



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Silver Spring, MD 20910

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Dr. Randall S. Wells  
Acting Chair, Atlantic Scientific Review Group  
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1600 Ken Thompson Parkway  
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Dear Dr. Wells:

Thank you for your letter to Eileen Sobeck, Assistant Administrator for Fisheries, transmitting recommendations from the February 2016 meeting of the Atlantic Scientific Review Group (SRG). Your letter was forwarded to me because the Office of Protected Resources within NOAA Fisheries is responsible for national programs under the Marine Mammal Protection Act and leads NOAA Fisheries' coordination of the SRGs.

The SRG has made many valuable recommendations to help guide NOAA Fisheries' marine mammal science and management, which are addressed in the enclosure. I appreciate the continued service and contributions by members of the Atlantic SRG in providing advice and support to NOAA Fisheries in accordance with the Marine Mammal Protection Act. Furthermore, I appreciate your willingness to serve as Acting Chair of the Atlantic SRG, and value the guidance you provided the group. I look forward to our continued partnership to improve the science supporting the conservation of marine mammals.

Sincerely,

Donna S. Wieting  
Director, Office of Protected Resources

Enclosure

cc: Eileen Sobeck, NOAA Assistant Administrator for Fisheries



## **Responses to Recommendations of the Atlantic Regional Scientific Review Group**

- (1) *The SRG recommends that communication between Science Centers should be improved with regard to developing, refining, and sharing methodologies of relevance across regions.*

We recognize the importance of sharing methodologies between Science Centers and are pleased with the discussions prompted by relevant presentations at the Joint SRG meeting. We are planning an internal protected species science workshop in fiscal year 2017 to facilitate further communication between Science Centers regarding analytical methodologies.

- (2) *In response to concerns about undetected interactions between North Atlantic right whales and fisheries in the inshore waters along the Maine coastline, the SRG recommends that NOAA Fisheries increase its passive acoustic monitoring program for North Atlantic right whales to include the exempted waters of Maine.*

As part of a research project funded by the Navy to the Northeast Fisheries Science Center (NEFSC) Protected Species Branch (PSB) and Woods Hole Oceanographic Institution (WHOI), we have had four Marine Autonomous Recording Units (MARUs) positioned in a grid, and WHOI digital acoustic monitoring (DMON)-equipped buoy stationed off Mount Desert Rock, Maine, and so covering some inshore waters. Archived records of the DMON-buoy (available at <http://dcs.who.edu/mdr0915/mdr0915.shtml>) show the deployment from September 2015 to February 2016. As can be seen from the archive, right whale calls were detected from September to early December 2015. The MARU data have yet to be analyzed. A similar deployment is planned for 2016. The passive acoustics research program also has the data from Maine Department of Marine Fisheries MARU deployments along the inshore coast of Maine. These are being analyzed as part of the larger project to assess right whale occurrence along the entire eastern seaboard. Once both of these data sources are analyzed, we will be in a position to fill in whatever gaps still exist along the Maine coast. However, the passive acoustics research program's field is funded entirely through external sources – that is, sources other than NOAA Fisheries base funding. Currently, the NEFSC has no appropriated funds to allocate recorders to work in inshore Maine waters, deploy recorders were they to become available, nor support the analysts needed to analyze the data from these deployments. If funding for additional passive acoustic work becomes available to the NEFSC group, work in the inshore waters of Maine could be given priority.

- (3) *The SRG is concerned about delays in developing regulations to mitigate pilot whale takes in the pelagic longline fishery.*

NOAA Fisheries is in the process of revising the Atlantic Pelagic Longline Take Reduction Plan based on the consensus recommendations from the December 2015 meeting of the Atlantic Pelagic Longline Take Reduction Team. In the meantime, we continue to monitor observed and estimated interactions with pilot whales and other marine mammals in the fishery.

- (4) *The SRG recommends that NOAA Fisheries, with authority from the Endangered Species Act (ESA) to require special management considerations or protection of critical habitat features: a) recognize that right whale habitat includes that portion of the acoustic environment in which they use sound for basic life functions, b) implement measures by which to quantify the spatio-temporal dynamics of right whale acoustic habitat, and c) include acoustic habitat metrics in an integrated approach for assessing habitat loss.*

In January of this year, we published a final rule revising right whale critical habitat incorporating several changes to the proposed critical habitat rule based on public comments received. As noted in our response to the Atlantic SRG recommendation letter of September 1, 2015, NOAA Fisheries considered acoustic qualities that allow right whales to communicate efficiently and carry out other essential biological functions. We found that the physical and biological features associated with acoustic qualities or features of the habitat that are essential to the conservation of North Atlantic right whales are currently unknown. Even though it is not currently possible to identify an acoustic critical habitat feature, it is important for NOAA Fisheries to continue to consider and address these potential impacts to North Atlantic right whales through the ESA section 7 consultation process. We will continue to consider new information related to the acoustic environment required by the North Atlantic right whale for its conservation and recovery as it becomes available.

