

Hungry Humpbacks report

Cabo Frio fieldwork

Coordinator: Rodrigo Tardin

Associated researcher: Maria Glarou

Team: Pedro Froés, Larissa Melo, Anna Karoline Muniz, Sophia Di Gerardi, Rodrigo Pedrosa, Laís Chaves, Lara Rodrigues, Guilherme Maricato

The field season were comprised from June 4th to July 7th 2024. During this period, there were good weather conditions for boat survey in 14 days (Beaufort < 3). During fieldwork, we left Cabo Frio city pier and move towards the south part of the study area, in Arraial do Cabo municipality, where whales are more commonly found. In this area, a local group of citizen scientists from a land station 100m above the water helped us detecting the whales. This strategy improved our detectability and maximized our efforts for data collection.



Figure 1. Drone takeoff from a 6.5m inflatable rigid boat in Cabo Frio, Brazil.

Whenever, a humpback whale was sighted, we approached it with the boat and observed their behavior to evaluate the feasibility of drone measurements. When a whale was travelling in a slow to moderate speed or was resting, the drone flew over to perform body condition measurements. After the measurements, we landed the drone and started the approach to collecting biopsy samples, using a 150lbs crossbow equipped with 25x40 stainless steel tips.



Figure 2. Biopsy attempt on a adult humpback whale in Cabo Frio, Brazil.

We conducted an overall of 108.6h of survey effort along the 14 days of fieldwork. We observed humpback whales in all sampling days, but also Orcas, *Orcinus orca*, in two days, bottlenose dolphins, *Tursiops truncatus*, in one day and Right whales, *Eubalaena australis*, in one day. In total, 69 flights were conducted comprising 774 minutes on-air. We measured 98 humpback whales by drones.



Figure 3. Three humpback whales sampled by Drone in Cabo Frio, RJ. Red arrow points the individual who had its body condition measured in this frame.

We collected skin and blubber from 20 whales. We also photo-identified the whales totaling 845 photos. Most of the groups of humpback whales we observed, ranged from 2 to 6 individuals. In a same drone flight, the number of whales measured varied from one to three. 86.3% of the whales sampled were adults and 13.7% potential juveniles. No mother-calf pair group was observed and sampled. However, one mother-yearling pair was sampled (drone-only), as well as 5 potential pregnant females were sampled (3 drone and biopsy and 2 drone-only).

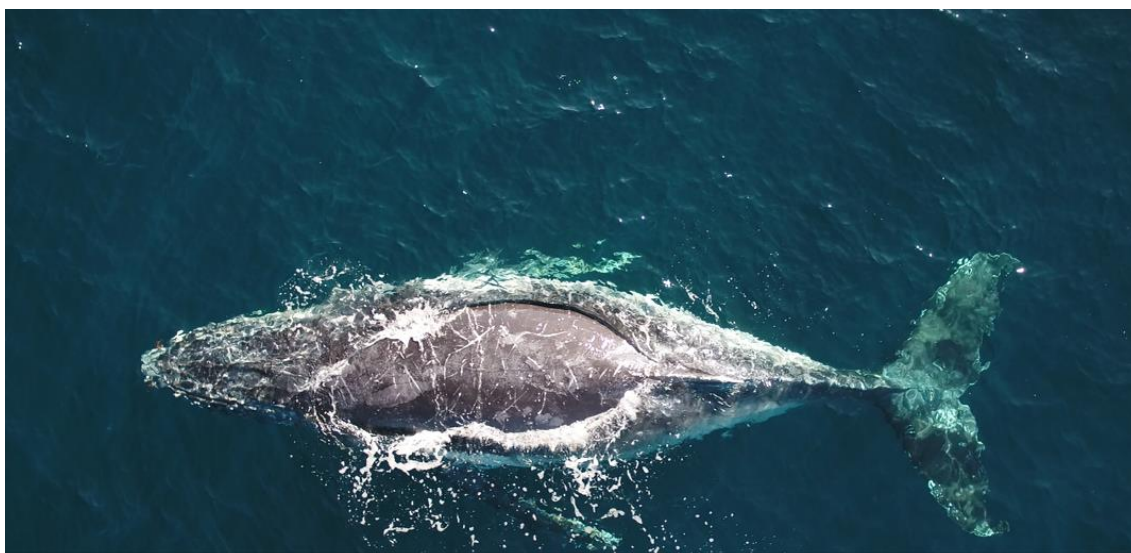


Figure 4. Potential pregnant female sampled in Cabo Frio, Brazil.

From the biopsies, eight skins were available for stable isotope analyzes and 20 for genetics. From the blubber, 16 samples were available for hormone analyzes and four for transcriptomics. Local science outreach was conducted with Instagram posts and local newspaper interviews.



Figure 5. The researcher Maria Glarou giving interview to local newspapers.

