

Project Update: May 2022

The activities carried out to date include:

1. Collection of biopsies from cetaceans:

1.1 Biopsies of orcas, *Orcinus orca*, in the south part of the Gulf of California
Samples of blubber (n= 3) and skin (n=3) of orcas has been collected in the south part of the Gulf of California, near Cerralvo Island. Recently, in the region of Baja California Sur, an emerging touristic activity involving swimming with the orcas is developing. Currently, this activity is not regulated and often involves the harassing of the animals, forcing them to shift their natural behaviour. This species in fact uses this habitat as a feeding ground and it is often possible to observe different families of orcas feeding on various prey such as sharks, rays, dolphins, etc. The presence of sometimes 15-20 boats in the vicinity of the hunting pod has been proven to be extremely stressful for the animals. Aerial images have shown sudden change of behaviour due to the presence of boats too close to the individuals. In addition, the way in which the activity is carried out sometimes shows a lack of judgment on the part of the tourist service providers, who navigate at high speeds in the vicinity of the animals. We will participate to a meeting involving local actors to discuss the actual situation and how to improve the management of the activity.



Fig.1 Dr. Hiram Nanduca collecting biopsies of orca, *Orcinus orca*. © Erick Higuera.



Fig. 2 Individuals of orcas in the Gulf of California. © Erick Higuera.

1.2 Biopsies of fin whales, *Balaenoptera physalus*, in the Bay of La Paz.

Biopsies (n = 10) of blubber and skin of fin whale has been collected from free swimming animals in the bay of La Paz.

1.3 Biopsies of bottlenose dolphins, *Tursiops truncatus*, in the Bay of La Paz.

Biopsies (n = 6) of blubber and skin of bottlenose dolphins has been collected from free swimming animals in the bay of La Paz.

1.4 Biopsies of common dolphins, *Delphinus delphis*, in the Bay of La Paz.

Biopsies (n = 10) of blubber and skin of common dolphin has been collected from free swimming animals in the bay of La Paz. This species is a common prey for orcas, so the results of the analysis of trace elements will reflect the presence or absence of biomagnification.

2. Laboratory work of the first batch of samples

The first 60 samples have been prepared for the analysis of trace elements and stable isotopes. Samples has been wet weighted (Fig. 3), dry-freeze, ground and digested for the analysis of trace elements. A subsample has been packed for the analysis of stable isotopes (Fig 4). The results of both analyses should be ready at the end of June 2022.



Fig. 3 Laboratory work to process the sample. Dr. Francesca Pancaldi is weighting organic tissues of cetaceans. © Erick Higuera.



Fig. 4 Samples located in the plate for the stable isotopes analysis. © Francesca Pancaldi.