



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**

NATIONAL MARINE FISHERIES SERVICE  
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THE DIRECTOR

John Calambokidis  
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MAR 03 2020

Dear Mr. Calambokidis:

Thank you for the letter to Chris Oliver, Assistant Administrator for Fisheries, transmitting recommendations from the March 2019 meeting of the Pacific Scientific Review Group (SRG).

The SRG has made many valuable recommendations to help guide NOAA Fisheries' marine mammal science and management, which are addressed in the enclosure. We appreciate the continued service and contributions by members of the Pacific SRG in providing advice and support to NOAA Fisheries in accordance with the Marine Mammal Protection Act. We look forward to our continued partnership to improve the science supporting the conservation of marine mammals.

Sincerely,

Francisco Werner, Ph.D.  
Director of Scientific Programs and Chief Science Advisor

Samuel D. Rauch III  
Deputy Assistant Administrator for Regulatory Programs

Enclosure

cc: Chris Oliver, Assistant Administrator for Fisheries  
David Detlor, Acting Director, Office of Science and Technology  
Donna Wieting, Director, Office of Protected Resources



**Responses to 2019 Recommendations of the  
Pacific Regional Scientific Review Group**

The PSRG reviewed the results of its 2018 meeting and reiterates its 2018 recommendations:

1. *NMFS and FWS streamline their processes for preparing stock assessment reports (SARs) to ensure that the information included in them is as up-to-date as possible. The PSRG recognizes that certain types of data and information may require extensive review before incorporation in SARs, but that is not always the case. For example, the PSRG believes that NMFS' SAR review process has been slow in including important information on fishery-humpback whale interactions and ship strikes, which could delay remedial actions. Managing marine mammal interactions with human activities can take years, even decades, but should not be delayed by slow SAR processing and reporting.*

In response to reporting of vessel strike and entanglement data for humpback whales, there is a 2-year lag time for getting new data into SARs. For example, the draft 2020 SARs will contain vessel strike and entanglement data from 2014 - 2018. The calendar year 2019 data are first verified, quality checked and inputted by the Regional Office before the SAR editor can update the SARs. This is a necessary quality control step and has been the perennial status quo for the SARs. NMFS strives to publish the SARs in a timely manner, but the agency review process took longer than anticipated despite our best efforts.

2. *NMFS develop a long-needed strategy to manage threats to Distinct Population Segments (DPS) of migratory whales and other species when these units mix during migration or on feeding grounds. Such a strategy should recognize DPS and stock complexes based on their discreteness, significance, and status as set forth in the NMFS-FWS joint policy (Federal Register 61:4721-4725), but those considerations should also account for their demographic, genetic and ecological characteristics and the risks they face individually and collectively.*

NMFS recently finalized Procedural Directive 02-204-03: Reviewing and Designating Stocks and Issuing Stock Assessment Reports under the Marine Mammal Protection Act and will give an overview of the Directive at the 2020 PSRG meeting. This Directive establishes a process for prioritizing stocks that should be considered for stock designation revisions, clarifies science and management roles in designating marine mammal stocks, emphasizes the definition of a stock as a management unit, provides guidance for determining whether multiple Demographically Independent Populations (DIPs) may be combined into one or more stocks for management purposes, and details the process by which stock designations are made and documented. The Directive also addresses how to designate stocks of marine mammals when DPSs of the species have been designated under the Endangered Species Act (ESA). The process provides a means to weigh both management and science when considering the discreteness of DIPs, including their demographic, genetic and ecological characteristics, as well as the mixing of DIPs and DPSs during migration or on feeding grounds. Ultimately, the Directive promotes developing stock designation schemes that maximize our effectiveness in managing the risks DIPs and/or DPSs face individually and collectively, given the best available scientific information and management tools.

