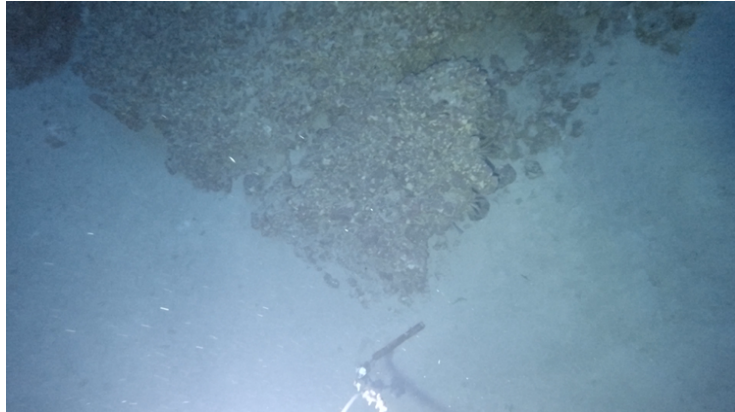


Project 1:

Habitat Classification in Puerto Rico's Deep Drop Fishery



Kate Overly¹ and Andy David²

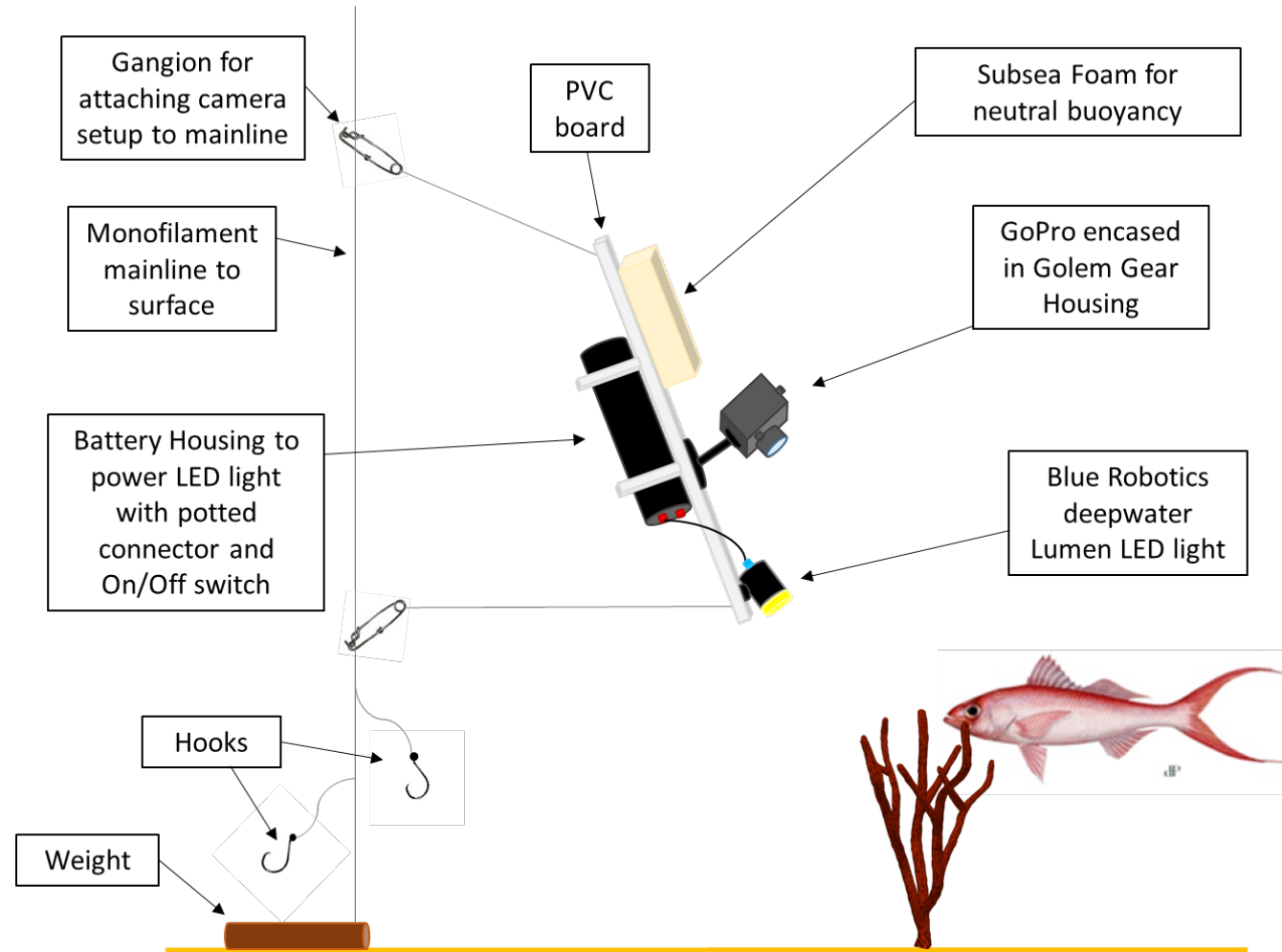
¹Riverside Technology Inc., in support of NOAA Fisheries Service, Panama City Laboratory, Panama City, FL

