Trophic interactions of Bottlenose Dolphins (*Tursiops truncatus*) in the Florida Coastal Everglades

Valeria Paz, Jeremy Kiszka, Florida International University
Research Mentor: Michael R. Heithaus

Goals

- Determining the food sources contributing to bottlenose dolphins' diet

Figure 1. Dolphin foraging in Everglades National Park

Research Methodology

- Biopsy samples (n=80) of blubber and skin were collected under Scientific Research Permits from NOAA (Fig. 2A)
- Samples were dried, homogenized, and underwent three successive lipid extractions using a chloroform:methanol solution (Fig. 2B)
- Stable isotope analyses of δ13C and δ15N were performed at the stable isotope facility at FIU

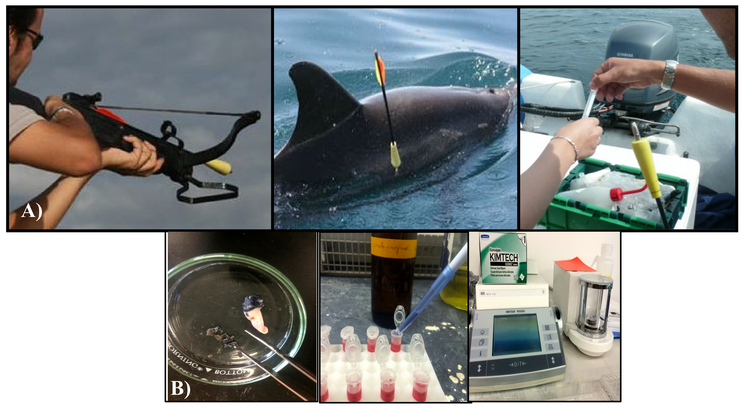

Figure 2. A) Dolphins sampled with a modified crossbow bolt. B) Biopsy sample processing using standard SI methods

Results

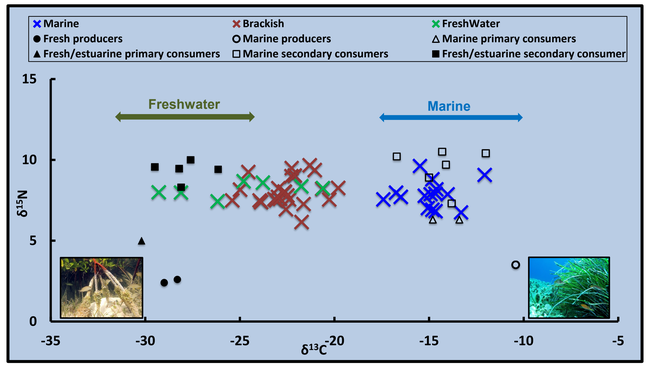

Figure 3 . Biplot of δ13C vs δ15N mean isotope values for producers and consumers in the Shark River Estuary and adjacent marine waters from Matich & Heithaus (2014). Producers and consumers from the freshwater/estuarine food web are solid black; those from the marine food web are white with black outline. Producers are circles (●), primary consumers are triangles (▲), secondary consumers are squares (■), and dolphin skin isotope signatures are x's (×).

Conclusions

- Preliminary results suggest that dolphins are foraging in multiple habitats (rivers, inland bay, coastal waters)
- Prey targeted by dolphins were collected in 2019 in all habitats to further analyze specific prey contribution using SI mixing models

Future Goals

- Marine mammals may be a good indicator of pollutants in an ecosystem since they accumulate high levels of chemicals because they are long-lived and their long half-life of elimination of pollutants such as heavy metals
- We plan to investigate how mercury and selenium concentrations may vary with differences in sex and age of dolphins in collaboration with the Environmental epigenetics labs

vpaz003@fiu.edu

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This material is based upon work supported by the National Science Foundation under Grant No. HRD-1547798. This NSF Grant was awarded to Florida International University as part of the Centers of Research Excellence in Science and Technology (CREST) Program. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.