



## Cruise Report

**NOAA Ship *Ron Brown* / ROV *Jason* Expedition RB-1903  
April 9 to April 30, 2019**

*for*

### **DEEP SEARCH**

**DEEP Sea Exploration to Advance Research  
on Coral/Canyon/Cold seep Habitats**

**Deepwater Atlantic Habitats II:  
Continued Atlantic Research and Exploration  
in Deepwater Ecosystems with Focus on  
Coral, Canyon and Seep Communities  
Contract - M17PC00009**

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## Expedition Background

The RB1903 expedition on board the NOAA Ship *Ron Brown* with the ROV *Jason* is the fifth cruise of the project, and the second submersible sampling cruise. The primary goals of this cruise are as follows:

1. Exploration of new sites and new areas within known sites
2. Sampling of corals and associated fauna for biodiversity and biogeography
3. Community sampling at seep and coral habitats
4. Sediment sampling at soft sediment sites for biogeochemistry and diversity
5. Collections of corals for live coral experiments
6. Water sampling for water chemistry and microbial diversity
7. Sediment, water, and faunal samples for eDNA work
8. Geological observations and sampling for geomorphology
9. Lander deployments

## Cruise Summary Table

Date	Location	Latitude	Longitude	depth	Jason dive	CTD cast	Activities
5-Apr	Charleston, SC						ROV mobe
6-Apr	Charleston, SC						ROV mobe
7-Apr	Charleston, SC						ROV mobe
8-Apr	Charleston, SC						ROV mobe
9-Apr	depart Charleston, transit to Stetson Shallow					CTD01	depart 1400, arrive 2200, CTD cast, attempt to hold station but 3 knots current
10-Apr	Richardson Hills	32	-77.43	790	J2-1128	CTD02	arrive 0630, deploy USBL pole, 0700 CTD cast, 0900 deploy elevator for USBL calibration, 2000 ROV launch
11-Apr	Richardson Hills	31.88	-77.374	800		CTD03, 04	1000 recover ROV, 1030 deploy lander, 1100 triangulation, 1300 2x CTD, 1800 turn for port for crew family emergency
12-Apr	Richardson Hills						transit back to Richardson, move on to mapping ops from Richardson to Blake Deep
13-Apr	Richardson Hills	31.985	-77.413		J2-1129	CTD05, 06, 07	0800 recover lander, 1000 CTD cast @ Richardson A4963, 1200 launch Jason
14-Apr	Richardson Hills						0900 recover Jason, 1100 deploy lander, triangulate, transit to Popenoe Mounds, MBES over Hoyt Hills on the way
15-Apr	Blake Mounds	31.079	-79.492	600			arrive 1000, weather conditions forced an early return to port
16-Apr	Charleston - Savanna Banks				J2-1130	CTD08	Arrive Charleston by 08:00, depart Charleston 1200, head to Savannah Banks, CTD on arrival, Dive: 1800
17-Apr	Blake Deep	31.079	-79.492	600	J2-1131		recover: 0800, head to Blake Deep, CTD, dive 2000

Date	Location	Latitude	Longitude	depth	Jason dive	CTD cast	Activities
18-Apr	Blake Deep	31.293	-77.243	1300		CTD09	recover 0800, CTD, level-wind test, transit to Moorehead City
19-Apr	Morehead City						weather issues
20-Apr	Cape Lookout	34.32424	-75.78643	500			18:00-22:00 transit map Lookout deep, transit to Pamlico Canyon
21-Apr	Pamlico Canyon	34.956	-75.224	600	J2-1132	CTD10	triangulate the lander upon arrival (3 hrs), CTD:0800, Dive: 12:00
22-Apr	Pamlico, Pea Island	35.675	-74.797	200		CTD11	recover: 16:00, CTD: 17:00, transit to Pea Island seep ~0000, dive: 0000
23-Apr	Pea Island, Kitty Hawk Seep	35.932	-74.816	285	J2-1133	CTD12, 13	dive: 0:00-12:00, recover: 12 or 16:00, CTD x2 (4hrs), transit to Kitty Hawk (2hrs)
24-Apr	Kitty Hawk, Keller Canyon	35.531	-74.852	300	J2-1134	CTD14	dive: 0:00-12:00, CTD: 13:00, transit to Keller (2hrs), no dive (currents)
25-Apr	Lookout Deep	33.923	-75.812	1200	J2-1135	CTD15	dive 1400-1700, CTD, weather building
26-Apr	Blake Ridge Seep	32.494	-76.199	2200			mapping ops, weather
27-Apr	Blake Ridge Seep	32.494	-76.199	2200	J2-1136	CTD16	dive: 0000-1600, recover, transit to Blake Seep (4 hrs) , CTD, dive: 0000
28-Apr	Cape Fear Seep	32.975	-75.933	2600	J2-1137	CTD17	dive: 0000-2359
29-Apr	Richardson West	31.894	-77.698	700	J2-1138	CTD18	recover: 0400, CTD: 0730-1000, dive start transit to Charleston
30-Apr	return to Charleston						arrive 1200
1-May	Charleston, SC						DEMOB
2-May	Charleston, SC						DEMOB

## General Dive Plans

Each dive will have a specific plan based on the type of habitat, the sampling needs at the site, the capacity of the *Jason* “basket,” the results of the previous dive(s), and the overall needs of the entire project. Although much of this information will only be available the evening before the dive, there is enough existing information to present generalized dive plans for the three habitats that are the focus of this study: canyons, corals, and cold seeps.

**Canyons:** The canyon dives will focus on coral diversity, biogeochemistry, macro-infauna, geology, and water sampling. If bubble plumes and seeps are present, they will also be investigated. Dives will begin in the deepest parts of the chosen targets and proceed upslope.

**Basket:** 11 push cores on port swing arm, 14 push cores on the basket, 8 sample quivers on swing arm, 6 on the basket, 4 niskins, 5-chamber slurp, 1 large biobox, 3 mussel pots (if seeps present), additional sample quivers (if seeps are not present)

Priorities: corals for barcoding, key coral and mussel species with associates for pop gen, push cores in canyon axis and near corals and/or mussels (if possible), water samples near scleractinians and large coral colonies, rocks for geology

**Corals:** These dive plans are primarily focused on the *Lophelia*-dominated habitats in the southern part of the study area.

Basket: 11 push cores on swing arms, 8 sample quivers on swing arms, 4 niskins, 5-chamber slurp, 2 large bioboxes, 3 coral pots, rock boxes, additional sample quivers

Priorities: video survey of distinct geomorphologies identified from new and existing multibeam data, coral community samples, push cores associated with and away from community samples, water samples near the seafloor where live corals are present, rocks (if present), other corals for barcoding, *Lophelia* in bioboxes for live coral experiments

**Seeps:** The dive plans for the deep seep sites where mussels are present (i.e. Cape Fear) and shallow sites that are dominated by bacterial mats (i.e. Pea Island) will be similar with the replacement of the mussel pots with additional push cores at the shallow sites.

Basket: 25 push cores on swing arms, 14 sample quivers, 8 on swing arms, 6 on the basket, 4 niskins, 5-chamber slurp, 1 large bioboxe, 2 mussel pots (if seeps present), rock boxes, additional push cores and sample quivers (if seeps are not present)

Priorities: Mussel community sampling, push cores associated with community samples and away, mussel sampling into bioboxes for pop gen plus gill/host genomics, water samples associated with all mussel samples, coral samples (if present), carbonates

## **Expedition Activities**

### **April 5**

Jason mobilization begins with the arrival of the four Jason vans plus the rad van on the crane barge. All of these were loaded onto the ship and installation begins. Shipments from the science party including hand-carried packages and pallets are also brought on board using the ship's crane.