- (5) *The SRG recommends that NOAA Fisheries include acoustic occurrence data for abundance estimation in spatial models.*

We agree with the SRG that this is an important area to expand our modeling efforts. We held a workshop on the topic in September 2015. The NEFSC PSB has employed a postdoctoral statistician to work on this and other issues related to right whale modeling in 2016/2017. Significant advances have been made in acoustic signal detection, classification, and localization over the last several years. However, there remain technical hurdles to the direct incorporation of passive acoustic data into spatial models and abundance estimates. These limitations include: 1) difficulty in the estimation of detection distances from moored units, 2) challenges in the classification of delphinid whistles, and 3) a lack of information on cue production (call rates) for many species. Each of these challenges has been addressed for certain species in isolated studies or specific regions. Of the species we assess, sperm whales are the most tractable for augmentation of visual survey data with passive acoustic data given their well understood acoustic behavior and easily detectable and identifiable sounds. Density estimates from moored units in the Gulf of Mexico have also been published recently, and arrays of moored units have provided density data for both right whales and potentially Bryde's whales. However, to date, there are insufficient data available to support the direct incorporation of passive acoustic data into abundance estimates or spatial models. Both increased data collection and improved methodologies are required to achieve this goal. The NEFSC and Southeast Fisheries Science Center (SEFSC) along with several academic partners are actively working toward this goal. We are grateful to the SRG for acknowledging the importance of this work.

- (6) *The SRG recommends that NOAA Fisheries provide personnel to conduct trend analyses of abundance data.*

We agree that doing these trend analyses is important. As discussed at the February 2016 Atlantic SRG meeting, there are currently limited data available to conduct meaningful trend analyses for most species in the Atlantic and Gulf of Mexico. The upcoming 2016 surveys may provide an opportunity to conduct such analyses for the Atlantic, as the survey will represent the fourth data point in a sparse time series (1998, 2004, and 2011). We are also currently exploring several statistical methods to document trends (including a Bayesian mixed-effects stratified method) that use the existing or expansion of the density habitat models developed under Atlantic Marine Assessment Program for Protected Species. It would include both the 2016 data to be collected and data collected from previous surveys. In the Gulf of Mexico, we do not anticipate conducting additional vessel and aerial surveys until 2017 at the earliest, and at that time we will have only three summer vessel surveys to work with (2003, 2009 and 2017) and one spring survey. Analysis of trends can be undertaken as soon as data become available. However, this priority will have to be balanced against other priority analytical requirements for the stock assessment reports (SARs) and take reduction team support. NOAA Fisheries will explore the possibility of incorporating trend analysis into the Gulf of Mexico Marine Assessment Program for Protected Species, which is currently in the early planning stages. We appreciate the SRG's acknowledgement that these analyses need resourcing and appreciate the recommendation for extra resourcing to conduct them.

(7) *The SRG recommends that NOAA Fisheries analyze trends in abundance using random effects models.*

We agree that taking a mixed-effects approach to assessing trends in abundance from survey data could be a useful approach. We are concerned that, given the variability in survey design over the years, the random component of these models (blocks or regions) could be problematic. If they are too large, then there will be too few random effects for the model to be useful. Making the blocks/regions small enough for there to be sufficient replicates in the random effects raises the problem that there may be instances where some blocks are not covered in some surveys. Either approach raises the possibility that the confidence intervals of the random effect could be extremely large, creating problems with making inference from the model. See pages 93 and 156 of Pinheiro and Bates 2006 for examples. There might be a Bayesian mixed-effects approach that could offer a solution. This is one of a variety of analytical approaches that will be explored when trend analysis becomes possible.

(8) *The SRG recommends that the NEFSC PSB hire a full-time scientist to oversee a dedicated research program for gray and harbor seals.*

We agree that a full-time pinniped scientist on staff at the NEFSC is desirable and appreciate the SRG pointing out the value and necessity of having a dedicated research program for harbor and gray seals.

