

## SMALL GRANT IN AID OF RESEARCH – 2015

### Trophic structure of bottlenose dolphin (*Tursiops truncatus*) populations in the southern Gulf of Mexico

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#### SUMMARY REPORT

Bottlenose dolphins (*Tursiops truncatus*) are top predators in marine food chains displaying a great variety of feeding behavior and habits. Several populations of this species has been documented in different localities in the southern Gulf of Mexico but is still unclear the habitat use of these, their trophic preferences and if they integrate a metapopulation. The aim of this project was to have a better understanding of the trophic ecology of the bottlenose dolphin populations in the southern Gulf of Mexico using the stable isotope technique. Preliminary results of teeth samples from stranded bottlenose dolphins in two different areas of the Yucatan Peninsula indicate that bottlenose dolphins from the eastern Yucatan Peninsula had  $-11.24\text{‰}$  ( $\delta^{13}\text{C}$ ) and  $12.3\text{‰}$  ( $\delta^{15}\text{N}$ ); these isotope ratios were similar to those in the western Yucatan Peninsula with  $11.5\text{‰}$  ( $\delta^{13}\text{C}$ ) and  $12.8\text{‰}$  ( $\delta^{15}\text{N}$ ). We also compared these stable isotope ratios with others obtained from six potential prey in both localities following the enrichment suggested for each isotope in a prey-predator relationship and the results suggest that bottlenose dolphins from the eastern Yucatan Peninsula feed mainly on hogfish (*Lachnolaimus maximus*) and Mexican four-eyed octopus (*Octopus maya*) while the dolphins from western Yucatan Peninsula feed mainly on the lane snapper (*Lutjanus synagris*) and red grouper (*Epinephelus morio*). We also analyzed the stomach content of the stranded dolphins resulting that the trophic spectrum was constituted of four fish species: lane snapper (*L. synagris*), hogfish (*L. maximus*), Gulf kingfish (*Menticirrhus littoralis*), white grunt (*Haemulon plumierii*), and a cephalopod: the Mexican four-eyed octopus (*O. maya*). Both techniques suggest that bottlenose dolphins in the Yucatan Peninsula feed on coastal and benthic prey.

These trophic results will be complemented with stable isotope ratios from skin samples of free-ranging bottlenose dolphins in order to establish the scientific

basis for a long term project to monitor the bottlenose dolphin populations as bioindicators of ecosystem health. In addition, these results contributed to conclude the bachelor's thesis of Elsy Olivárez-Rodríguez.

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