Nancy Prouty from USGS reports that she has strep throat, so she is replaced by Lauren Carroll from Mandy Joye's group.

### **April 6-7**

Additional members of the science party arrive and mobilization continues. There are problems encountered with rigging the rad van. Eventually, it is determined that there is

a ground in the power cable coming from the van. Issues with the port ship's crane overheating slow the process, with the lander still on the pier and an inability to move large items on the deck.

## **April 8**

The remaining members of the science party arrive in the morning and everyone moves on board. An electrician is scheduled to address the problem with the rad van. A frayed wire is located on the connection from the van to the ship's power supply and this repair eliminates the ground. Issues with the port crane overheating continue and the lander remains on the pier.

The ship departs at noon for a test of the recently rebuilt generator in the harbor. While this is ongoing, a trip to the NOAA Hollings lab is completed to fill the liquid nitrogen dewars (there is no -80°C freezer on board).

The ship notifies us that the original crew member scheduled for the cruise is now healthy and can sail for the entire length of the cruise. That results in a shuffling of the berthing since that person (a male) is replacing a male on leg 1 and a female on leg 2.

## **April 9**

We are scheduled to depart at 1000, but this is delayed while the crane repairs are finalized and the lander is then loaded onto the ship. The ship finally departs at approximately 1400 hrs.

2200 **CTD-01** in Stetson Shallow

We arrive at a location in the Stetson Shallow region with sufficient water depth (> 500 m) to conduct the USBL calibration with the elevator. The USBL pole is deployed and a CTD cast is conducted to generate a sound velocity profile and collect a series of water column samples.

## **April 10**

When the CTD cast is complete at approximately 0130, the ship attempts to hold station, but is not able to in the ~3 knots of current that are present here. The Gulf Stream is significantly further west now than it was in August. We continue on to the Richardson Hills sites on the other side of the Gulf Stream.

0700 **CTD-02** Richardson Hills

We arrive and the surface currents are just under 1 knot. We lower the USBL pole and conduct a CTD cast, generating a water-column profile with the CTD and firing niskin bottles near the seafloor (21) and near the surface (3).

0900 Elevator deployment

The elevator is deployed in a flat spot along the eastern edge of the “U” that separates the Stetson Banks sites to the west from the Richardson Hills sites to the east. Then the ship molds station at a series of cardinal points and determines the range and bearing to the elevator to complete the USBL calibration.

1900 Elevator recovery

2000 Launch **J2-1128** at Richardson Hills swale site

On the descent, we crossed a clear thermocline at approximately 750m, far deeper than normal, but similar to the water column profile over the other Lophelia mounds at the northern reef track at Richardson Hills.

The ROV landed immediately on coral rubble habitat with abundant live Lophelia colonies. Ivan took the controls to get the camera dialed in. He determined that frequent white balancing of the camera will greatly improve the color temperature of the image, particularly when you go from sitting down to transiting or vice versa. We then began a series of octocoral collections - there were abundant Plumarella and neptheids throughout, and patches of a white plexaurid from time to time. The first swale was mostly this type of habitat with live Lophelia colonies in the “bush” stage with some Madrepora and a few Solenosmilia mixed in. The second swale near WPT 2 was mostly coral rubble with very little live coral consisting of smaller colonies of Lophelia and occasionally Enallopsamia.

The bottom of the swale between WPT 2 and 3 was finer sediments with clear bedforms of sand and small rubble. As we began to climb up towards WPT 3, there was mostly rubble with large numbers of small, white plexaurid colonies. At the top near WPT 3, we encountered another field of standing dead coral with numerous live coral colonies interspersed. We set up for the first coral pot sample here, and then made a live coral collection into the biobox. Leaving WPT 3, the coral cover began to decline on the way to WPT 4.

We continued along the track from WPT 4 to 5, and observed coral rubble in the swales/furrows between the peaks, with dense live Lophelia on the highs. The structure below the live Lophelia appeared to be a dense matrix of dead Lophelia and fine and sandy sediments. We collected MP2, soft coral, Plumarella, and Lophelia into a quiver and biobox during the watch. Fish observations included rattails (e.g., Nezumia), snaphobranchid eels, and a goosefish (Lophiodes). Depth ranged from ~747 to 773 m. There was a noticeable shimmer in the water around these topographic highs, consistent with water temperature changes.

Near WPT5, on the flank close to the top of a small feature at approximately 780 meters, the substrate was mostly coral rubble with white plexurid octocorals plus sponges. We collected one of the white plexurids as a representative of this habitat. As we continued up the feature, we came across occasional Enallopsammia profunda



colonies, most were the yellow morph, but a few were white. We collected some of each. An invertebrate that was conspicuous was the pinkish Echinus urchin. We continued upslope towards WPT 6. At approximately 750 m, the temperature began to climb sharply, from 4.4 to 6.5 degrees C at 760 m, then to about 10 degrees at 730 m. We traversed across a swale with coral rubble/sandy substrate before climbing to WPT6, where there was again a higher abundance of large live coral colonies in the warmer waters. Here we began to see occasional Madrepora oculata. We collected M. oculata and Lophelia, plus Plumarella. Within about 5 minutes, we observed 3 chimeara with black spots.

The transit between 6 and 7 was mainly along the top of a ridge. At WPT 7, there were numerous large live Lophelia colonies. Some of these were approaching the thicket stage, with rings or semi-circles of live coral growing around a center consisting of standing dead skeleton. In some places, these structures were so large that they had tipped over and the live coral continued to grow at the edges.

## **April 11**

ROV was off bottom at 0730, but the level-wind was not functioning and there was a wrap in the winch. The ship moved to the NE into deeper water and the ROV was lowered back to the bottom. Recovery was slow and methodical, but avoided any further mishaps.

1000 recover J2-1128

1030 launch **lander** @ Richardson Hills

1100 triangulate lander position

The lander was deployed at a site approximately 1 km NE of the area that was just surveyed on the previous dive. The intent is for the lander to stay down for ~48 hours collecting data then we will return to recover and redeploy it in a nearby location.

1330 **CTD-03** at Richardson Hills swale site

1500 **CTD-04** at Richardson Hills swale site

The first CTD (03) was to collect bottom water for the live coral tanks and buckets in the cold room. The second CTD (04) was for a complete water column profile roughly half way between the lander position and the end of the J2-1128 dive.

The winds and seas were consistently climbing all day, so we moved to mapping operations. A survey was planned to fill the gaps in the bathymetry between the Richardson Hills and Blake Deep sites. However, at this time, one of the crew members had a family emergency, and the ship turned to transit to the nearest port, which is Cape Fear near Wilmington NC.

## April 12

We arrived inside the fairway at Cape Fear at 0700 and a Costa Guard boat came out to meet us and transfer the crew member. We then turned and headed back out towards the Richardson sites. The weather continued to be too rough for an ROV deployment, so we ran two mapping lines between Richardson Hills and Blake Deep.

## April 13

At 0630, we broke off of the multibeam line and transited over to the lander site. Just after 0800, we triggered the release of the lander. It was successfully recovered around 0900. It seemed to be a successful deployment with plenty of data from all of the instruments, and a large number of amphipods inside of the fish that were deployed with the baited camera.