²NOAA Fisheries Service, Panama City Laboratory, Panama City, FL

Objectives

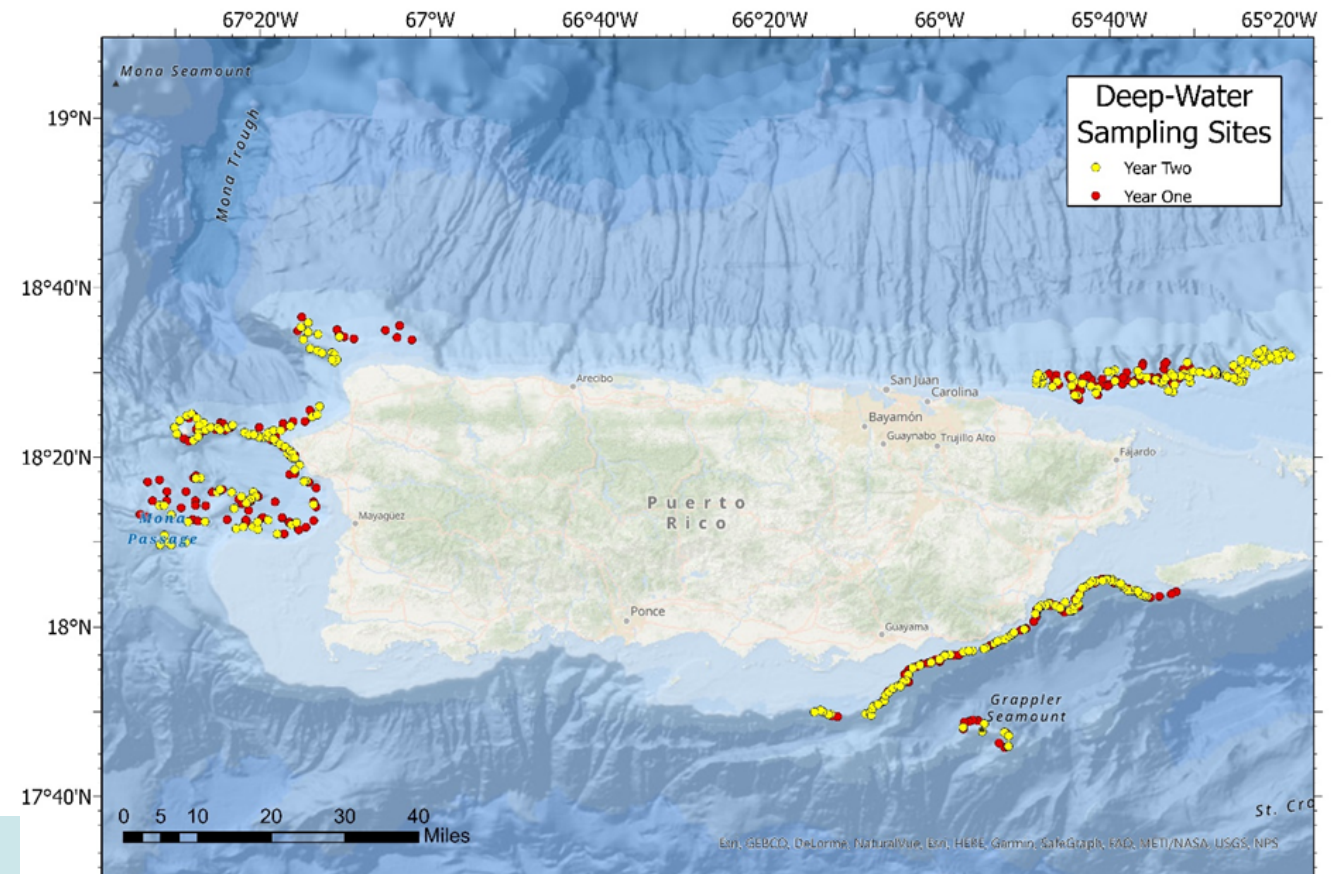
- Two year project: Fall 2018-Fall 2020
- Development of low cost, deepwater camera and LED light system
 - Deployable from center console tethered to commercial fishing gear on vessels in NW, SE, and NE of Puerto Rico
 - Operating in 100-500 m depth range
- Describe habitat utilization of queen snapper using video data and hook and line fishing
- Length, weight, and biological samples for age and growth and reproductive studies on queen snapper and other target species

