human activities, particularly oil and gas development activities, on the Western Gray Whale population. The panel also coordinates research to, among other objectives, minimize disturbance to Western Gray Whales and identify and mitigate potential risks associated with scientific research activities.

The United States signed a Memorandum of Understanding at [IWC 65](#) with the Russian Federation and Japan to implement the IUCN’s range-wide Western Gray Whale Conservation Plan. The IUCN Western Gray Whale Conservation Plan was drafted in 2010 with the goal of ‘managing human activities that affect western Gray Whales and maximizing the population’s chances for recovery, based on the best scientific knowledge.’

North Atlantic right whales are critically endangered, with 451 individuals remaining at the end of 2016. Since 2017, there have been 18 right whale deaths, with the majority occurring in Canada (12 in Canada; six in the United States). The winter season is the species’ calving season, but no right whale calves were born in 2018 – causing additional concern for the future of the species. Their decline is primarily from entanglement in fishing gear and collisions with ships. More specifically, whales become entangled in the ropes connecting lobster traps or crab pots to buoys at the surface of the water. Other stressors affect right whales, such underwater noise and changes in oceanographic conditions that affect prey distribution and availability.

Both the U.S. NOAA Fisheries and Fisheries and Oceans Canada (DFO), in partnership with other agencies, have taken a number of regulatory, research, and field-based actions to curtail entanglements and other anthropogenic impacts. These include implementing modifications to fishing gear, closing certain fishing areas to reduce entanglement risk, a disentanglement response network, conducting aerial surveys for both population monitoring and detection of entangled whales, and coordinating other working groups and response networks. For example, NOAA Fisheries coordinates a Large Whale Entanglement Response Network and a Take Reduction Team, the latter of which has recently been assessing the feasibility of emerging gear modifications, such as buoy-less gear, that could reduce right whale entanglements. Canada has specifically instituted a number of closures of certain fishing areas in 2018 for both snow crab and other species.

6.2.5. *Southern Ocean Research Program (SORP)*

The Southern Ocean Research Partnership (IWC-SORP) was proposed to the IWC in 2008 with the aim of developing a multi-lateral, non-lethal scientific research program that would improve the coordinated and cooperative delivery of science to the IWC. There are 11 member countries in the Partnership: Argentina, Australia, Brazil, Chile, France, Germany, Italy, New Zealand, Norway, South Africa and the United States. Field work has spanned McMurdo Sound, the western Antarctic Peninsula, Terra Nova Bay, Raoul Island, South Georgia and Marion Island and covered photographic identification, biopsy sampling, satellite tagging and acoustic recording. The United States strongly supports SORP and provides financial and staff support for research. More information can be found online at <http://www.marinemammals.gov.au/sorp>.

6.2.6. Pacific Ocean Whale and Ecosystem Research (POWER) Program

Large whale IWC-POWER cruises were conducted in the North Pacific between 2016 and 2018. Following completion of the surveys in 2016, and including efforts from past years, nearly all of the North Pacific will have been surveyed. The Government of Japan has provided most of the resources to carry out these non-lethal surveys for cetaceans in the North Pacific. NOAA scientists have also participated in these cruises, facilitating the authorization and collection of biopsy samples from large whales throughout the survey area.

6.3. Cross-Border Sanctuaries

The Sister Sanctuary Program, managed by Stellwagen Bank National Marine Sanctuary, was established in 2006 to facilitate the effective management of a shared population of humpback whales across jurisdictional boundaries throughout its migratory range, from feeding and nursery grounds in the Gulf of Maine to breeding and calving areas in the Wider Caribbean region. To date, the program includes five member countries — Dominican Republic, Bermuda, the French Antilles, Caribbean Netherlands and USA—and is a pioneering program in support of the United Nations Environment Program’s Specially Protected Areas and Wildlife’s Marine Mammal Action Plan for the Wider Caribbean Region (UNEP/SPAW-MMAP). The initiative has forged the marine mammal protected areas network (MaMPAN, est. 2015), the first such international partnership in the world protecting one of the ocean’s most iconic species throughout its North Atlantic migratory range.

The multi-sanctuary, science-based program has increased the area of protection for North Atlantic humpback whales from a previous 2,180 square kilometers within the Sanctuary to a total area of 669,429 square kilometers combined among the sanctuaries over the past ten years, making it one of the largest networks of coordinated marine conservation areas in the world. This successful cooperation was achieved through education, conservation and science exchanges and by improving communications, aligning priorities, and enhancing resource-sharing between sister sanctuary partners/nations, with support and involvement from more than 60 national and international agencies as well as other levels of government and a wide array of NGO partners. The Sister Sanctuary Program provides a model for leadership to catalyze action and link assets and resources of governments/nations,

intergovernmental organizations and NGOs to focus attention on the need to manage and protect humpback whales beyond their borders.