3. *NMFS reinvigorate its efforts to clear the Northwestern Hawai'ian Islands of net and other marine debris accumulating on the islands and in the nearshore regions of the associated ecosystems. That debris poses a significant and unacceptable threat to many marine species that may become entangled in or ingest it.*

There are ongoing efforts at several levels to deal with the accumulation and impact of marine debris on marine species. The annual Hawaiian monk seal field camps in the Northwestern Hawaiian Islands (NWHI) intervene directly to disentangle seals (roughly 300 seals since the 1980s) and pick up and remove marine debris from beaches. Over the next two years, there will be multiple efforts by a broad coalition of partners to remove debris from the area. We briefly will review these efforts below.

2020: The State of Hawaii Department of Land and Natural Resources Division of Forestry and Wildlife (DOFAW) will be leading a shoreline marine debris removal cruise aboard the M/V Imua in September-October 2020. The DOFAW team (primarily Kure Atoll Wildlife Conservancy field staff) will be teaming up with the Damage Assessment, Remediation and Restoration Program (DARRP), Pacific Islands Fisheries Science Center (PIFSC) Ecosystems Science Division (ESD), U.S. Fish and Wildlife Service (FWS), NOAA National Ocean Service Papahānaumokuākea Marine National Monument (PMNM), and potentially the non-profit Papahānaumokuākea Marine Debris Project (PMDP) to remove shoreline entanglement hazards and other marine debris from Kure Atoll, Pearl and Hermes Atoll (adhering to strict biosecurity protocols), Midway Atoll, Lisianski Island, Laysan Island, and French Frigate Shoals. The proposed 24-day cruise led by 12 field staff from the various organizations will target 12 operational days and 75,000-100,000 lbs of shoreline debris removed.

2021: PIFSC ESD will lead a large-scale (30-60 day) in-water marine debris removal mission in the NWHI, prioritizing derelict fishing net removal from Pearl and Hermes Atoll and Maro Reef. They will also supplement the in-water work with shoreline marine debris removal work at Kure Atoll, Pearl and Hermes Atoll, Midway Atoll, Lisianski Island, Laysan Island, and French Frigate Shoals. This project will be largely funded by PIFSC, NOAA DARRP, and NOAA Marine Debris Program. Potential partnerships for this project include PMNM and PMDP. The goal is to target 100,000 lbs of in-water derelict fishing nets removed from shallow coral reef environments in the NWHI.

4. *NMFS convene a Take Reduction Team (TRT) for fisheries that are known to entangle humpback whales along the U.S. West Coast and evaluate the large number of entanglements to determine if they constitute an Unusual Mortality Event (UME). The PSRG recognizes the important work on this issue by the different state working groups, especially California, and the value of related, new information that could inform a TRT. The current draft SAR, prepared after the 2018 PSRG meeting, only includes entanglements through 2016 but already reports anthropogenic mortality above potential biological removal (PBR) levels for the affected stocks. The reported five-year average of anthropogenic mortality will continue to increase as it incorporates more recent years with higher entanglement rates. Addressing this issue with a TRT should be an increasing priority.*

As we noted in NMFS's response to recommendations in 2018, Section 118(f)(3) of the Marine Mammal Protection Act (MMPA) provides that NMFS may prioritize convening take reduction teams and developing take reduction plans (TRPs) when insufficient funding is available. MMPA section 118(f)(3) contains specific priorities for developing TRPs. NMFS has insufficient funding available to simultaneously develop and implement TRPs for all strategic stocks that interact with Category I or Category II fisheries. As provided in MMPA section 118(f)(6)(A) and (f)(7), NMFS uses the most recent SAR and List of Fisheries as the basis to determine its priorities for establishing TRTs and developing TRPs. Through this process for developing TRTs, in 2015, NMFS evaluated the CA/OR/WA stock of humpback whales and trap/pot fisheries and identified this as a lower priority compared to other marine mammal stocks and fisheries for establishing TRTs, based on population trends of the stock and M/SI levels incidental to that commercial fishery. In addition, NMFS continues to collect data to categorize fixed-gear fisheries and assess their risk to large whales off the U.S. west coast. Accordingly, given these factors and NMFS' priorities, implementation of developing a TRP for trap/pot fisheries has been deferred under section 118 as other stocks/fisheries are a higher priority for any available funding for establishing new TRPs.