Deepwater Camera System



Overview of Field Survey

- Drop camera and hook and line deployed by commercial fishermen at each station
 - Total of 471 stations over 2 years
- GoPro's video analyzed for the following:
 - Habitat classification
 - Fish and deepwater coral species identification
 - Minimum counts; Presence/absence
 - Percentage of bottom covered by specific biotic and abiotic organisms and features
- Estimate factors affecting queen snapper distributions and abundance
- Species richness and diversity index
- Patterns in the observed fish community



Catch Data

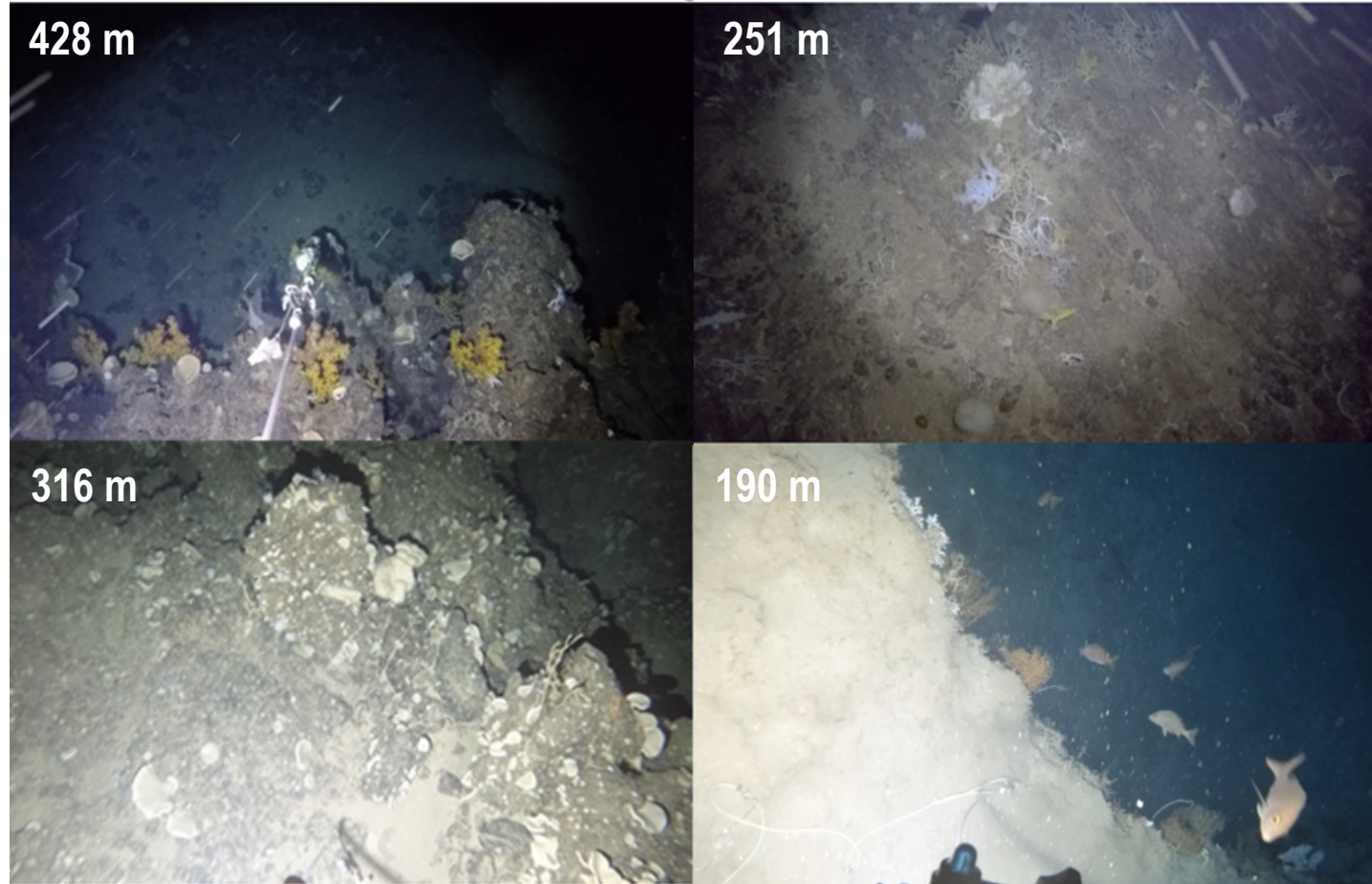
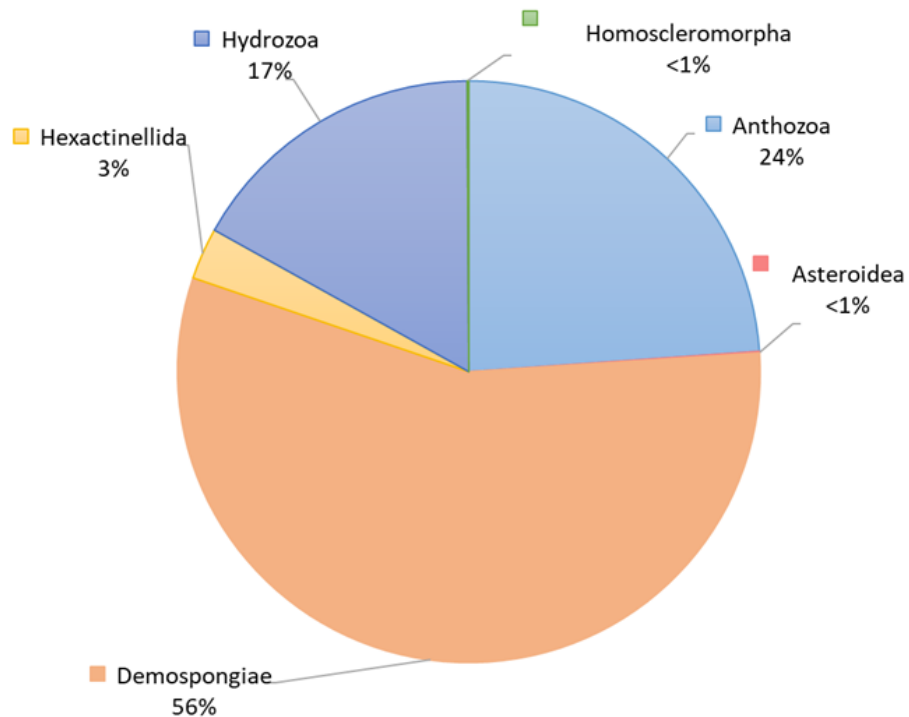
- Fish ID, fork length, total length, weight, sex
- Biological samples taken:
 - otoliths and gonads
- Age and growth studies conducted on:
 - Queen snapper (*Etelis oculatus*)
 - Blackfin snapper (*Lutjanus buccanella*)
 - Black snapper (*Apsilius dentatus*)
- Co-registered with multibeam bathymetry data, video data (habitat), and depth



Preliminary Findings – Southeast Deep Coral Initiative

- Fish Species (Video): 77
- Fish Species (Hook and Line): 22
- Invertebrate Species (Sessile and Mobile): 100+

Puerto Rico Deep-Water Coral and Sponges



Project 2:

A comprehensive US Caribbean Fishery-Independent Survey utilizing stereo video and hook and line methods to assess the deep water snapper-grouper complex in Puerto Rico.

