

Summary

Cruise: AT-41

Pilot: Bruce Strickrott **Dive:** A4968 **Stbd Observer:** Mike Rasser

Date: 29 Aug 2018 **Site:** Cape Fear **Port Observer:** Jay Lunden

Dive A4968 aimed to explore a new area of a previously described cold-water coral mound at Cape Fear (Quattrini et al. 2012 Mar Biol). The planned dive track began with an approach towards the mound from the northwest, with early targets along the northwestern face of the mound; the latter part of the dive plan included traversing to the southeastern side of the mound. The major objectives of the dive included community collections of coral matrix and associated invertebrates with coral pots; live coral collections of *Lophelia pertusa* and *Paramuricea*; quiver collections of *Anthothela*, *Muriceides*, *Lophelia*, and *Paramuricea*; push coring sediments near corals; and water sampling near scleractinian corals for carbonate chemistry measurements. Despite a shortened dive due to battery drain from strong currents on the coral mound, the dive was mostly successful and we met most of our sampling objectives.

Immediately upon reaching bottom (~453 m), we observed soft sediment with scouring, indicative of strong bottom currents. A linear feature in the sediment was observed running parallel to the north-south axis of the mound; the pilot suggested that this may have been a result of a bottom trawl. Following initial set-up and orientation, we began traversing towards the first target (T1) on the northwestern face of the mound; the substrate quickly transitioned from soft sediment to coral rubble with small colonies of live *Lophelia pertusa* interspersed irregularly across the rubble. Prior to moving further to the east into the coral rubble substrate, we stopped to push core and collected 6 cores near the sediment-rubble interface. Following the push core collections, we collected the first coral pot collection (MP#3), deployed marker #6, and fired a Niskin. We shot 4K video on live *Lophelia* with ophiuroids on dead skeleton.

Following the previous collections, we continued transitting upslope towards target T1 and continued to observe coral rubble, live *Lophelia*, several fish species including *Laemonema melanurum*, *Nezumia aequalis*, the wreckfish *Polyprion americanus*, the chain dogfish *Scyliorhinus retifer*, numerous large galatheids

including *Euminida picta*, flytrap anemones, *Echinus* urchins, and basket starfish. The coral rubble and dead coral skeleton was heavily populated with two morphospecies of ophiuroids, and small colonies of the octocoral *Anthothela* were growing on the dead skeletal framework.

Despite moving upslope, we faced very strong currents and checked with TopLab and ChiefSci to alter the dive plan and pursue tracks along the mound that would allow us to move easier alongside the current. We moved south along the central portion of the north-south axis and continued to observe several coral species, including *Thecopsammia* cup corals, *Madrepora*, ?*Muriceides*, and *Paramuricea*. The lone colony of *Paramuricea* that we observed was collected into the biobox B3. During this transit, we collected a coral pot over standing dead skeletal framework that was heavily populated with ophiuroids.

Near 18:00 UTC, we consulted with TopLab about power and were instructed to leave bottom at 19:00. With the final hour, we collected a coral pot over live *Lophelia*, collected live *Lophelia* into the Biobox, and fired the remaining Niskins. We deployed marker #10 at the coral pot site, and attempted to push core but were unable to due to hard substrate underneath the thin film of sandy sediment. We used the remaining time on the bottom to shoot 4K video of different fish species as they approached the vehicle. Upon leaving the bottom, we observed a very large wall of live *Lophelia* but were unable to sample. We left bottom and dropped weights at 19:00 UTC.

Dive Highlights:

- 3 coral pot collections over live *Lophelia*, dead *Lophelia*, and coral rubble
- Live *Lophelia* and *Paramuricea* collections
- Quiver collections of observed octocorals and scleractinians, including two quivers for *Lophelia* microbiome
- 6 push cores near coral rubble and live *Lophelia*
- 4K video of fishes, galatheids, and interaction between galatheids, *Laemonema*, and chainshark over a squid carcass

Submitted 29 Aug 2018, J. Lunden