As you note in your recommendation, since 2015, we have acquired additional information about the fisheries entangling these stocks, particularly the California Dungeness crab pot/trap fishery. Given such new information and the efforts by the state working groups, NMFS is still in the process of reevaluating these priorities. We will update the SRG on any changes for large whales off the West Coast after that analysis is completed. In the meantime, NMFS continues to work directly with the States of California, Oregon, and Washington on developing Conservation Plans intended to support applications for ESA Incidental Take Permits and providing technical assistance on draft regulations for fishery operations and gear marking to reduce the risk of entanglements and allow for more accurate identification of fisheries that entangle large whales. Further, NMFS will continue to gather fishery characterization and entanglement information for these fisheries in anticipation of either convening a take reduction team in the future as resources and priorities allow, or through other regulatory mechanisms mentioned above to minimize incidental take and serious injury and mortality levels to both the current MMPA stock and the two newly listed DPSs of humpback whales. This information would be critical to the development of a take reduction plan to reduce the bycatch of strategic stocks, particularly given the tight regulatory timeframe required under the MMPA.

As we noted in our response last year, at that time the West Coast Regional Office did not consider approaching the UME Working Group regarding the recent increases in entanglement events. NMFS has investigated the causes of the increases and concluded the primary causal factors in increases in entanglement risk include the amount or degree of overlap between foraging and migrating whales and the effort levels and location of the fisheries. Increased public awareness of the issue has also likely led to an increase in reports of animals, complicating our ability to determine whether the rate of entanglements has truly spiked in just the last few years. NMFS has directed resources towards understanding and addressing the issues. If the PSRG is requesting a formal consultation with the UME Working Group to evaluate the elevated entanglements, NMFS can advise on the consultation process and the data that would be needed by the UME Working Group. The evaluation of the data, the scientific determination as to whether the UME criteria have been met, and guidance on next steps of the

investigation as warranted are made by the Working Group. NMFS would determine whether to declare an event a UME after considering the Working Group's recommendation.

5. *NMFS make every effort to sustain the multi-year, multi-region ship survey schedule established with the Bureau of Ocean Energy Management and the Navy, without compromising the obligation to collect information required for SARs.*

Leveraging partnerships to support multi-year, ship-based rotational surveys remains a high and continuing priority for NMFS. Pacific Marine Assessment Program for Protected Species (PacMAPPS) is a partnership among Federal Agencies to conduct surveys to assess the abundance of multiple species and their ecosystems (Multispecies Cetacean and Ecosystem Assessment Surveys - MCEAS) on a 5-year survey schedule. The PacMAPPS partnership includes Bureau of Ocean Energy Management (BOEM), NMFS (Alaska (AFSC), Northwest, PIFSC, and Southwest (SWFSC) Fisheries Science Centers), U.S. Navy, and the FWS. NMFS is responsible for assessing and managing protected species in all U.S. Exclusive Zones and the eastern tropical Pacific to meet objectives of the MMPA and ESA. Despite NMFS best efforts, the vagaries of the annual budget allocation, competing agency priorities, and ship-time availability can affect survey design, goals, and operations. PIFSC, SWFSC, and AFSC have initiated a conversation with BOEM and Navy to develop the next 5-year rotation for cetacean surveys in the Pacific. The discussion is ongoing, but we do expect the PacMAPPS partnership to continue.

#### Procedural Requests

6. *The PSRG requests that NMFS prepare a Draft 2019 SAR for CA/OR/WA humpback whales and eastern North Pacific blue whales for PSRG review during May 2019. Both of these stocks are experiencing increased rates of human interaction and warrant close, timely management. In the absence of up-to-date SARs, the PSRG was unable to discuss these stocks at its meeting.*

Draft 2019 SARs for CA/OR/WA humpback whales and eastern North Pacific blue whales were prepared and provided for SRG review during June 2019, after the March in-person meeting. Feedback received from the SRG has been incorporated, and the Draft 2019 SARs were released for public comment on 27 November 2019.