Kate Overly¹, Andy David², Ryan Caillouet³, Steve Smith⁴

¹Riverside Technology Inc., in support of NOAA Fisheries Service, Panama City Laboratory, Panama City, FL

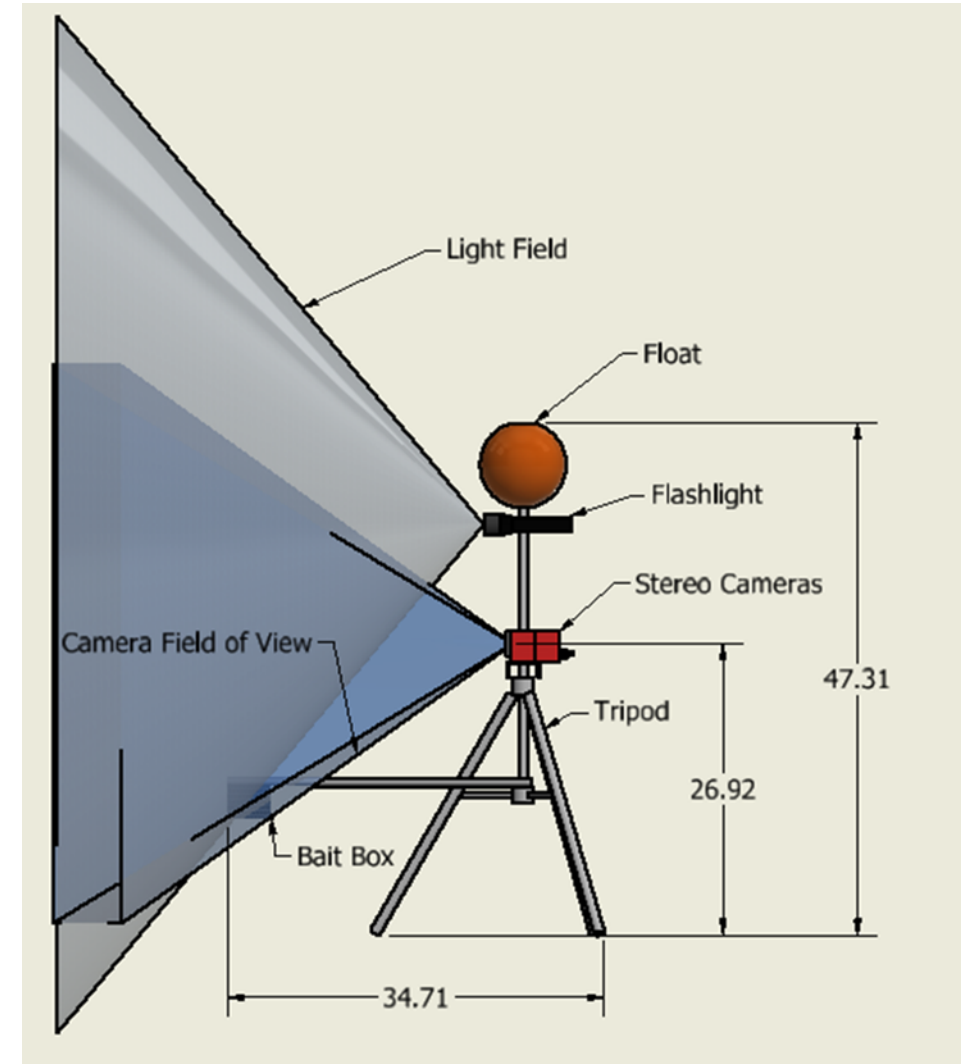
²NOAA Fisheries Service, Panama City Laboratory, Panama City, FL

³NOAA-NMFS-SEFSC-Mississippi Laboratories, Pascagoula, MS

⁴NOAA-NMFS-SEFSC-Miami Laboratory, Miami, FL

Overview

- Projected start date for field work: January 2021
- Deepwater S-BRUV
 - 100-650 m
 - Deployed and retrieved on deep-drop fishing gear
 - Records imagery of benthic habitats and fish assemblages
 - Addition of optical imagery in the form of paired, deep water stereo video cameras which will allow for the collection of non-destructive and size composition data
- Fishing lines will be deployed to collect biological samples upon retrieval of the video system at each sampling location
 - Bait preference