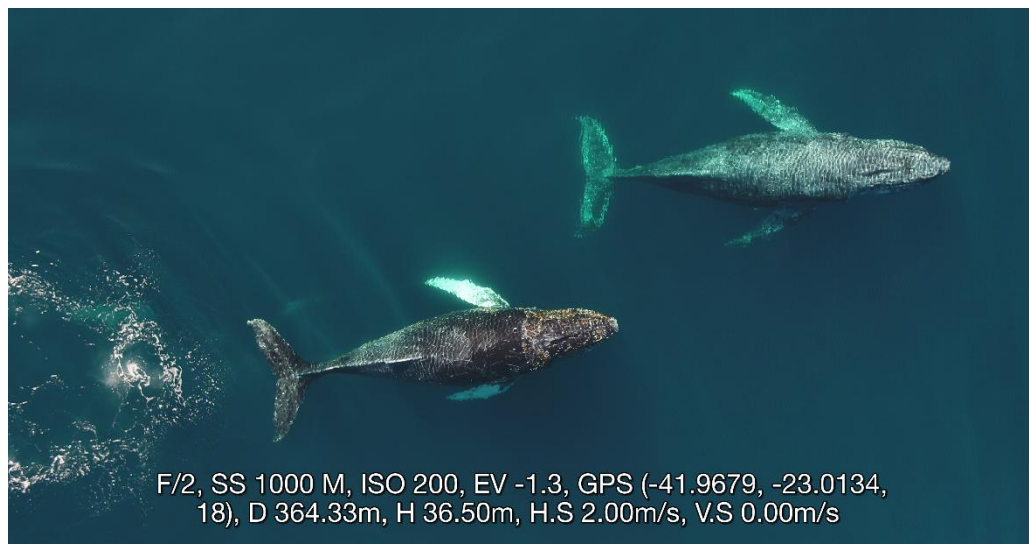


Figure 6. Two humpback whales measured in Cabo Frio, RJ, Brazil



Figure 7. A mixed group of bottlenose dolphins and humpback whales in Cabo Frio, RJ, Brazil

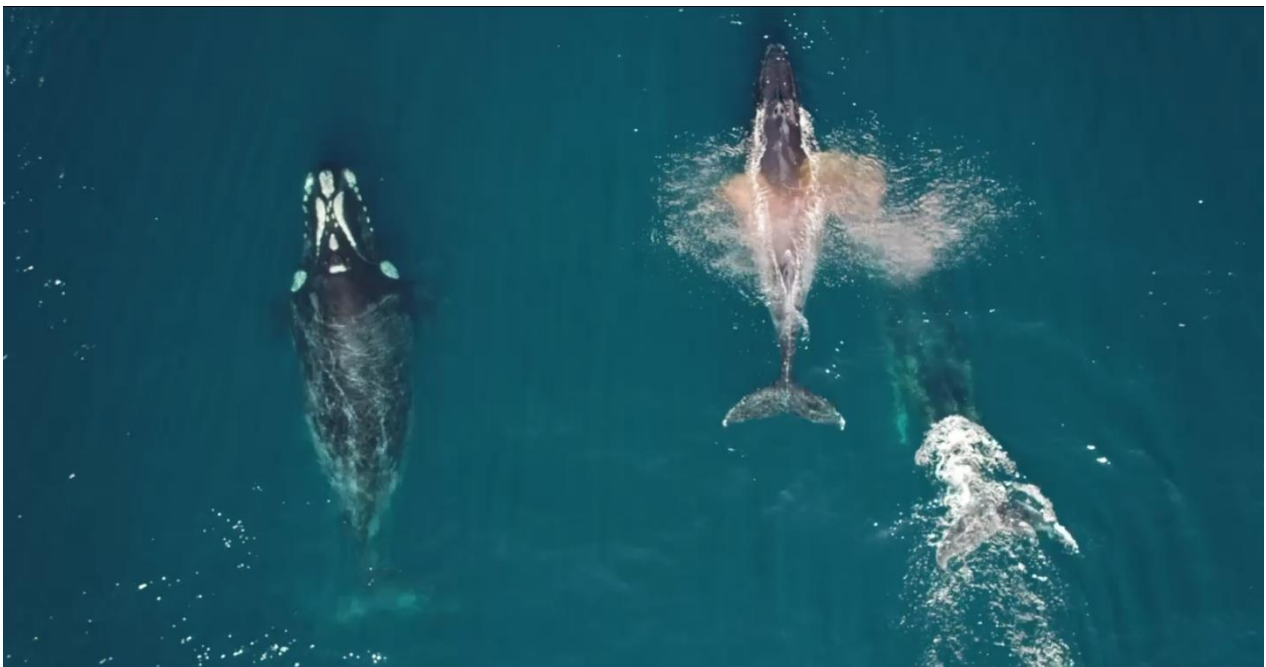


Figure 8. A mixed group of Southern right whales and humpback whales in Cabo Frio, RJ, Brazil



Figure 9. A humpback whale prepares to hit their head in the waters of Cabo Frio, RJ, Brazil.