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Feeding Ecology of Coastal Sharks in the Northwest Gulf of Mexico



The feeding ecology of three coastal shark species consisting of Atlantic Sharpnose (*Rhizoprionodon terraenovae*), Bonnethead (*Sphyrna tiburo*), and Atlantic Blacktip (*Carcharhinus limbatus*) was examined in the northwest Gulf of Mexico (GOM). A total of 601 (305 *R. terraenovae*, 239 *S. tiburo*, and 57 *C. limbatus*) sharks were collected through the recreational fishery offshore Galveston, Texas over 2013 and 2014. Stomach contents were examined for all individuals and quantified for short-term diet information (days) and stable isotopes of carbon ($\delta^{13}\text{C}$), nitrogen ($\delta^{15}\text{N}$), and sulfur ($\delta^{34}\text{S}$) in muscle tissue were analyzed for a subset of samples to examine longer term (weeks to months) feeding patterns. Both *C. limbatus* and *R. terraenovae* stomach contents primarily consisted of teleost fish with % IRIs of 91.16 and 98.95%, respectively. Primary prey categories for *R. terraenovae* included unidentified Teleostei (87.40 %IRI), Panaeidae (3.56 %IRI), and Tuthoidea (2.92 % IRI). Dominant prey in *C. limbatus* consisted of Unidentified Teleostei (88.52 %IRI) and *Micropogonias undulatus* (7.46 %IRI), additional non-teleost fish prey categories including Crustacea and Cephalopoda accounted for 1.15 %IRI. *S. tiburo* had a diet primarily of crustaceans (87.20 % IRI), the top three contributors were unidentified Brachyura (48.91 %IRI), *Callinectes sapidus* (18.06 %IRI), and *C. similis* (3.32 % IRI). Carbon ($\delta^{13}\text{C}$), nitrogen ($\delta^{15}\text{N}$), and sulfur ($\delta^{34}\text{S}$) values revealed similar trends as the stomach contents. Mean $\delta^{13}\text{C}$ was significantly enriched for *S. tiburo* (-16.84 ‰) relative to the other two species, which had similar mean $\delta^{13}\text{C}$ (*R. terraenovae* -17.07 ‰ and *C. limbatus* -17.06 ‰). Mean $\delta^{15}\text{N}$ was significantly enriched for *C. limbatus* (16.64 ‰) and similar between *R. terraenovae* (15.94 ‰) and *S. tiburo* (15.90 ‰). $\delta^{34}\text{S}$ was a useful tracer for benthic invertebrate consumption consisting of significantly depleted values for *S. tiburo* (15.45 ‰), relative to *R. terraenovae* (16.01 ‰) and *C. limbatus* (16.30 ‰). Collectively, both stomach contents and stable isotopes support unique feeding strategies of three common shark species that occupy similar habitats in the northwestern GOM.