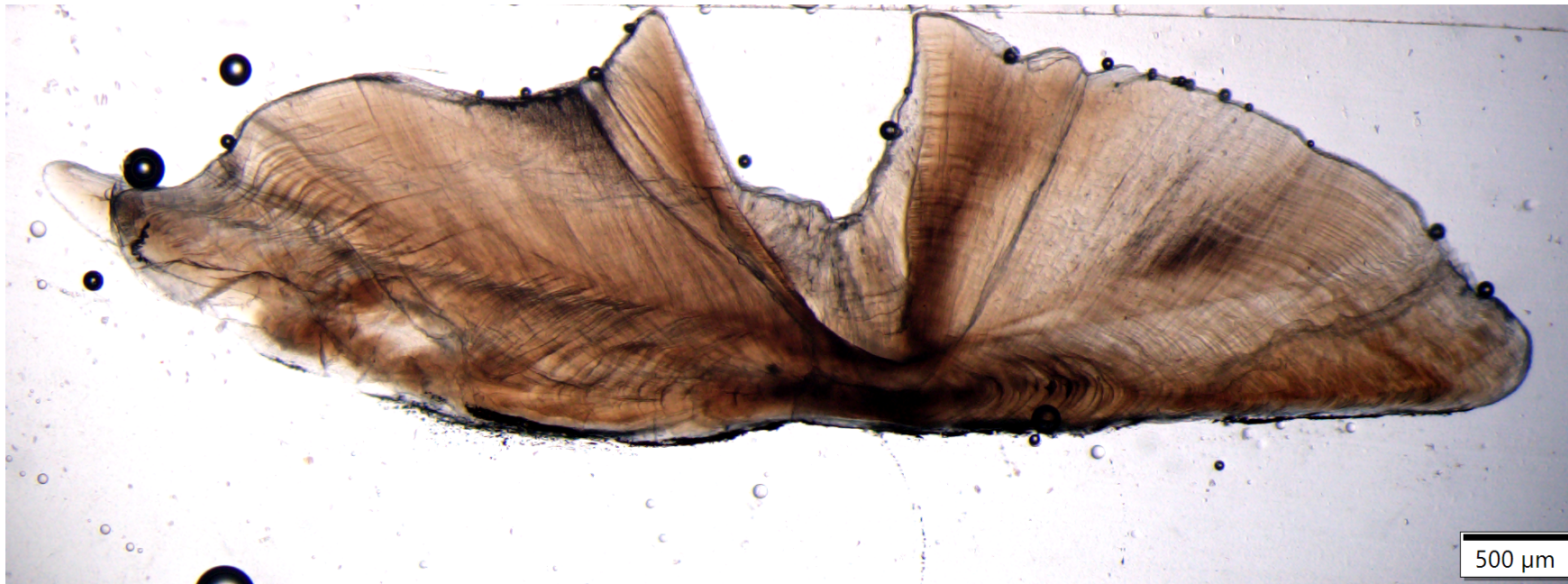


Expected Outcomes: December 2020

- Development of the necessary steps required to collect appropriate data to assess species in the deep water snapper-grouper complex in the US Caribbean.
- Development of a deep water stereo video system combined with wavelength-modified LED lights will provide a non-destructive method of measuring fish length for fish species which avoid visible light and/or are difficult to catch by hook and line methods.
- The survey itself will provide unbiased, geo-referenced estimates of relative abundance, and sizes of exploited and unexploited fishes for the west coast of Puerto Rico.
- Provides technology that will be directly transferable to other SEFSC regions, where it can be reproduced at low cost to gather data on distribution, abundance, and length composition for species of interest.

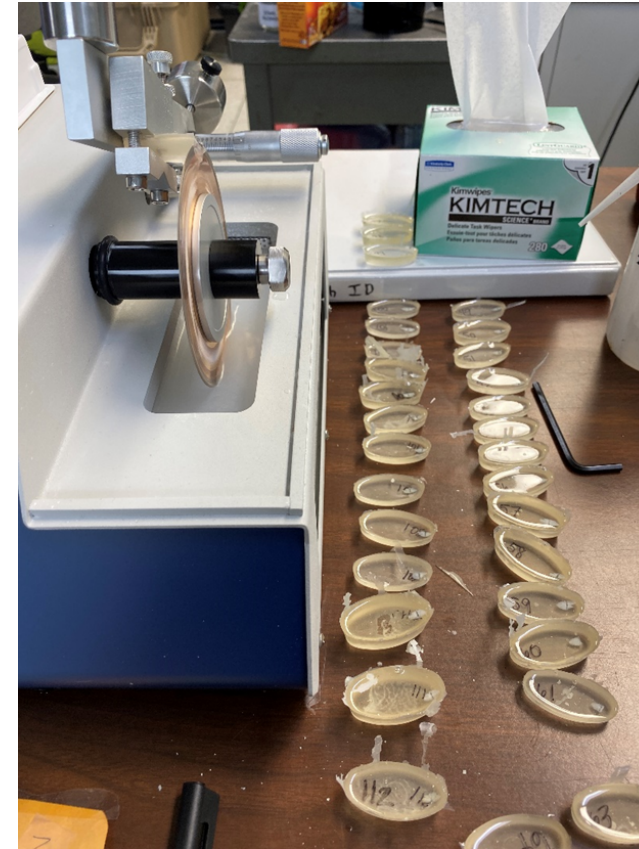
Project 3:

Age and Growth of Queen Snapper (*Etelis oculatus*)



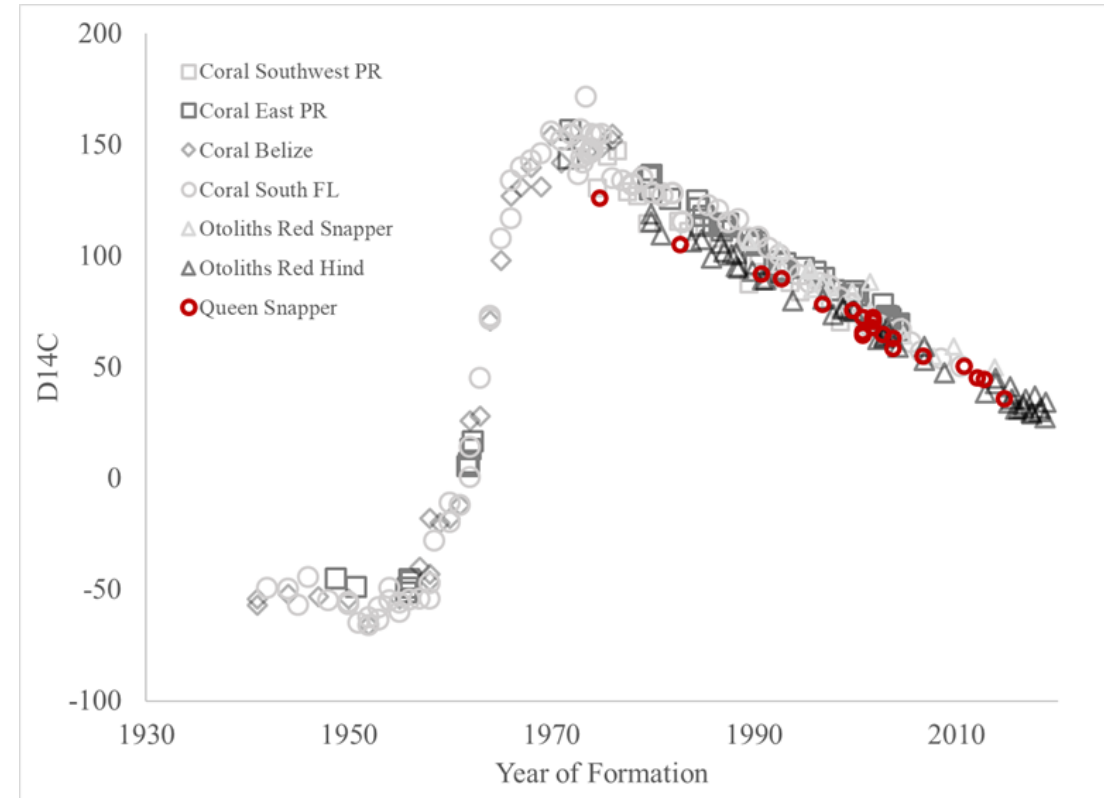
Objectives

- Aging archived and contemporary otoliths from US Caribbean and US Gulf of Mexico
 - 300 US GOM
 - 1991-2019
 - 800+ US Caribbean
 - 2005-2006, 2012, 2015-2020
- Validating the accuracy of age estimation via application of the bomb radiocarbon chronometer using both otolith and eye lens cores
- Drawing inference about likely juvenile habitat through comparison of otolith core ΔC^{14} values and lens core ΔC^{14} values



Expected Outcomes: May 2021

- Age, growth, and mortality parameters are the essential first steps to being able to compute a quantitative assessment on queen snapper in the US Caribbean.
- This project will provide critical information on queen snapper life history including:
 - Validated age composition estimates
 - Size distributions for US Caribbean and Gulf of Mexico
 - Extending longevity estimates for queen snapper
 - Previous maximum age of 8 y/o
 - Youngest: 5 y/o, FL 178 mm
 - Oldest: 45+ y/o, FL 708 mm
 - Computed growth functions
 - Estimates of natural mortality



Contact: Kate Overly at katherine.overly@noaa.gov