We then transited to the Richardson Hills site where Alvin dive 4963 took place. We took 3 CTD casts, the first for bottom water and the second and third for a full water column profile. The 2<sup>nd</sup> cast was to the northeast, downstream from the site, and the 3<sup>rd</sup> cast was to the southwest, upstream of the site (the current was approximately 1.5 knots at a heading of 060). We then waited until the sea state declined to launch the ROV at this site.

1130 **CTD-05** at Richardson Hills A4963 site

1300 **CTD-06** at Richardson Hills A4963 site

1600 **CTD-07** at Richardson Hills A4963 site

1900 Launch **J2-1129** at Richardson Hills A4963

We launched the vehicle about 1.5 nautical miles SW (upstream) of the seafloor target. The Jason group wanted to text their level-wind on the way down so we decided to allow for the drift of the ship in the 1+ knot surface currents. On the descent, the temperature dropped steadily the entire time. At 450 m, it was approximately 16 deg C, and at 650 m it was 11 deg C. On the seafloor at 725 m, it was around 9 deg C. Occasionally during the dive, the shimmering water of the thermocline was observed at depth.

At 2014 local time, the bottom was in sight. We set up on bottom and immediately looked for a place to deploy the McLean pump. We came across the large 3m high marker that was deployed with the coral transplant experiment, but it was in a different location, just down hill from the deployment site. This was a relatively flat area of rubble surrounded by live coral cover on the side of the coral mound, so we set the McLean pump here at 2046 local and used the marker to relocate the pump at the end of the dive.

As we came off the bottom, we turned towards the transplant target and almost immediately found them. The three cement blocks with the stained coral were retrieved into the starboard biobox without incident. However, we had a very hard time closing the box even though it was not apparently fouled in any way. Between 2130 and 2200 hrs, we shot a series of highlight video in this area of large live Lophelia colonies on a fairly steep slope.

We set down at a new location and collected a series of Plumarella, Anthothela, and a few sponges into the quivers. We moved over a bit to a relatively undisturbed location and collected a coral pot sample and a few more collections into the quivers. We then moved again to take another coral pot in a nearby location, and some live Lophelia into the port biobox.

## **April 14**

The ROV picked up and traversed to WPT 2 on the north side of the mound, away from the Alvin dive tracks in the area. We collected Madrepora, Plumarella, unknown white plexaurid, and a cup coral. We also collected an unknown yellow plexaurid and Anthomastus. The area was composed of lots of standing dead Lophelia capped with dense branches of live Lophelia. A few globular sponges that looked like large golf balls were also observed. There were a few fish observed while transiting up the slope, including Nezumia, Laemonema?, and synaphobranchids. At 0223 we started to head toward the McLane pump to start the multibeam patch test at a known target. The seafloor was visible during the multibeam ops, with dense particulate organic matter visible in the water column. There was a time code issue with the 4K camera, where some of the video was collected with an incorrect time code. The issue was corrected. During the MB patch test, the plan was to run lines at different elevations at particular headings to calibrate pitch and roll. Overall resolution of the MB will be ~ 0.5m. At 0345, the survey began, with 5.5 survey lines completed by 0929. During trackline 6, the current was too fast (0.5 kt to the NE) for the ROV to remain on heading and make way, so the decision to break the line was made. It was not possible to complete the cross line, so the plan changed to head to the seafloor and collect samples.

At 0600 local time, we returned to the seafloor on the SW flank of the mound. We deployed marker 1 at 31d59.051 N, 77d24.675 W and then collected Madrepora, Lophelia, and 3 Plumarella colonies into the biobox. We took some nice highlight video in this area after the collections.

At 0645, the wind had come up to about 20 knots, with gusts to 25, and the weather was predicted to get worse throughout the day, so the dive was given 30 minutes until leaving bottom. We took the last mussel pot sample and deployed marker 2 at this location. We then transited over to the pump deployment site, over some very large, tipped-over, live Lophelia colonies, and set up to retrieve the pump. By 0715, the pump

was on board and secure. We attempted to fire all of the niskins, but only the two smaller niskins actually triggered. At 0730, we left bottom.

0900 Recover **J2-1129** from Richardson A4963 site

Recovery took a long time because of the persistent issues with the Jason winch level-wind system. At a number of points, the vehicle had to be lowered again to take wraps out of the winch. After recovery, the weight for the lander was repositioned, and the ship began to transit over to the lander deployment location.

1100 Deploy **Albex lander** at Richardson Hills site.

The lander was deployed from the same surface position as before. It was then triangulated in to get a good fix on it at its resting place on the seafloor. It will remain there until the next cruise, which is not scheduled yet, but should occur some time in September – October 2019. Once we were done with the triangulation, then we transited to the Blake Mounds site overnight.

## **April 15**

We arrived at the Blake Mounds site in the morning after a very rough transit. Once we were set up in position at the site, we tested the ability of the ship to hold station. The currents were up to 3 knots, which made it very difficult for any operations. We then went north to the Savannah Banks sites, where the current was approximately 1.5 knots. However, the seas remained at 5-7 feet and the winds were a sustained 20-25 knots. Therefore, the decision was made to head into port early in the hope that we could get the transfer completed in the morning and get back out to sea early on the 16<sup>th</sup> when the weather was supposed to be better.

## **April 16**

We transferred 11 new science personnel on board. Headed to Savannah Banks to conduct **CTD08** followed by a long dive, **J2-1130**. The winch level wind was not functioning well so the ROV team did a test to see what adjustments need to be made to the end stop for each wrap. During descent, there was a significant amount of POM in the water column and squid. On the way to WP1, we saw some octocorals (*Pseudodrifa*) and cup corals and some live and dead *Lophelia* and collected a coral pot. The sediment had too much coral rubble to enable push coring. Other corals observed during the transit upslope included

Throughout the transit from WPT 1 to WPT 2 there was an increase in coral rubble and live coral density as the ROV moved upslope. During the first portion of the transit there was a lot of coral (likely *Lophelia pertusa*) rubble without much live coral except small colonies of stylasterid and nephtheid corals. Then the rubble became denser and the occurrence of live *Lophelia pertusa* thickets increased. As the ROV continued upslope the currents increased to around 1 knot and there were sightings of *Madrepora* and

*Enallopsammia* (both yellow and white morphs). Around 0630 (depth?) there was a shift in dominant scleractinian coral from *Lophelia pertusa* to *Enallopsammia* (white morph). Amongst the coral rubble primnoids (*Plumarella*), cup corals (*Thecapsammia*), Nephtheids (*Pseudodrifa*), and sponges were common. There was also a number (>5) of small shark seen throughout the area. At WPT 2 (511m) there was live *Enallopsammia* and the diversity of corals listed above. Downslope from WPT2 the coral diversity suddenly halted and there was almost no live scleractinians and much less rubble. There was very high current with a lot of particulate in the water. Throughout this time, we collected two mussel pots of *Lophelia*, one large live *Lophelia* collection, *Madrepora*, *Plumarella*, *Pseudodrifa*, cup corals, *Enallopsammia* (white and yellow), and sponges. One notable observation was of a shark eating a squid while conducting a live *lophelia* collection. Also noticed that the large urchins are primarily in the rubble areas and not with the live coral. Overall, there were several collections of target corals (e.g., *Enallopsammia*, *Madrepora*, *Lophelia*, etc.). Ultimately, we were able to collect push core in the coral rubble next to the *Pseudodrifa* and near *Enallopsammia*. Collected another mussel pot on a small patch of live *lophelia* with dead coral matrix. Fish observed included catshark, chimaeria, *Nezumia*, scorpaenids. We tripped all 4 niskins at the end of the dive near *Enallopsammia*, but the aft niskin didn't close all of the way because it had shifted during the dive. We left bottom at 1138 UTC and saw lots of POM during ascent.

