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FORAGING ECOLOGY OF COMMON BOTTLENOSE DOLPHINS (TURSIOPS TRUNCATUS) IN GALVESTON BAY

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Introduction
Recent surveys suggest year round residence of common bottlenose dolphins (Tursiops truncatus) in upper Galveston Bay (UGB), an area where dolphins were not previously observed. One of the most important factors affecting bottlenose dolphin movement patterns & habitat preferences is the spatial & temporal distribution of prey resources. Determining their foraging ecology is crucial to understanding their life history. Atlantic Croaker, Spot, & Sand Seaturt have been reported as important prey items for bottlenose dolphins.

Objectives
• Estimate habitats used for foraging in the Galveston Bay (GB) ecosystem
• Estimate proportions of different prey consumed by dolphins

Methods
• Conduct standardized photo-identification surveys
• Collect 60 remotely based biopsy samples (10x25mm) from free ranging dolphins
• Foraging behavior- following shrimp boats, fluke out diving, swirling, fish in mouth, fish chasing, & fish tossing
• Collect target fish to run stable isotope analysis (SIA)
• Compare δ13C & δ15N values of dolphins to different sub-bays in GB using SIA1
• Use previously published data on prey items & Bayesian mixing models (δ13C, δ15N) to estimate proportions of prey consumed
• Pair photo-id survey data & SIA results to estimate foraging areas & seasonal occurrences of individuals

Preliminary Results
• 30 photo-ID surveys completed Aug. 2013-Dec. 2015
• 122 sightings in GB
• 13 samples collected (Aug.-Oct. 2015)
• Dolphins observed foraging in 55% of all sightings
• Dolphins observed patrolling shrimp trawlers in 40% of the sightings
• 73% of foraging dolphins were with a shrimp trawler

Expected Results
• Based on historical studies in the GB ecosystem1:
  • Dolphins with ↓ δ13C likely foraging in UGB or Trinity Bay
  • Dolphins with ↑ δ13C likely foraging in lower GB, East or West Bay
  • δ15N will be ↑ in UGB & Trinity Bay due to anthropogenic nitrogen loading
• Estimate proportions of prey consumed using Bayesian models
• Photo-id survey data & SIA will reveal evidence of site fidelity

Future Work & Discussion
We will continue biopsy surveys & conducting photo-ID surveys. As apex predators, bottlenose dolphins act as sentinels for the overall health of the GB ecosystem. This proposed research will contribute to basic life history knowledge of the GB population & identify key foraging habitats. The data will also be useful for future management plans by providing insight to prey selection & documenting bioaccumulated contaminants for ecosystem modeling.

Literature Cited