7. *At the next meeting, NMFS provide an analysis of the 2018 CCES joint fish/marine mammal survey, with a focus on the positive and negative impacts of the survey's dual mission on the quality of West Coast cetacean assessments. The PSRG believes it is important to know how the dual mission affects those surveys and what the long-term consequences might be for continuing with similar survey designs.*

The SWFSC will present such an analysis at the 2020 SRG meeting.

8. *Three weeks before all following meetings, NMFS and the FWS provide summaries of the progress they have made on each of the PSRG recommendations from the previous meeting, along with an annotated agenda to preview what NMFS and the FWS will be presenting at*

*the upcoming meeting. While NMFS provides a response to the PSRG recommendations after they are submitted there are often new developments that occur closer to the time of the next meeting that would be helpful for fine tuning the agenda and preparing PSRG members.*

When coordinating future Pacific SRG meetings, the NMFS liaison to the SRG will request that NMFS and FWS staff provide a written summary as part of the document packet sent to the SRG three weeks before the meeting.

9. *NMFS provide regular updates regarding stocks that overlap with the U.S. Exclusive Economic Zone and that may be affected by the Marine Mammal Protection Act's Import Provision rule (Section 101(a)(2)). The PSRG appreciated the update provided by NMFS staff at the 2019 meeting and believes regular updates are necessary to ensure the PSRG has the information needed to meet its responsibilities.*

We will provide updates on the List of Foreign Fisheries and our implementation process for the MMPA Import Provision rule. With regard to tracking transboundary stocks, at this point, unless the stock is subject to a take reduction plan, our focus is on working with nations to ensure that they are moving toward estimating bycatch of those stocks in their fisheries and estimating the portion of those populations in their waters. Therefore, nations are at the phase of defining the bycatch risk associated with their fisheries. In some instances, nations are using U.S. stock assessments to calculate bycatch limits or using U.S. potential biological removal as their bycatch limits. At the time of the Comparability Finding determination (submissions due March 1, 2021, to NMFS), the picture of bycatch will likely be clearer. In the meantime, we are working with nations to provide better estimates of marine mammal bycatch in their fisheries.

#### New SRG Requests

##### 10. *Southern Resident Killer Whales*

*The PSRG recommends that NMFS (a) take urgent, bold, precautionary actions to manage the multiple factors posing risks to the southern resident killer whale (SRKW) population, and (b) consider the establishment of a science-based recovery team to provide the agency with objective guidance on the numerous scientific issues that the agency must contend with to promote SRKW recovery (e.g., the management of other marine predators that may compete with SRKWs for food, determining adequate setbacks for vessels in the vicinity of the whales). The SRKW population has been declining since 1995 and the existing evidence indicates that the decline is likely to continue into the foreseeable future: its reproductive and survival rates have fallen well below sustainable levels, its age structure is becoming distorted with a paucity of immature females, and numerous individuals in the population are in poor condition. The PSRG recognizes that the task force established by Washington's Governor Inslee has reviewed the status of, and risk factors affecting, the SRKW population and the outcome of that review would provide valuable information to be considered by a recovery team. At the same time, however, NMFS is the lead agency responsible for the protection and recovery of this highly endangered population and, as such, it must lead the recovery effort. A recovery team could provide valuable scientific advice to NMFS regarding the most important actions needed to investigate and recover this population.*

NMFS continues to lead and work with partners to implement actions from the Recovery Plan to support the recovery of SRKW. The recent Species in the Spotlight story on SRKW in the ESA Biennial Report to Congress includes updates for 2017-2018 and many of the actions continued into 2019 and are ongoing. In developing the Recovery Plan for SRKW we determined that the open public process used to develop the conservation plan already included interested stakeholder groups and actually allowed for even broader participation than a recovery team would have allowed. The recovery plan was well informed by external science review in the form of numerous workshops. We have taken a similar approach for the implementation of recovery actions, drawing on a broader set of internal and external scientific experts and stakeholders than we could have achieved through one recovery team. We have been able to get input from a larger number of experts by pulling together specialized groups with direct expertise for program reviews and to have focused discussions on specific threats, actions, and priorities. Several examples of these topic-specific reviews or discussions include:

- Transboundary fisheries/prey workshops in 2011/12
- We had a comprehensive program review in 2015 that had an external science panel
- We conducted several health/condition workshops to identify and prioritize actions related to poor reproduction and low survival
- We worked with EPA on a technical review of contaminant effects and gaps, specifically for Polybrominated diphenyl ethers (PBDEs) on SRKW
- We identified and are implementing priority short-term research and management needs for 2016-2020 in the Species in the Spotlight Action Plan
- Participation on Advisory and Technical workgroups for ECHO
- We engaged state, federal, Canadian and tribal scientists to inform the identification of priority prey stocks for SRKW
- Ongoing Pacific Fishery Management Council Workgroup review of impacts of coastal fisheries on SRKW
- Participation on the WA Governor's Task Force and working groups
- Participation on Canadian Technical Working Groups to develop Interim Measures for 2019 and 2020
- We conducted a peer review of the Biological Report supporting the SRKW critical habitat revision proposed rule

#### 11. *Hawaiian False Killer Whales*

*With regard to false killer whales, the PSRG recommends that NMFS— (1) work with the False Killer Whale (FKW) Take Reduction Team to re-examine all FKW interactions with the longline fishery for the purpose of identifying and developing more effective and safe alternatives for releasing hooked whales unharmed and without trailing gear; (2) fund additional research on the nature of fishery interactions with FKWs, the resulting injury and mortality rates, and the development of alternative mitigation measures to minimize injuries and deaths from those interactions. (3) more rigorously test the branchline mitigation measure currently in use with different hook, line and leader combinations to better*

*determine gear configurations that produce the desired result; those tests should specifically examine —*

- a. the bending strength of different circle hook types and sizes that meet regulatory standards for the fishery, and*
- b. the breaking test of commonly available monofilament branchline leader material used in the fishery.*

*To date, efforts to mitigate FKW interactions with the Hawai'i longline fishery have not been effective. Alternative management strategies should be explored to ensure that the number of FKWs injured and killed by the fishery is reduced as required. The most effective way to identify such alternatives is likely to come from a re-examination of all the existing data on FKW-longline interactions. If potentially useful alternatives are identified, they will likely require research into their effectiveness, and NMFS should be prepared to provide the necessary funding for such research. The current mitigation system is based on gear-related assumptions that, if suitably adjusted, circle hooks will straighten and branchlines and leader will hold when exposed to the high tension exerted by a FKW. Results to date indicate this approach is not as effective as anticipated. If NMFS is going to continue to rely on this system, then each of its main components should be tested systematically to ensure that the mitigation measure as a whole is working as intended. Regulations implementing the current approach limit the maximum hook shank diameter to 4.5 mm or less and the monofilament branchline diameter to 2.0 mm or greater. However, hooks and line that meet these regulatory requirements may vary in actual bending or breaking strength, and further testing is required to determine what hooks and line satisfy the intent of the regulations.*

*This current mitigation approach also depends on the actions of the captain and crew. For that reason, the PSRG encourages NMFS to formally train both the captains and crews of longline fishing vessels in the safe use of this method for releasing bycaught marine mammals without trailing gear. To meet that objective safely, NMFS — with the assistance of the FKW Take Reduction Team — should develop, test, and document the procedures to be used and the data to be collected so that observers, captains, and crew can be so trained and the resulting data used a basis for improving the system over time. Finally, at its meeting, the PSRG discussed the longstanding concern over low reporting levels of FKW interactions from unobserved trips and the question of whether additional types of monitoring are needed. The group was informed that this issue is being considered by the FKW Take Reduction Team, and looks forward to learning about the Team's deliberations.*