(9) *The SRG recommends that NOAA Fisheries consider estimating the number of pinnipeds hauled out with active gear entanglement but which received no stranding response. The SRG also recommends that NOAA Fisheries assess the possibility of expanded stranding and entanglement response to areas where there is none, such as the north shore of*

*Massachusetts, Nantucket, and Martha's Vineyard, and to Maine, where there is no stranding response to pups.*

We agree that sampling of pinniped haul-out sites with the aim of estimating rates of sub-lethal entanglements is a worthwhile endeavor. This is one of the projects being considered for future unmanned aerial vehicle research, by us and by collaborators at WHOI. Existing aerial photographs have been flagged for instances of entanglement, and more can be done to try to quantify the problem.

The NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO) Marine Mammal Response Program has been diligently looking for organizations to take on stranding response in the Massachusetts gap coverage areas since 2013. No federal funding is available to cover base operating costs for new Stranding Network members, making it difficult to encourage new organizations to take on response activities. However, consultations have been ongoing with entities interested in applying for authorization to respond to strandings on Martha's Vineyard and Nantucket. Seacoast Science Center, authorized responder for New Hampshire, has been assisting GARFO with animal response from Salisbury through Ipswich, Massachusetts. In fiscal years (FY) 2015 and 2016, the Prescott Grant Program annual competition included a regional priority to provide stranding response in these geographic areas with gaps in coverage. This regional priority will also be included in the upcoming FY 2017 Prescott Grant Program competition.

Maine has full stranding response coverage; therefore there is no change in response efforts to stranded seals, including pups. The closure of the University of New England's rehabilitation facility placed demands on the response organizations as it eliminated rehabilitation options for Maine responders. Pups are monitored in the field for a longer period of time, resulting in more cases requiring euthanasia due to limited rehabilitation capacity in the region.

*(10) The SRG recommends that NOAA Fisheries employ methods to improve estimates of  $g(0)$  in the Atlantic and Gulf of Mexico.*

The planned Gulf of Mexico Marine Assessment Program for Protected Species (GoMMAPPS) surveys will provide  $g(0)$  estimates for most cetacean stocks in oceanic waters of the Gulf of Mexico based upon the two-team independent observer approach. These will be applied to all future SARs. Alternative approaches for estimating  $g(0)$ , including the Barlow method, will be evaluated for the Atlantic and Gulf of Mexico. In the interim, as Gulf of Mexico SARs are updated, NOAA Fisheries will apply appropriate proxy  $g(0)$  values from the Atlantic surveys.

*(11) The SRG recommends that NOAA Fisheries make research on Gulf of Mexico Bryde's whales an immediate and high priority. Of particular importance is: 1) tagging of whales, especially with satellite-linked tags, to define their ranging patterns, 2) collection of genetic samples, and 3) investigation of the possibility of occurrence of this species elsewhere in the Gulf of Mexico, as suggested by acoustic records from the western Gulf.*

We agree with these recommendations, and the SEFSC has developed research plans to address them. The SEFSC is actively exploring a number of potential options for implementing these

research plans. With regard to the collection of genetic samples for stock delineation, the SEFSC would focus efforts on any whales encountered in the western Gulf of Mexico. The genetics of whales in the northeastern Gulf of Mexico was thoroughly investigated by Rosel and Wilcox (2014). We recently dedicated funding from the NOAA Fisheries Office of Science and Technology Ocean Acoustics Program to deploy acoustic moorings in the western Gulf to examine Bryde's whale distribution. The Office of Science and Technology has also funded ongoing efforts to analyze Bryde's whale acoustic data in 2015 and 2016. Additionally, NOAA Fisheries has been conducting an ongoing study of acoustic backscatter to quantify the distribution of fish schools in the northeastern Gulf of Mexico to better characterize Bryde's whale habitat and initiated an analysis of stable isotopes from Gulf of Mexico Bryde's whale biopsy samples to understand trophic and food web relationships.

