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Update on the Gulf of Mexico (Bryde's) Whale Research—2018-2019

Southeast Fisheries Science Center

INTERNATIONAL WHALING COMMISSION

Update on the Gulf of Mexico (Bryde's) Whale Research and Management Recommendations —2018-2019

NOAA, National Marine Fisheries Service

Below are brief responses to the recommendations made by the Scientific Committee in regards to the Gulf of Mexico (Bryde's) whale.

● Make full and immediate use of available legal and regulatory instruments to provide the greatest possible level of protection to these whales and their habitat.

Response: On April 9, 2019, NOAA listed Gulf of Mexico Bryde's whales as "endangered" under the Endangered Species Act. These whales are also protected under the Marine Mammal Protection Act.

● Ensure that seismic surveys and associated activities that degrade acoustic habitat are excluded from the region of the eastern Gulf of Mexico inhabited by these whales, including an appropriate geographic buffer against acoustic impacts from activities in the Central Planning Area and active leases in the Eastern Planning Area.

● Based on the known distribution of these whales and overlap with certain fisheries, improve understanding of potential for interaction with fishing gear, and expand and implement appropriate measures, such as area closures, to reduce the risk of entanglement throughout their range

Response: As required by the US's ESA, NOAA Fisheries intends to consult with other federal agencies on actions they carry out, fund, or authorize that may affect the species.

· Ensure that information about core known habitat and movements in the Gulf of Mexico is transmitted to the U.S. Coast Guard, shipping industry trade organizations, and Gulf of Mexico port authorities (e.g. in Tampa, Florida) for their consideration to mitigate ship-strike risk.

Response: As required by the US's ESA, NOAA Fisheries intends to consult with other federal agencies on actions they carry out, fund, or authorize that may affect the species.

● Develop and implement restoration projects (with funds from the Deepwater Horizon oil spill settlement) for these whales and their habitat as a priority and ensure that a robust monitoring and adaptive management plan is in place to evaluate the effectiveness of all restoration efforts.

Response: The Deepwater Horizon oil spill Programmatic Damage Assessment and Restoration Plan (PDARRP) includes Gulf of Mexico Bryde's whales among the injured marine mammals to be restored. In 2017, the Open Ocean Trustee Implementation Group (OO TIG) invited the public to submit restoration ideas for consideration. Priorities for oceanic marine mammals, including Bryde's whales, included characterizing and addressing noise, reducing vessel collisions, protecting habitat, better understanding causes of illness and death, and addressing relevant data gaps. The OO TIG will release a draft restoration plan for public comment in late spring/early summer.

Once the plan is final, restoration projects that address these priorities will be implemented. It's expected these whales will benefit from this restoration plan.

- Characterise the degree of overlap between the whales' currently known preferred habitat and ship traffic, and immediately implement appropriate measures to reduce the risk of ship strikes (e.g. rerouting, speed restrictions).

- Design and conduct research programs (sighting surveys, acoustic monitoring, genetic mark-recapture, photoidentification if feasible, satellite tagging if feasible, health studies if feasible) to further investigate these whales' distribution, movements, habitat use, health, survival and fecundity. This should include efforts to better document the whales' total geographic range and to document causes of mortality through necropsies when carcasses are reported.

Response: The NMFS Southeast Fisheries Science Center (SEFSC) has a variety of ongoing research projects aimed at improving understanding of these whale's distribution, range and habitat use to better document the total geographic range. The work involves photo-identification, passive acoustics and trophic studies. A dorsal fin photo-ID catalog has been developed from photos taken on all NMFS SEFSC cruises. A variety of passive acoustic studies are ongoing including:

- *Use of real-time DIFAR sonobuouys during large vessel NOAA cruises in the northeastern Gulf of Mexico (see below) to validate call types produced by GOMx Bryde's whales. This work has validated GOM Bryde's whales as the source of long moan calls, manuscript for peer review in progress.*
- *Deployment of 5 passive acoustic moorings in the northwestern Gulf of Mexico for one year (2016-2017) along the 225m isobath to determine whether whales were in the area.*
- *Planned deployment of two new passive acoustic instruments for one year starting in June 2019 in the northwestern Gulf of Mexico as follow up to the previous instruments.*
- *Development of automated acoustic dectector algorithms to analyze data collected from 10 years of HARP deployment in the northeastern Gulf of Mexico.*
- *Analysis of data from a NOAA Ocean Noise Reference Station buoy placed in deep waters southwest of the primary habitat in the northeastern Gulf of Mexico has not detected any Gulf of Mexico Brydes whale calls*
- *Planned future acoustic work includes deployment of 5 units along shelf break in Mexican waters in collaboration with Mexican scientists with the goal of deployment them sometime between June and November 2019.*

The NMFS SEFSC received funds from the Gulf of Mexico RESTORE Act to conduct research on the trophic relationships and improve understanding of the physical, oceanographic, and biological features defining critical habitat for Gulf of Mexico Bryde's whales. This project began in June of 2017 and will continue through May 2020. It includes three seasonal ship-based surveys to assess the habitat, spatial distribution, and foraging ecology using a multi-faceted approach that integrates visual and acoustic monitoring, environmental sampling, trawling, biopsy sampling for genetic, stable

isotope and pollutant analyses, and deployment of animal-borne tags. Models will be developed from the resulting data that will identify key trophic interactions, improve characterization of Bryde's whale habitat, and provide information to managers that will inform restoration and population recovery activities. Large vessel cruises were conducted in Spring and Fall 2018 and an eight week cruise is planned for the summer of 2019. To date, Acousonde suction cup tags have been deployed on two GOMx Bryde's whales. Seven calls were recorded from one whale over a ~72 hour period, no calls from the other whale over 25 hours and whale dive behaviours are being analyzed from the tag data; photos of dorsal fins were taken to document unique individuals and add to catalog; water samples were collected for an environmental DNA (eDNA) study and a PCR-based assay to detect presence/absence of whales in the eDNA water samples was developed and tested; active acoustic data were collected throughout the survey along both planned cross-bathymetry tracklines and in the presence of whales. Small scale, cross-bathymetry active acoustic transects were conducted in areas where visual or acoustic detections indicated whales were present. The 2019 cruise will utilize a remotely operated hexacopter to collect photogrammetric data and document body condition of encountered whales. In addition, mid-water trawls will be deployed for prey sampling targeting likely prey aggregations observed using the scientific echosounders. Prey will be sampled for stable isotope analyses to pair with skin samples of biopsied whales to better understand trophic interactions and likely prey resources. The resulting data and analysis will be integrated into the evaluation of critical habitat features for the Gulf of Mexico Bryde's Whale.

Finally, a Bryde's whale stranded off Florida in January 2019 and a full necropsy was conducted. The entire skull & skeleton was preserved and are being cleaned and will be accessioned at the U.S. National Museum of Natural History at the Smithsonian Institution.