NMFS is currently coordinating with the False Killer Whale Take Reduction Team (Team) to develop recommendations to amend the measures of the False Killer Whale Take Reduction Plan (Plan). This includes modifications to existing measures and developing new measures intended to reduce mortality and serious injury (M&SI) to false killer whales (FKW) resulting from interactions with the Hawaii longline fishery. Specifically, the Team is evaluating recommendations to test gear, modify gear requirements, revise training and handling guidelines, increase monitoring effort (i.e., electronic monitoring), and a number of other measures to reduce M&SI. NMFS recently conducted tests to measure the strength of

hooks accounting for different attributes (i.e., size, diameter, cross-section) and will be using these results to inform gear requirements to reduce M&SI. NMFS is also conducting a field study to evaluate the effect of wire diameter of hooks on catch retention in the long-line fishery. NMFS continues to analyze FKW interactions to evaluate factors that contribute to M&SI and will continue testing gear and working with the Team to develop measures to reduce FKW M&SI in the longline fishery.

## 12. Hawai‘ian Monk Seals

*The PSRG also recommends that the NMFS recognize toxoplasmosis as a source of anthropogenic mortality for Hawai‘ian monk seals, both in the SARs and more broadly, and continue to work with state and local agencies to reduce the negative impact of this additional source of mortality on the population. Toxoplasmosis is a result of environmental contamination from the feces of felids that have been introduced to the Hawai‘ian Islands, making the mortality caused by this disease a direct result of human actions. Effort should be made to reduce this anthropogenic source of mortality, especially as adult female monk seals appear to be most sensitive to the disease, putting the status of the monk seal population at risk.*

The draft 2020 SAR will include known toxoplasmosis deaths as human-caused. In 2019, PIFSC hosted the “Technical Workshop on Toxoplasmosis in Hawaiian Monk Seals” in Honolulu. The workshop participants included experts representing multiple scientific disciplines, countries, and taxa with relevance to toxoplasmosis. Through this workshop, PIFSC defined knowledge gaps and identified feasible, strategic research actions. The input from this workshop was used to develop a suite of recommendations and future directions to guide PIFSC’s scientific priorities on this important disease threat so that it can inform managers tasked with mitigating the threat. Addressing a terrestrially sourced pathogen whose definitive host (felids) has ramifications for other native wildlife is a unique challenge for NMFS and mitigating it will require a great deal of coordination, creativity, and partnerships. PIRO convened a workshop in mid-January 2020 to seek input as it begins developing an action plan for NMFS that will include recommendations for scientifically informed, stakeholder, leveraged, strategic management actions.

## 13. Hawai‘ian Spinner Dolphins

*The PSRG recommends that NMFS support the development and implementation of a spinner dolphin survey design that provides a stronger basis for characterizing the abundance, trend, and status of spinner dolphin stocks in Hawai‘i. The lack of such basic information has long undermined efforts to characterize and manage human impacts on those stocks. Scientists have provided clear evidence that human interactions have affected other dolphin stocks significantly and the PSRG is concerned with the lack of progress on the protection of spinner dolphins in Hawaii. The PSRG has provided recommendations to that effect in the past, but NMFS has made seemingly little progress in conducting the appropriate studies and implementing necessary management actions. As a related matter, the PSRG reiterates its previous recommendation that NMFS use time and area closures to protect spinner dolphins rather than a 50-yard approach limit, and that the agency review the efficacy of the Dolphin SMART program. Interactions between humans and dolphins are generally*

*very dynamic: both may be moving about and the distances between them changing rapidly, which means that those distances are difficult to measure and the interactions difficult to manage. The 50-yard approach limit is included in the NMFS' Dolphin Smart Program. However, the PSRG does not consider it to be sufficiently effective in protecting the dolphins and believes the 50-yard limit specifically and the Dolphin Smart Program generally warrant review. Other regions have recognized shortcomings in the Dolphin Smart program and are re-evaluating the approach, and such review also is warranted in Hawai'i. Among other things, the review should consider the use of time-area measures to manage interactions, as they are much easier to detect, verify, and enforce.*