*(12) The SRG recommends that NOAA Fisheries prepare a list of stocks of potential concern, due to their small size or lack of information, for SRG review with regard to prioritizing research.*

We agree that this should be a focus and will prepare a list for the 2017 SRG meeting. When the SRG conducts its review with regards to prioritizing research, we suggest that they use the quantitative risk assessment method developed by the SEFSC (Phillips and Rosel 2014) for assessing the relative risk of estuarine bottlenose dolphin stocks in the Gulf of Mexico so that such stocks can be prioritized in the manner similar to that recommended by the SRG. This process has been applied to all the estuarine stocks in Texas (Phillips and Rosel 2014) and is currently being applied to those in Louisiana, with the intention to continue with Mississippi, Alabama, and Florida stocks in the future as resources become available. The methodology considers more than population size, assessing potential threat levels from a suite of 19 anthropogenic stressors.

*(13) The SRG recommends that NOAA Fisheries initiate surveys in water of the southern Gulf of Mexico, south of the U.S. Exclusive Economic Zone, to better define transboundary stocks and obtain more accurate estimates of abundance for oceanic stocks.*

We agree that Gulf of Mexico-wide distribution, abundance, and stock structure assessment that include the southern Gulf of Mexico (i.e., waters of Mexico and Cuba) are needed for oceanic and shelf stocks and that these stocks should be managed from a Gulf-wide perspective. The SEFSC is actively exploring mechanisms such as GoMMAPPS to initiate Gulf-wide assessments.

*(14) The SRG recommends that NOAA Fisheries investigate alternative sources of information for Caribbean stocks.*

We agree that the knowledge of cetacean stocks in U.S. Caribbean waters is poor. We welcome the opportunity to explore and discuss alternative methods of obtaining information from these waters with the SRG. However, dedicating SEFSC staff effort to obtaining, managing, and processing new information will have to be balanced against other priorities.

*(15) The SRG commends the SEFSC for outstanding scientific work and collaboration related to the injury assessment for the Deepwater Horizon Programmatic Damage Assessment and Restoration Plan (PDARP).*

We appreciate the SRG's commendation.

*(16) The SRG recommends that NOAA Fisheries develop an appropriate recovery factor to include in updated potential biological removal (PBR) calculations for stocks affected by the Deepwater Horizon oil spill.*

We have been discussing this option and appreciate that the SRG agrees that this is a reasonable action to take. The SEFSC will continue to consider appropriate changes to recovery factors for affected stocks for future SAR updates.

*(17) The SRG recommends that NOAA Fisheries assign a single senior author to each SAR to improve quality of writing and communication. Authors should be well-acquainted with publication-quality scientific writing, retain senior authorship for a number of years, and initially be given time and institutional support to completely re-write SARs.*

We thank the SRG for this constructive comment and will evaluate how to improve the quality of the SARs. As noted by the SRG, re-evaluating and re-writing of SARs is a huge task and staffing capacity available to undertake this job is limited. Although NOAA Fisheries policy means individual authors cannot be listed for each SAR, we can assign senior staff to oversee production of SARs to a higher standard. As producing SARs is a group activity – there are many disparate topics requiring different expertise – the “senior author’s” role would be somewhat editorial. We will also need to ensure that having different authors for different SARs does not introduce inconsistency across SARs and lead to the same type of information being presented differently across SARs. As such, there is an overall (across-SARs) editorial issue that will also need to be addressed. Some of the problems with SARs stem from the gradual accretion of information therein, in response to additions suggested by the SRG over the years. While this information has proven valuable, remedying this will require substantial rewriting, and as the SRG correctly identifies, means that individual authors must be allocated the time needed to complete these rewrites.

*(18) The SRG recommends that NOAA Fisheries develop training and materials for new SRG members. The SRG further recommended that the NOAA Fisheries liaison brief the SRG on NOAA Fisheries' follow-up activities related to SRG recommendations from the previous three years to give the group a better understanding of how its recommendations are being used.*

We agree that training materials would be useful in orienting all new SRG members, and will develop them in advance of the 2017 SRG meetings. Additionally, in future Atlantic SRG meetings the Liaison will brief the group on follow-up activities in response to past SRG recommendations.

## References

- Phillips, N. and P.E. Rosel. 2014. A method for prioritizing research on common bottlenose dolphin stocks through evaluating threats and data availability: Development and application to bay, sound and estuary stocks in Texas. NOAA Technical Memorandum NOAA Fisheries-SEFSC-665.
- Pinheiro, J.C. and D.M. Bates. 2006. Mixed-effects models in S and S-PLUS. Spring Science & Business Media.
- Rosel, P.E. and L.A. Wilcox. 2014. Genetic evidence reveals a unique lineage of Bryde's whales in the northern Gulf of Mexico. *Endangered Species Research* 25: 19-34.