## April 17

Recover ROV, transited to Blake Deep, then another dive, **J2-1131**. Reached bottom at 0106 UTC. Observed several coral species including bamboos and anthipatharians. We attempted to push core but were unable to collect at the beginning of the dive due to the substrate. Between WTP 1 and WPT 2 there was sedimented bottom with octocorals and black corals growing on occasional rock outcrops. The slope up to WPT 2 was not very steep and was very sedimented. The transit between WPT 2 and WPT 3 yielded highly sedimented rocks and interesting geology with sediment/rock shelves all the way up the ridge. At the top of the ridge (1314 m) was a rock overhang (~.5-1 meter thick) with *Desmophyllum*, *anthomastus*, black corals, anemones, and bamboo corals. At 1311 meters there was a sedimented area below the ridge and four push cores were collected. The ROV came around the "nose" of the ridge at WPT 3 and the community did not change much but there were bigger boulders, however everything was still very sedimented. Starting between WPT 3 and 4 there were sparse corals on small sedimented rocks on a not very steep slope. Headed downslope to WPT 4 to try and do some push cores but there were too many rocks so headed back up slope. Throughout this time, we collected *Solenosammilia*, *Hemicorallium*, *Iridogorgia*, black coral, yellow plexaurids + *Astroschema*, dead bamboo coral skeleton, *Metallogorgia*, *Desmophyllum*, *Chrysogorgia*, *Lethothela*, *Swiftia*, and 4 push cores. Continuing on to WP4, the corals encountered were similar to those found at the first part of the dive, including yellow

plexaurids, Solenosmilia, and unknown bamboo. We collected some nice imagery of a rock with large vase sponges, bamboo, Solenosmilia, Chrysogorgia, and desmophyllum. Also observed a few different types of seapens. Four more push cores were collected. Rock samples were collected as well. At 1149 UTC, we reached the top of the feature where we tripped the niskins and observed a fish with several parasites. A few more plexaurids and a Chrysogorgia were collected before coming off bottom at 1433 UTC.

### **April 18**

Recover ROV, **CTD-09**, then transited to 2000 m water depth location for level wind test because of issues with ROV winch. The winch was not wrapping consistently and changing direction prematurely. Test was successful. Transited to Morehead City.

### **April 19**

Transit to Morehead City to wait out the weather.

### **April 20**

Departed Morehead City and transited to mapping site at Cape Lookout, where we collected high resolution multibeam bathymetry for ~4 hours over target area identified from the predictive models. We then started transiting to Pamlico Canyon ~ 2230 local.

### **April 21**

Around 0400 am local, we set up to triangulate the lander. This procedure went well and we were able to locate and triangulate a position of the Pamlico lander. The surface current was ~3kt to the NE. **CTD-10** with monocoress started around 0800 local, at a location northwest of our dive target in a gully area at 1300 m. The current was strong and made the CTD cast very challenging. While we were able to collect a bottom sediment sample with the monocoress, it likely hit the side of the canyon due to the significant wire angle that occurred throughout the cast. This was due to the fact that the USBL pole made it impossible for the ship to back down in order to straighten the wire.

The ROV launch was ~1200 for ROV dive **J2-1132** at Pamlico Canyon on Easter Sunday and there was chocolate and candy for all. This dive started at the base of the canyon at around ~1800 m and continued upslope. The bottom was heavily sedimented with a steep slope and there were Acesta shells observed. Sediment cores were collected at several locations throughout the dives, on sedimented ledges. At 2049 UTC, we collected some rock samples and Acanthogorgia ~ 1700 m. Transiting from WP1 to WP2, there were a series of rock steps and ledges, mainly populated by sea stars and ophiuroids. Near WP2, at the base of a wall, the second set of push cores (7 total) were collected. While transiting from WP2 to WP3, we began to see lots of brisingid sea stars and small underhang communities of Solenosmilia, Desmophyllum, and some colonies of Acanthogorgia. Two slurp collections were made of Solenosmilia

and *Desmophyllum* from these communities (blue and black containers). Upon reaching WP3, we took a set of 6 push cores. All equipment on the ROV worked fine, but the vessel was having difficulty holding station on occasion with the wind and current. One occasion we left bottom for a few minutes while the ship stabilized, but otherwise managed to maintain normal operations. The overall dive plan was to work laterally along the northern steep canyon wall in a northwest direction. Dense coral communities were observed under the terrace overhangs. These communities were dominated by *Solenosmilia variabilis*, *Desmophyllum dianthus* and *Acanthogorgia* sp. The fileshell *Acesta* sp was also commonly observed amongst the corals. We moved upslope to explore a different depth range (~1350-1300m) but despite abundant exposed hard substrate at these depths, the habitat was almost devoid of megafauna. The bathymetry contours were tending to spread further apart as we moved WNW up-canyon, so we decided to move back down-slope to the steeper walls. Throughout the dive, several collections were made of dominant corals, *Acesta* and other fauna using slurp, quivers and bioboxes. Representative rock samples were also collected. Due to the length of the dive, we were able to make our way through most of the planned waypoints, covering space over a large vertical and lateral gradient, as well as distinct changes in the seafloor geological morphology.

## **April 22**

Continued dive, delayed recovery until after 1600 local because a storm blew through and the seastate picked up. Notable observations also include trash (e.g., monofilament) throughout the dive. The ROV was off bottom at 1853 UTC, ~1185m.

Planned CTD ops directly after USBL recovery took a few hours because set up and drift required setting up the ship ~3 miles southwest of the 1600m depth target in Pamlico Canyon. While deploying **CTD-11**, it became clear that with the USBL pole in the water, it was not possible for the ship to back down to enable a straight wire angle. The CTD reached the seafloor at ~1130m within the canyon. Camera on CTD confirmed that we reached the seafloor with a clear image of a crab.

## **April 23**

Dive at Pea Island seep, **J2-1133**. The overall plan was to investigate seep targets in the southern cluster (Pea Island C) where we have good Sentry imagery of seep carbonate, mats, and dense fishes. At 0626 UTC, the ROV was headed to the seafloor, with lots of POM and midwater fishes observed on descent. Several seep targets were placed on the underlay to help guide the dive. At 0634 UTC, the ROV reached bottom (354.8 m), and we encountered lots of fish, including black bellied rosefish, and low visibility overall. At 0707, bubbles were observed as well as lots of pits and mounds on the sediment surface. At 0750, cores were collected within mat sediments and bubbles released during the coring (330 m). When collecting a rock sample (0914 UTC), a tubeworm appeared after a piece of rock was broken off of a larger carbonate sample.