PIFSC has worked together with PIRO, the Hawaiian Islands Humpback Whale National Marine Sanctuary, and University of Hawaii (UH) to develop a spinner dolphin monitoring plan that includes acoustic monitoring to understand seasonal distribution, abundance surveys at each island area, and a follow-on study to the SAPPHIRE project that would aim to examine age structure and potential long-term impacts of swim-with programs off Hawaii Island. PIFSC and UH have invited Dr. Len Thomas to Hawaii to work with us to develop a study design for assessing abundance and trends, and we expect that collaborative work to take place in March of 2020, shortly before the PSRG in-person meeting. PIFSC and Dr. Bejder will provide an update on research plans at the March in-person meeting.

NMFS is currently evaluating the alternatives in the Proposed Rule for Protective Regulations for Hawaiian Spinner Dolphins under the MMPA, which includes a 50-yard approach regulation and time-area closures. NMFS will use the best available science in determining actions that may be required to protect spinner dolphins.

#### 14. *Hawai'ian Spotted Dolphins*

*The PSRG recommends that NMFS develop and implement a research strategy that will provide the basic information needed to complete an informative stock assessment for insular spotted dolphins in Hawai'i. The existing information is sufficient to conclude that individuals from this stock interact with fisheries around the main Hawai'ian Islands. NMFS should be assessing the nature and frequency of these interactions to determine and minimize their impact on the dolphins.*

Assessment for Hawaii insular spotted dolphins is complicated by overlapping stock boundaries and lack of sufficient markings to facilitate the use of photo-identification catalogs to examine population size. PIFSC is partnering with UH to develop a Ph.D. or postdoctoral project with the goal of developing novel or existing methods for modeling the abundance of this stock. These approaches will improve abundance estimates given the complications with using standard distance or mark-recapture approaches.

#### 15. *Mariana Islands Cetacean Surveys and Beaked Whale Strandings*

*The PSRG recommends that NMFS continue to collect marine mammal stock assessment information in the waters around Guam and the Commonwealth of the Northern Mariana Islands and develop SARs for those species even if certain information is incomplete. The*

*PSRG welcomes NMFS' progress in collecting scientific information on cetaceans in the Mariana Archipelago, but more needs to be done. Completing these SARs would highlight what is known and what additional information is needed. Clearly, large-scale, ship-based visual and passive acoustic abundance surveys should be continued, with genetic sampling and photo-identification, to assess population structure, abundance and distribution of cetacean species in the region. In addition, further analyses of existing genetic sampling, tagging, photo-ID and acoustic datasets are needed and almost certainly will lead to new insights about the marine mammals in those waters and the potential impacts of human activities on them.*

*The PSRG also recommends that NMFS work with the U.S. Navy to establish an acoustic monitoring program that (a) quantifies long-term trends in the abundance of beaked whales in the waters of the Navy's Marianas Islands Range Complex and (b) includes aerial surveys of area shorelines following sonar exercises to document cetacean strandings or mortality that might otherwise not be recorded from remote areas of the islands. These recommendations are based, in large part, on the apparently high rate of beaked whale strandings coincident with use of mid-frequency active sonar during naval exercises in the Mariana Archipelago.*

PIFSC is working toward finalizing a Technical Memorandum describing all of the data and information currently available on Mariana archipelago cetacean populations. This report will serve as the basis for Mariana cetacean SARs. With the new guidelines surrounding the delineation of DIPs and stocks, we must approach new SARs for Mariana cetaceans through that process and do not expect to have new SARs for these stock until 2021.

Further, PIFSC expects to continue its partnership with the Navy to conduct a large-scale survey for cetaceans in the Marianas in the summer of 2021. As the fourth survey in the PacMAPPS partnership, NMFS has presently allocated ~60 sea days to the assessment effort. The PacMAPPS survey in the Marianas will include standard shipboard visual and acoustic surveys, as well as the deployment of drifting acoustic spar buoy recorders for the examination of beaked whale abundance and distribution. Navy has otherwise discontinued support for NMFS passive acoustic work in the region as they reexamine their priorities for future research across all Navy ranges.