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Update on the Gulf of Mexico Bryde's whale/Rice's Whale Research and Conservation—2021-2022

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Research

Taxonomy

The identification and renaming of the species to *Balaenoptera ricei* (common name Rice's whale) was completed following the publication by Rosel et al. (2021) and the review and concurrence of The Society for Marine Mammalogy's Taxonomy Committee. The National Marine Fisheries Service published a Federal Register (86 FR 47022) notice to formally change the name "Gulf of Mexico Bryde's whale" to the "Rice's whale." Now that the name is formally recognized by NMFS, the species name will be used in Stock Assessment Reports and other documents related to the MMPA and ESA.

Passive Acoustic Monitoring

A variety of passive acoustic studies focused on Rice's whales are ongoing in the Gulf of Mexico. The following work was conducted from March 2021-2022:

- A manuscript was accepted by the Journal of the Acoustical Society of America, which describes analyses of recordings from real-time DIFAR sonobuoys deployed during large vessel NOAA cruises in the northeastern Gulf of Mexico (funded by the NOAA SEFSC and NOAA RESTORE Science Program). This study validates Rice's whales as the source of long-moan and tonal-sequence call types by localizing calls and conducting visual surveys to find what sources were present at the location. Additionally, downsweep sequence calls were localized to Rice's whales, providing support to the hypothesis posed by Sirovic et al 2014 that the longer sequences are variants of the downsweep pulse pairs localized by Sirovic et al, 2014.
- A manuscript was accepted by Endangered Species Research, which describes results from the 2016-2017 western and central Gulf of Mexico shelf-break passive acoustic mooring dataset. The study describes stereotyped variants of Rice's whale long-moan calls and their persistent year-round occurrence on up to 16% of days per year, indicating that some portion of Rice's whales regularly occur in waters beyond the core habitat in the northeastern Gulf of Mexico.
- Analyses of acoustic recordings from two passive acoustic instruments deployed along the northwestern Gulf of Mexico shelf-break from August 2019 to August 2020, as follow up to the previous instruments, were completed during this period. Results will be incorporated into a manuscript for peer-review that will describe presence and absence at moored PAM sites throughout the Gulf.
- Analyses of 2-years of acoustic recordings from three long-term HARP sites (since the *Deepwater Horizon* oil spill) and one noise monitoring site were completed to investigate potential deeper water occurrence. Results will be incorporated into a manuscript for peer-review that will describe presence and absence at moored PAM sites throughout the Gulf.
- A manuscript has been drafted for submission for peer-review describing results of acoustic detections from automated acoustic detector algorithms applied to eight years of data from the De Soto Canyon HARP site in the northeastern Gulf of Mexico core habitat. Data from 8-years of recordings at another nearby site are being added to the manuscript with plans for submission this year.
- We are attempting to recover one HARP deployed along the shelf-break off Tuxpan in Mexican waters in January 2020 in collaboration with Mexican scientists. COVID impacts have affected our ability to travel to Mexico to recover this unit, and are currently aiming to recover it in April 2022. We have four more HARPs in Mexico that we will attempt to deploy before our lease on them runs up; dependent on COVID19 and ship availability.
- A HARP deployed along the shelf-break west of Venice, Florida in August 2020 was recovered in August 2021. The instrument recorded around four months of data before the hydrophone cable was cut, from an unknown cause. These data have been analyzed for Rice's whale call detections, and results will be

incorporated into a manuscript for peer-review that will describe presence and absence at moored PAM sites throughout the Gulf.

- The U.S. Navy is supporting deployment of a large-scale passive acoustic array that nearly completely covers the core habitat of the whales in the northeastern Gulf of Mexico. Deployment of this array began in May 2021 and will include three ~5-month deployments of Soundtrap ST500 STD moorings. The first and second deployments were recovered in November 2021 and April 2022, respectively and the third deployment will be recovered in August 2022. Analyses have begun to evaluate variation in seasonal call occurrence across the array to understand core habitat usage over time. We are actively seeking funding sources to continue data collection beyond the currently planned one year of recordings.
- We are continuing deployment of a long-term, large-scale passive acoustic monitoring project throughout the Gulf of Mexico (U.S, Mexico, and International waters), funded under the NOAA Restore Science Program in collaboration with the *Deepwater Horizon* noise mitigation project (described below). Seven of eight long-term HARPs, three of four short-term HARPs and and one of two tracking HARPs were successfully recovered with good quality recordings in August 2021, and eight long-term, four short-term, and two tracking HARPs were deployed, for recovery in July 2022. These data are currently being analyzed for Rice's whale call presence, which will allow us to evaluate whether Rice's whales ever occur on these Gulf-wide instruments in deeper waters and will continue the De Soto Canyon HARP site time-series in the core habitat.
- We have obtained funds to build two dedicated Rice's whale HARPs in 2022 and will attempt to deploy them either at the prior western Gulf sites to continue the time-series or at new sites to further explore their distribution along the shelf-break.

