

### What do catsharks eat? (Hint: not micesharks!)

Two species of deep-sea sharks, the Brown Catshark (*Apristurus brunneus*) and Filetail Catshark (*Parmaturus xaniurus*), occur together off the coast of Central California. The species have very similar morphologies and preferred habitat, which suggests that they may compete for the same prey items (e.g., fish, crustaceans, squid). This study explores the trophic position and habitat utilization of each species to determine whether and to what extent these deep-sea sharks are competing for dietary resources.



Specimens of the Brown Catshark and Filetail Catshark were collected on commercial trawlers between June and October 2017. Whole sharks have been already been processed: the stomachs and muscle tissue have been removed and frozen for subsequent preparation and analysis.

Stomach Content Analysis (SCA) will be performed to characterize recent consumption and diet composition. Stomachs will be dissected and prey items will be identified to the lowest



taxonomic level possible. While SCA is relatively inexpensive to perform, one of its drawbacks is that it is merely a snapshot of the diet at a single point in time. Stable Isotope Analysis (SIA) will be performed to characterize the catsharks' diets over longer periods of time. White muscle tissue taken from the vertebral region of each specimen will be prepared for  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  analysis.

#### **As an undergraduate student assistant for this project, you will get to assist with:**

- Dissection of stomachs for stomach content analysis
  - Dissecting stomachs and filtering the contents through a sieve
  - Identifying partially digested prey items to species using invertebrate and teleost identification guides
- Preparation of muscle tissue for stable isotope analysis
  - Dehydrating frozen muscle tissue samples using a drying oven
  - Homogenizing samples using either a mortar and pestle or Wig-L-Bug

**Things you will learn/be exposed to:**

- Principles of trophic ecology
- Stomach Content Analysis (SCA)
  - How to identify partially digested prey items in the stomachs of the catsharks.
  - Taxonomy and phylogeny
- Stable Isotope Analysis (SIA)
  - Basics of SIA, a method of analyzing trophic ecology that is continually gaining popularity for studying interconnectivity of organisms within an ecosystem.
- What it is like to work in a laboratory setting

**You will need to be willing and able to:**

- Work with smelly stomachs
- Count small body parts using a dissecting scope
- Reliably get yourself to Moss Landing Marine Laboratories

**Looking for someone who is**

- Punctual
- Attentive to detail
- Attentive to safety guidelines
- Diligent
- Willing to work with smelly stomachs
- Passionate about research
- Never afraid to ask questions