The tubeworm and rock sample were collected. This was the first tubeworm that we have observed in the US Atlantic seeps to date. Lots of squid were present, along with long-finned hake?, and anemones. A few more rock samples were collected throughout the dive. All equipment on the vehicle worked fine, there was a moderate current coming from the north that occasionally re-suspended sediment and reduced visibility. Surface current and winds were minimal and the ship held station well. Around WP6, patchy, moderate sized bacterial mats were observed on the flat sedimented periphery, and large discrete authigenic carbonate mounds were common in the center of the feature. These were densely colonized by *Actinoschypia*, zoanthids and anemones. On one occasion a colony of *Lophelia* (11.5 deg C, ~ 280 m) was observed and a sample collected. Several *Eumunida picta* were associated with the coral colony. No seep-endemic megafauna were observed, but this appeared to be a highly productive site, as evidenced by the large number of fishes (Jacks, Blackbelly Rosefish, *Lymonema*, Cusk-type fish and eels) and crabs. Collections of 16 push cores (in active seep site with bubbles and off-seep), and 4 water samples (1 in bubbles and 3 next to bacterial mats) were made in addition to the coral sample. The cores were covered with an tarp to avoid loss due to degassing during ascent. The ROV was off bottom at 1601 (300m).

**CTD casts 12 and 13** were conducted at Pea Island, off seep and on seep, respectively. Following the casts, we transited north to Kitty Hawk seep.

Dive at Kitty Hawk, **J2-1134**: Launch planned at 2000 with a long dive planned (~16hrs). At ~0050 the ROV was 30 m off bottom, with lots of swimmers, dense POM, and mid water fishes observed. At 0054, the ROV lost power, which was returned at 0057 UTC. At 0102, bottom was in site, with lots of quill worms and a scorpaenid on the seafloor (466.8m). Other fish observed included a snipe eel, paralepidid (cf. barracudina), eel pouts, and black bellied rosefish. Other animals included lithodid or spider crabs, flounders, and many squat lobsters. We slurped several of these *E. picta*, but the slurp chamber wasn't indexed correctly, so they remained mostly in the slurp hose until later in the dive when the chamber was adjusted. Continuing on to WP2, we encountered bubbles and white mat, and a rocky area with a vestimentiferan tube worm (0215 UTC). Following imaging the tube worm and during the collection of the worm's rock, a ground fault occurred (0226 UTC) with the rock in the manipulator. When power was restored (0232UTC), the rock had been dropped, but it didn't take long to find it and collect the worm and the rock (0245). We also saw some sort of ray. As we transitioned over soft sediment (400m), we continued to see spider crabs and swimming shrimp with long antennae.

## **April 24**

At 0442 (UTC), another ground fault occurred, which was resolved by 0447. Upon heading back along the track and while continuing to chase sonar targets, it was noted



that another tubeworm was observed on a large carbonate formation. Throughout the dive, we observed a few tubeworms on rocky substrate. We also found some areas with active bubbling ~360 and collected some good imagery and push cores. Additional cores were collected within mat environments (0849 UTC) at 334 m. As we transited to shallower depths, we also saw some large megafauna, including sharks [e.g., hammerhead], conger?, large manta ray, sea robin, flounder and lobsters. While we were on the lookout for live clams, none were found, but we did see trash and collected a plastic spoon (~220m). Toward the end of the dive, there appeared a series of linear ridge features on the sonar, apparently low profile bed forms. Jason was off bottom at 1550 UTC (213m).

Following recovery, we conducted **CTD-14**, and then transited to Keller. On station at ~1600. Given the 3 back to back dives at Pamlico and the two seep sites, time was needed to turn the basket around and prepare for the next dive. Planned dive at 0000 on the 25<sup>th</sup>. Current and wind look good, conditions to dive were good throughout the evening until ~2030 when the current picked up to 4.9 kt. At 2200, the bridge, EL, and Chief Sci decided that the conditions were prohibitive for diving, so we set a course for the deep Cape Lookout site, allowing us to test the habitat suitability models developed for the area.

## **April 25**

Dive at cape lookout deep, **J2-1135**. The plan was for a relatively short dive here before the weather started to pick up and push us south. At 1924, the ROV had landed slightly deeper than 1000 m on sediment, with scattered small bacterial mats. Push cores were collected within the mats, as well as suction samples. There were few invertebrate megafauna, but moderately abundant fishes of various types (*Nezumia*, *Coryphaenoides*, *Synphobranchid* eels). We transited to the NW towards a steeper structure that had been interpreted as a wall. During the transit we came across a pile of boulders of a black material. They were sparsely colonized by sponges, octocorals (*Acanthogorgia*, bamboo corals, *Chrysogorgia*) and black corals (*Bathypathes?*). We collected a *Chrysogorgia* colony, a small yellow 'plexaurid' (which resembles *Acanthogorgia*) and a rock with a small single branch bamboo colony from the first rock pile. We headed WNW towards the 'wall' and encountered a series of rocks (sonar showed more), each with a few coral colonies: bamboos, *Anthomastus*, black coral, *Acanthogorgia*, small yellow plexaurid. Highlight imagery was collected at the rock features, then the ROV continued WNW. Continuing to the NE along the 950 m contour, we encountered some *Nezumia* and other rattails. At 2139 UTC, the seas were building and we were told 20 more minutes left to the dive. While several *Acanthogorgia* were collected into quivers, attempts were made to collect the yellow plexaurid, but the ROV was pulled off the area and the collection was aborted. The Niskin bottles were fired and

the ROV was recovered. **CTD-15** was acquired before the weather became too rough for any over the side work.

## **April 26**

Weather picked up, transit mapped Cape Fear, Blake Ridge areas, but data quality are questionable because the sea state was too rough for good acquisition. Conditions continued to be rough throughout the day and no other ops were possible, except for securing gear, catching up on sample processing, Bingo, and sleep.

## **April 27**

We conducted a **CTD-16** at Blake Ridge seep while waiting on the sea state to mellow in order to dive. During the cast, the ship drifted ~2.5km to the east, so the USBL pole was recovered so we could transit and get on station quickly. **J2-1136** was launched at ~1600 local at Blake Ridge Seep, with a target depth of 2166m. We reached bottom at 2144 UTC at 2164m. The overall plan was to target an area of Blake Seep that had been dived on before, where we could target community collections of mussels and possibly clams, collect sediment cores within mats and adjacent to mussel beds, slurp bacterial mats, sample carbonates and water, and image hydrate. Within the first hour of the dive, we came upon a familiar scene of bucket lid markers (#3) and Bob Carney's old bucket of rabbit food and oyster shells. His name was still clearly visible on the outside of the bucket. In addition, we saw some old Alvin drop weights heavily corroded. Bob's experiment was planted in the middle of an extensive mussel bed (*B. heckeræ*) with mussels of various lengths. There were some great locations for mussel pot collections, and pots were collected in 3 different mussel patch sizes: small, medium, and large. Targeted mussel collections for various analyses also included communities found within different sized patches, and associated holothurians (cf. *chirodota*). These scoops of mussels proved to be very tricky, due to the varying mussel sizes, but several different patches were collected. Lots of dead clam shells were observed, but no large live clams were collected. However, following ROV recovery, several small clams were present within the mussel collections. Push cores were also collected in mat environments, along with some urchins within the same area. At 0046, we crossed bucket marker #4 near a patch of mostly large *B. heckeræ*. We saw a *Bathysaurus* and an *Antimora* with a parasite attached. While transiting to WP4, we came upon an enormous mound. On the bathymetry, we had a target marked hydrate, and here it was (0200UTC)! A huge hydrate mound with cave like features where two *Gaidropsarus* fish were hanging out. We collected some imagery at the mound, bubbles, and surrounding environment. Many of the rocks observed were either too big or not pliable/breakable, but we were able to collect a rock after all (0258UTC). We found a black coral attached to a mussel shell, so we collected it (2165m). Above a dense mussel bed and adjacent to the large hydrate mound, we tripped the 4 niskins. Several of the mussels were coated in white, fluffy material, not exactly like filamentous mat, similar to what has been

observed at the mussel beds to the north (e.g., Norfolk seeps). During the last part of the dive, we encountered a few octopuses in and around the mussels.

