

SOCIETY FOR MARINE MAMMALOGY
SMALL GRANTS IN AID OF RESEARCH
Final Report

Project title:

Historical assessment of franciscana dolphins' ecological traits from Late Pleistocene to Holocene based on morphometric and stable isotope analysis

Thayara Silveira Carrasco

PhD Candidate in Biodiversity of Coastal Environments

Universidade Estadual Paulista, Brazil

+5513991387281

thayaracarrasco@gmail.com

The extensive marine fossil record from interglacial periods of the Late Pleistocene of southern Brazil represents a unique opportunity to study the ecological history of the franciscana dolphin, *Pontoporia blainvillei*, over geological time. For this purpose, morphometric characters and the isotopic composition ($\delta^{13}\text{C}$ and $\delta^{18}\text{O}$) of fossil and contemporary skulls were investigated. From fifteen measurements considered, fossil and contemporary samples showed differences in size in four of them: width of premaxilla at its foramen, greatest width of external nares, greatest width of left nasal, and minimum distance between maxillae across vertex; whereas a principal component analysis did not identify differences in overall morphometric characteristics. The isotopic composition of both groups is in agreement with morphometric results and showed no differences between fossil and contemporary specimens. However, variation in $\delta^{13}\text{C}$ values was higher in fossil specimens, and the opposite trend was observed for $\delta^{18}\text{O}$ values. Therefore, the franciscana from the southern Brazilian population did not undergo drastic ecological variation. The slight variation in morphology may reflect changes in the echolocation apparatus or an artifact of the diagenetic process affecting the shape of fossil bones. Isotopic variation, in turn, possibly reflects a less variable trophic component in contemporary specimens and changes in salinity along the study area. The development of this work was possible thanks to the grant provided by SMM, which supported all travel fields and analysis. The final manuscript is now in process of finalization and will be submitted for an international journal soon.