Abundance

There have been no additional surveys to estimate the abundance of Rice's whales since 2017-2018. The current abundance estimate remains 51 (CV=0.50).

Trophic Ecology

Several manuscripts are in preparation to describe the results from the Rice's whale trophic ecology project funded by the NOAA RESTORE Science Program. Results to date demonstrate that the physical oceanography of the core habitat, including surface inputs of high productivity water and bottom upwelling, likely maintain high secondary productivity in the region. A combination of scientific echosounder data, stable isotope data, and trawl data were used to characterize the primary prey of Rice's whales, a demersal fish *Ariomma bondi* that occurs in dense near-bottom schools. Analyses are ongoing to evaluate foraging behavior and energetics using data collected from kinematic tags.

Deepwater Horizon oil spill Restoration Plans status and updates

There are currently two post *Deepwater Horizon* restoration projects planned in the Gulf of Mexico that may affect these whales:

- Vessel Collision Mitigation. This project's aim is to reduce and mitigate vessel strikes with large whales in the Gulf of Mexico. It is in early planning stages, and implementation has been delayed to early 2023.
- Noise Mitigation. The goal of this project is to reduce impacts of anthropogenic noise on cetaceans in the Gulf of Mexico. Implementation planning for this project began in 2020. The passive acoustic monitoring component of the project is described above, and additional project activities including characterization of sound fields in the Gulf of Mexico are ongoing.

Management advances

- ESA Section 7 Consultations. NMFS has continued consulting on a number of federal projects. As a result of some of these consultations, NMFS is developing a *Best Management Plans for Protecting Rice's Whales from Vessel Operations in the Gulf of Mexico*.
- Recovery Plan Development. In Fall 2021, NMFS convened a multi-session virtual workshop to harness the collective expertise, creativity, and ingenuity of stakeholders and experts from across the United States

and beyond to help the Agency develop an effective recovery plan for the Rice's whale. NMFS sought input on (1) approaches for recovery planning that address the challenges relevant to the recovery of the listed species in its current and foreseeable environment; (2) development of possible recovery criteria that would indicate when the species should be considered for delisting; and (3) development of suggested recovery actions to reduce and/or ameliorate the threats to these listed whales. We hope to have the workshop summary report posted to our Rice's whale website in April 2022.

- Taxonomy/Name Change. NMFS published a Federal Register (FR) notice to formally change the name "Gulf of Mexico Bryde's whale" to the "Rice's whale." Now that the name is formally recognized by NMFS, Rice's whale will be used in the MMPA Stock Assessment Report.
- Critical Habitat. NMFS is in the process of making a determination on critical habitat. We hope to publish our determination in the Federal Register in Fall 2022.
- An analysis was undertaken by the NOAA National Center for Coastal Ocean Studies to identify Aquaculture Opportunity Areas (AOA) within the Gulf of Mexico (Riley et al. 2021). This spatial planning activity compiled information on site characteristics, species occurrence and other factors to evaluate potential sites for aquaculture development. This analysis considered the defined core habitat of Rice's whales in evaluating the potential environmental impacts of aquaculture facilities. Of the nine identified AOAs, none occurred within the core Rice's whale habitat, but several occur within the 100-400m depth ranges where Rice's whales have been observed in the central and western Gulf of Mexico. In addition, there is an aquaculture project that has applied for a permit to operate within Rice's whale core habitat. The potential impacts of these projects on Rice's whales are unknown.
- The U.S. department of the interior announced the preparation of a draft environmental assessment to evaluate the potential for offshore wind leasing in the Gulf of Mexico (US Department of Interior, 2022). The area currently being considered includes the central and western Gulf of Mexico in waters extending to water depths of approximately 1,000m. While this area does not currently include the core Rice's whale habitat in the eastern Gulf, it does include Rice's whale habitats in the central and western Gulf. NMFS is working with BOEM to provide input on spatial planning and other approaches to appropriately assessing the potential impact of wind energy development on Rice's whales and other endangered species.

Citations

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