## **April 28**

At 0625, a ground fault occurred while the ROV was on bottom, so once power was restored, the ROV came off bottom. Once the ROV was recovered and on deck ~0430, the Jason team used the surface interval to try and track down the source of the fault, which is the same one that has occurred on previous dives. We transited to Cape Fear to conduct **CTD-17** to 2600m at 0800 local. The ROV **J2-1137** was launched at 1200 (local) for a dive at Cape Fear seep to ~ 2600m for a 12 hour dive. At 1816 UTC, we reached bottom at ~2587m and transited to WP1. Moderate to heavy marine snow was observed, and the seafloor was composed of fine sediment with lots of visible bioturbation and brittle stars. A drift test revealed that the bottom current was fairly swift at ~0.9kt to 1600. Small colonies of “Anthomastus” were observed, so one was collected early on in the dive. Extensive mat was also observed, good for push core collections and slurp sampling. The ROV moved through the WP at a decent pace, transiting through to WP3 by 2000 UTC. We continued to see and sample bacterial mats in various patch sizes, holothurians, and euplectellid sponges. The ROV was definitely being pushed around by the current and sediment scour was observed on the mud. During the dive, several bamboo colonies were observed and a few were collected. Continuing on to WP5, the current was still very strong and there was lots of particulate organic matter in the water column. Other animals observed included Chrysogorgia, gastropods, Umbellula, ophiuroids, and holothrian trails, plus patches of dead sargassum. At ~2241 we observed some odd burrow/rock mud formations and collected some rocks for characterization. The slope was sedimented interspersed with rocky outcrop features. At 0000, we found a beautiful colony of a “Paragorgia” and collected some imagery before sampling a snip. During the latter part of the dive, several xenophyophores were observed. The seafloor features were similar in composition to seamounts to the north, with patches of exposed rock and xenophyophores present on the sediment. AT 0112, we imaged a very large mound feature with tubular concretions, cemented in place (D=2570m). We poked at the rocky ledges and the material appeared very clayey, and broke away easily. Toward the end of the dive, a few more push cores were collected in “background” sediments and the niskins were collected above a rocky feature with some Chrysogorgia colonies. None of the areas observed had dense coral cover nor were they very seepy. At 0220 the ROV was off bottom and headed to the surface. Overall, a very interesting dive, with lots of bacterial mats, strange tubular geological features, and corals!

## **April 29**

We transited to Richardson West for one final CTD cast and dive before heading to the sea buoy. During the **CTD-18** on arrival (~1030), there was an issue with the con file

which delayed the deployment. Following the cast, we launched the ROV (**J2-1138**) at 1330, with an approximate bottom depth of 727 m. On bottom time was 1855 UTC. The rocky seafloor appeared black, with high amounts of coral rubble and small patches of live *Enallopsammia*, *Plumarella*, white plexaurids, other octocorals, and sponges. Crusty features had dense corals growing with on the edges of ledges (several different species observed, including *Lophelia*, *Enallopsammia*). Several collections occurred within the first 4 hours of the dive, including plexaurids, primnoids, *Enallopsammia*, *Plumarella*, cf. *Leiopathes*, and crinoids. Push cores were attempted but the sediment was only a fine veneer over hard pavement. Several large *Leiopathes* were observed throughout the dive. At ~660 m near WP3, we stopped to image the ledges and collect a coral pot a mixture of live and dead *Lophelia*. There was a great deal of difficulty with the wire angle due to the swift surface current, so after a few hours of collections, the dive transitioned to a observation only dive in order to make way and minimize impact on the wire. This mode enabled the ship to maintain heading and provided an opportunity to cover a great deal of ground and observe the transition from rocky ledges and boulders to pavement with many coral colonies. During the last 3 hours of the dive, Tito took over flying and Mario was on the manipulators so we were able to fly and sample. This allowed us to trip the niskins, collect more corals, and some rock samples. Several fish species were also observed in the latter part of the dive including *Nezumia*, *Chanax* (good imagery), many *Hoplostethus*, and some type of eel, maybe synphobranchids. We left bottom at 0306 (UTC). Good dive overall, despite the operational limitations. Some of the largest *Leiopathes* colonies from all the DEEP SEARCH dives were observed at this site.

### **April 30:**

At ~0000 we headed to sea buoy for a 1200 arrival at the pier.

## **Scientific Personnel Participating**

1. Erik Cordes - Associate Professor, Temple University
2. Amanda Demopoulos - Research Benthic Ecologist, U.S. Geological Survey
3. Alexis Weinnig - PhD Candidate, Temple University
4. Ryan Gasbarro - PhD Candidate, Temple University
5. Abby Keller - Research Assistant, Temple University
6. Jason Chaytor - Research Geologist, U.S. Geological Survey, Sediments Laboratory.
7. Christina A. Kellogg - Research Microbiologist, U.S. Geological Survey
8. Jennifer McClain-Counts - Biologist, U.S. Geological Survey
9. Nancy Prouty - Oceanographer, U.S. Geological Survey, coral ecosystems.
10. Cheryl Morrison - Research Geneticist, U.S. Geological Survey
11. Aaron Aunins - Biologist, U.S. Geological Survey
12. Jill Bourque - Marine Benthic Ecologist, U.S. Geological Survey
13. Jonathan Quigley - Engineering Technician, U.S. Geological Survey
14. Brian Andrews - Geographer, U.S. Geological Survey

15. Allyson Boggess - Geologist, U.S. Geological Survey
16. Michael Rasser – Marine Ecologist, Bureau of Ocean Energy Management
17. Kate Segarra - Marine Biology, Bureau of Ocean Energy Management
18. Dylan Wilford - Masters Student, University of New Hampshire
19. Furu Mienis - Research Scientist, NIOZ - Royal Netherlands Institute for Sea Research
20. Sofia Ledin - PhD Candidate, NIOZ - Royal Netherlands Institute for Sea Research
21. Charlotte Kollman - Graduate Student, Coastal Carolina University
22. Hannah Choi - PhD Student, University of Georgia
23. Josh Parris - Research Technician, University of Georgia
24. Zachary Marinelli - Research Technician, University of Georgia
25. Caitlin Adams - Operations Coordinator, NOAA Office of Ocean Exploration and Research
26. Sandra Brooke - Associate Research Faculty, Florida State University Coastal and Marine Lab
27. Andrea Quattrini - Postdoctoral Researcher, Harvey Mudd College
28. Ivan Hurzeler - Filmmaker

## **Master Sample Sheet**

A Master Sample sheet is presented in **Appendix A**.

- Columns highlighted in blue include the metadata associated with each sample acquired during the cruise. Positions for samples taken during ROV dives are derived from the post-processed navigation data.
- Columns highlighted in orange indicate the destination sub-samples taken from each of the samples.

## **Plans of the Day (PODs)**

A compilation of Plans of the Day is presented in **Appendix B**.

## **Dive Plans**

All the dive plans from the cruise are presented in **Appendix C**.

## **Jason Dive Summaries**

The dive summaries from the Jason group are presented in **Appendix D**.

