Society for Marine Mammology: Small Grants in Aid of Research
Final Grant Report
(2021-2022)

Project title: Placing Brazilian northeastern cetaceans on the map

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Project region: Brazil
Amount awarded: $2,000

Project Summary:

Tropical oceanic species of cetacean are poorly studied, including the ones occurring in the highly diverse and threatened Brazilian Northeastern waters. The present project will use Brazilian Navy cruises on this region to conduct visual and acoustic monitoring of cetaceans. Our goal is to register the occurrence, distribution, estimate encounter rates, and produce distribution models for the species registered. This information will help discover new species occurrences in the region, define the threaten status of data deficient species, define priority conservation areas, and create a database for collaborative scientific research projects in the present and future.

Project's aim:

The general objective of the project is to monitor cetacean species in Northeast Brazilian oceanic waters.

Specific objective 1: Register the occurrence, distribution, estimate encounter rates, and produce preliminary distribution models of cetacean species in the region.

Specific objective 2: Create and maintain a photographic and acoustic database for the cetacean species found in the region to aid in collaborative scientific research projects.

Project Progress and Outcomes:

Due to the COVID-19 pandemic, Brazilian Navy cruises were suspended for most of the reported period. We were able to conduct only two expeditions onboard those cruises, one in July 2022 (Figures 1-2) and one in October 2022 (Figure 3). Together the expeditions covered over 2000 nm, with a total of 123 hours of visual monitoring (On and Off effort for distance sampling) and 441 hours of acoustic recordings (with a towed hydrophone array and a stationary/drifting buoy recording system). Four species were visually registered, most of which accompanied by acoustic recordings: *Tursiops truncatus* (2 sightings), *Megaptera novaeangliae* (2 sightings), *Stenella attenuata* (3 sightings), *Peponocephala electra* (1 sighting), and 2 unidentified cetacean sightings. All acoustic data collected is still under processing.

The sighting of the *P. electra* group consists of a new occurrence for the region and one of the few acoustic recordings for the species in the Atlantic. It was also probably the most oceanic record of the species. A scientific note on this encounter is being written and is currently our publication priority.

Due to the low sighting rate of those 2 expeditions, distribution models could not be produced yet. However, there is a considerable portion of the acoustic data that still needs to be processed. We expect to find other acoustic records of cetaceans, especially in the night period, when there is no visual monitoring. Also, the project is ongoing and new expeditions in 2023 will generate more data to better fulfill the specific objective 1 above.

The specific objective 2 was a complete success. The SMM Small grant allowed us to implement our digital library called ARC: Archive for Research and Conservation of Images and Sounds. It is a secure remote data storage, hosted in the UFRN, that currently consists of a 20 Tb space (that we intend to expand in the future). We are still in the process of transferring our datasets and those of our collaborators to the library (Figure 4). Around half of the space has already been filled, including by the 3 Tb generated in the two cruise expeditions described above and by over 1500 photos of *Sotalia guianensis* dorsal fins acquired previously. We hope ARC will expand and become a model for information exchange and facilitate the implementation of global projects such as GLUBS (Global Library of Underwater Biological Sounds).

Expense report:

We spent the SMM grant on similar equipment from the originally planned (PowerEdge T140, 2x 2TB SATA HD), but directly towards additional space in the server hosted at the UFRN (where only 2 Tb per laboratory is allowed), which secured more space, more security in redundancy and energy source, and the same functionalities.

Figures:

Figure 1 (left) – LSF checking the towed hydrophone array onboard a Brazilian Navy ship.
Figure 2 (right) – UFRN Laboratory of Bioacoustics team at *São Pedro e São Paulo* archipelago and the Brazilian Navy ship on the background. July 2022.

Figure 3 – SENTINELS OF THE BLUE AMAZON (the umbrella project covering the present one) team on a second Brazilian Navy ship with the UFRN flag. October 2022.

Figure 4 – LSF training students to transfer and share data on the UFRN Archive for Research and Conservation of Images and Sounds (ARC) and some of the hard drives containing datasets to be stored in the ARC.