## **Appendix A. - Master Sample Sheet**

# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatirini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_CTD01_N01	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	585	Water								X			
RB1903_CTD01_N02	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	585	Water								X			
RB1903_CTD01_N03	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	585	Water	EC9801						X				
RB1903_CTD01_N04	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	585	Water					X					X	
RB1903_CTD01_N05	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	585	Water					X					X	
RB1903_CTD01_N06	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	500	Water	EC9802						X				
RB1903_CTD01_N07	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	500	Water								X			
RB1903_CTD01_N08	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	500	Water											
RB1903_CTD01_N09	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	400	Water	EC9803						X				
RB1903_CTD01_N10	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	400	Water								X			
RB1903_CTD01_N11	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	400	Water											
RB1903_CTD01_N12	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	300	Water	EC9804						X				
RB1903_CTD01_N13	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	300	Water								X			
RB1903_CTD01_N14	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	300	Water											
RB1903_CTD01_N15	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	152	Water	EC9805						X				
RB1903_CTD01_N16	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	152	Water											
RB1903_CTD01_N17	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	152	Water											
RB1903_CTD01_N18	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	64 (chl max)	Water	EC9806						x				
RB1903_CTD01_N19	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	64 (chl max)	Water											
RB1903_CTD01_N20	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	64 (chl max)	Water								X			
RB1903_CTD01_N21	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	Surface	Water	EC9807						X				
RB1903_CTD01_N22	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	Surface	Water											
RB1903_CTD01_N23	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	Surface	Water					X					X	
RB1903_CTD01_N24	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.45443	Surface	Water					X			X		X	
RB1903_CTD02_N01	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water											
RB1903_CTD02_N02	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water					x					x	
RB1903_CTD02_N03	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water					x					x	
RB1903_CTD02_N04	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N05	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N06	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N07	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N08	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N09	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N10	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N11	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N12	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N13	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N14	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N15	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N16	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N17	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N18	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N19	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N20	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N21	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	813	Water				x							
RB1903_CTD02_N22	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	10	Water				x							
RB1903_CTD02_N23	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	10	Water				x							
RB1903_CTD02_N24	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32 0.278	77 25.876	10	Water					x						x
RB1903_J2-1128_B1_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:55:00	31.88667	-77.36803	762	Enallopsammia	EC9831		CM_00272	x				X			
RB1903_J2-1128_B1_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:55:00	31.88667	-77.36803	762	Ophiroid	EC9832							X			
RB1903_J2-1128_B1_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:55:00	31.88667	-77.36803	762	Crinoid	EC9833							X			
RB1903_J2-1128_B1_004	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:55:00	31.88667	-77.36803	762	Barnacle								X			
RB1903_J2-1128_B1_005	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:55:00	31.88667	-77.36803	762	Hydroids								X			

# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_J2-1128_B1_006	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:55:00	31.88667	-77.36803	762	Eunicid					XX						
RB1903_J2-1128_B1_007	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:55:00	31.88667	-77.36803	762	Amphipod					XX						
RB1903_J2-1128_B1_Sieve	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA						X						
RB1903_J2-1128_B2_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	9:04:00	31.88670	-77.36804	762	White plexaurid	EC9811			x	X	XX					
RB1903_J2-1128_B2_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	9:02:00	31.88670	-77.36804	762	Hydroids					X	X					
RB1903_J2-1128_B2_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	9:02:00	31.88670	-77.36804	762	Barnacle					X						
RB1903_J2-1128_B2_004	J2-1128	Richardson Hills	April 10th - 11th, 2019	9:02:00	31.88670	-77.36804	762	Enallopsammia	EC9812		CM_00262	x							
RB1903_J2-1128_B2_Sieve	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA						X						
RB1903_J2-1128_B3_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	6:58:00	31.88488	-77.37041	757	Lophelia		X	CM_00265	x	X						
RB1903_J2-1128_B3_002	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA												
RB1903_J2-1128_B3_Sieve	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA						X						
RB1903_J2-1128_B4_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:42:00	31.88649	-77.36844	764	Plumarella				x	X		XX				
RB1903_J2-1128_B4_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:39:00	31.88650	-77.36841	764	Lophelia	EC9835		CM_00274	x							
RB1903_J2-1128_B4_003	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Eunicid			CM_00275	x	XX						
RB1903_J2-1128_B4_004	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Cladorhizid	EC9834		CM_00276		X						
RB1903_J2-1128_B4_005	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:29:00	31.88650	-77.36844	763	Madrepora	EC9836		CM_00273		X						
RB1903_J2-1128_B4_006	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:39:00	31.88650	-77.36841	764	Ophiuroid	EC9852				XX						
RB1903_J2-1128_B4_007	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Hydroids					XX						
RB1903_J2-1128_B4_008	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Annelid					X						
RB1903_J2-1128_B4_Sieve	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA						X						
RB1903_J2-1128_B5_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	NA	NA	NA	Ophiuroid	EC9809		CM_00270		X						
RB1903_J2-1128_B5_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	NA	NA	NA	Plumarella	EC9810			x	X		XX				
RB1903_J2-1128_B5_003	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Enallopsammia (white)	EC9830		CM_00271	x							
RB1903_J2-1128_B5_004	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	NA	NA	NA	Dead Enallopsammia											
RB1903_J2-1128_B5_005	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	NA	NA	NA	Hydroids					X						
RB1903_J2-1128_B5_006	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	NA	NA	NA	Sponge					X						
RB1903_J2-1128_B5_Sieve	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Sieved					X						
RB1903_J2-1128_B6_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:55:00	31.88328	-77.37230	756	Lophelia		x	CM_00266	x	X						
RB1903_J2-1128_B6_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:55:00	31.88328	-77.37230	756	Annelid			CM_00267		X						
RB1903_J2-1128_B6_Sieve	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Sieved					X						
RB1903_J2-1128_O1_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:12:00	31.88636	-77.36882	752	White plexaurid	EC9813				X		XX				
RB1903_J2-1128_O1_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:12:00	31.88636	-77.36882	752	Ophiuroid				x	X						
RB1903_J2-1128_O1_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:12:00	31.88636	-77.36882	752	Hydroids					X						
RB1903_J2-1128_O2_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:10:00	31.88784	-77.36578	755	Plumarella	EC9814			x	X		XX				
RB1903_J2-1128_O2_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:15:00	31.88785	-77.36576	755	White plexaurid				x	X		X				
RB1903_J2-1128_O2_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:08:00	31.88783	-77.36579	755	Enallopsammia	EC9816		CM_00264	x	X						
RB1903_J2-1128_O2_004	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:15:00	31.88785	-77.36576	755	Lophelia	EC9817		CM_00263	x	X						
RB1903_J2-1128_O2_005	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:15:00	31.88785	-77.36576	755	Ophiuroid	EC9815				X						
RB1903_J2-1128_O2_006	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:15:00	31.88785	-77.36576	755	Eunicid					XX						
RB1903_J2-1128_O2_007	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Amphipod					X						
RB1903_J2-1128_O2_008	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Annelid					X						
RB1903_J2-1128_O3_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:29:00	31.88803	-77.36576	756	Madrepora	EC9826		CM_00268	x	X						
RB1903_J2-1128_O3_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:32:00	31.88802	-77.36576	756	Lophelia	EC9827		CM_00269	x	X						
RB1903_J2-1128_O3_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:32:00	31.88802	-77.36576	756	Ophiuroid	EC9828				X						
RB1903_J2-1128_O4_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	3:05:00	31.88013	-77.37381	792	Plumarella	EC9818			x	X		XX				
RB1903_J2-1128_O4_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	3:11:00	31.88014	-77.37383	792	Pseudodrifra	EC9819			x	X		XX				
RB1903_J2-1128_O4_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	3:11:00	31.88014	-77.37383	792	Brachiopod	EC9820										
RB1903_J2-1128_O5_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	4:46:00	31.88317	-77.37226	759	Plumarella	EC9824			x	X		XX				
RB1903_J2-1128_O5_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	3:54:00	31.88179	-77.37337	773	White plexaurid				x	X		X				
RB1903_J2-1128_O5_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	3:57:00	31.88179	-77.37337	773	Pseudodrifra	EC9825			x			X				
RB1903_J2-1128_O5_004	J2-1128	Richardson Hills	April 10th - 11th, 2019	4:48:00	31.88318	-77.37226	759	Bamboo					X		XX				
RB1903_J2-1128_O5_005	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Dead Lophelia					X					X	
RB1903_J2-1128_O5_006	J2-1128	Richardson Hills	April 10th - 11th, 2019	4:46:00	31.88317	-77.37226	759	Anemone							X				



# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_J2-1128_O5_007	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Ophiroid					X						
RB1903_J2-1128_O5_008	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Barnacle					XX						
RB1903_J2-1128_O5_009	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Hydroids					X						
RB1903_J2-1128_O5_010	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Sponge					X						
RB1903_J2-1128_O5_011	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Amphipods					X						
RB1903_J2-1128_O6_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	6:34:00	31.88488	-77.37042	756	Plumarella	EC9821				X	XX					
RB1903_J2-1128_O6_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	6:41:00	31.88489	-77.37041	757	Pseudodrifra	EC9822, EC929			x	X	XX					
RB1903_J2-1128_O6_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	6:41:00	31.88489	-77.37041	757	Orange Sponge	EC9823										
RB1903_J2-1128_O6_004	J2-1128	Richardson Hills	April 10th - 11th, 2019	6:41:00	31.88489	-77.37041	757	Hydroids					X						
RB1903_J2-1128_O6_005	J2-1128	Richardson Hills	April 10th - 11th, 2019	6:41:00	31.88489	-77.37041	757	Dead Lophelia					X						
RB1903_J2-1128_O6_006	J2-1128	Richardson Hills	April 10th - 11th, 2019		NA	NA	NA	Amphipod					X						
RB1903_J2-1128_N1	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:58:00	31.88915	-77.36568	732	Water	EC9872										
RB1903_J2-1128_N2	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:58:00	31.88915	-77.36568	732	Water											
RB1903_J2-1128_N3	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:58:00	31.88915	-77.36568	732	Water	x	X									
RB1903_J2-1128_N4	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:58:00	31.88915	-77.36568	732	Water	x	X									
RB1903_J2-1228_M2-1	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:11:00	31.88319	-77.37231	757	Live lophelia	EC9837										
RB1903_J2-1228_M2-2	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:11:00	31.88319	-77.37231	757	Dead lophelia	EC9838										
RB1903_J2-1228_M2-3	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:11:00	31.88319	-77.37231	757	Hydroid	EC9839										
RB1903_J2-1228_M2-4	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:11:00	31.88319	-77.37231	757	Plumarella	EC9840					XX					
RB1903_J2-1228_M2-5	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:11:00	31.88319	-77.37231	757	Eunice	EC9841										
RB1903_J2-1228_M2-6	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:11:00	31.88319	-77.37231	757	Ophiacantha bidentata	EC9842										
RB1903_J2-1228_M2-7	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:11:00	31.88319	-77.37231	757	Cup coral	EC9843										
RB1903_J2-1228_M2-8	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:11:00	31.88319	-77.37231	757	Stylasterid	EC9844										
RB1903_J2-1228_M2-Sieved	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:11:00	31.88319	-77.37231	757						x						
RB1903_J2-1228_M1-1	J2-1128	Richardson Hills	April 10th - 11th, 2019	7:09:00	31.88490	-77.37041	755	Live Lophelia	EC9845										
RB1903_J2-1228_M1-2	J2-1128	Richardson Hills	April 10th - 11th, 2019	7:09:00	31.88490	-77.37041	755	Dead Lophelia	EC9846										
RB1903_J2-1228_M1-3	J2-1128	Richardson Hills	April 10th - 11th, 2019	7:09:00	31.88490	-77.37041	755	Ophiacantha bidentata	EC9847										
RB1903_J2-1228_M1-4	J2-1128	Richardson Hills	April 10th - 11th, 2019	7:09:00	31.88490	-77.37041	755	Hydroid	EC9848										
RB1903_J2-1228_M1-5	J2-1128	Richardson Hills	April 10th - 11th, 2019	7:09:00	31.88490	-77.37041	755	Anemone	EC9849										
RB1903_J2-1228_M1-Sieved	J2-1128	Richardson Hills	April 10th - 11th, 2019	7:09:00	31.88490	-77.37041	755						x						
RB1903_J2-1228_M3-1	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Live lophelia	EC9850										
RB1903_J2-1228_M3-2	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Dead lophelia	EC9851										
RB1903_J2-1228_M3-3	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Ophiacantha bidentata	EC9853										
RB1903_J2-1228_M3-4	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Anemone	EC9854										
RB1903_J2-1228_M3-5	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Annelid	EC9855										
RB1903_J2-1228_M3-6	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Hydroid1	EC9856										
RB1903_J2-1228_M3-7	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Urchin1	EC9857										
RB1903_J2-1228_M3-8	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Eunice	EC9858										
RB1903_J2-1228_M3-9	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Crinoid	EC9859										
RB1903_J2-1228_M3-10	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Hexactenellid	EC9860										
RB1903_J2-1228_M3-11	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Urchin2	EC9861										
RB1903_J2-1228_M3-12	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732	Hydroid2	EC9862										
RB1903_J2-1228_M3-Sieved	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31.88913	-77.36576	732						x						
RB1903_CTD03_N01	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water					X						X
RB1903_CTD03_N02	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X	x						
RB1903_CTD03_N03	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N04	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N05	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N06	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N07	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N08	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N09	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							

# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatrin	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miens	Hillary Close
RB1903_CTD03_N10	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N11	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N12	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N13	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N14	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N15	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N16	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N17	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N18	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N19	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N20	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N21	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N22	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N23	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD03_N24	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21. 8972	790	Water	X			X							
RB1903_CTD04_N01	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	813	Water			x		x		x				x
RB1903_CTD04_N02	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	813	Water	EC9869		x		x						x
RB1903_CTD04_N03	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	813	Water			x		x						x
RB1903_CTD04_N04	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	813	Water								x			
RB1903_CTD04_N05	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	707	Water			x					x			
RB1903_CTD04_N06	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	707	Water			x								
RB1903_CTD04_N07	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	707	Water	EC9870		x				x	x			
RB1903_CTD04_N08	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	501	Water			x						x		
RB1903_CTD04_N09	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	501	Water			x				x	x			
RB1903_CTD04_N10	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	501	Water	EC9871		x								
RB1903_CTD04_N11	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	340	Water			x						x		
RB1903_CTD04_N12	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	340	Water			x					x	x		
RB1903_CTD04_N13	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	340	Water											
RB1903_CTD04_N14	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	340	Water	EC9863		x								
RB1903_CTD04_N15	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	260	Water	EC9864						x	x			
RB1903_CTD04_N16	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	175	Water	EC9865						x	x			
RB1903_CTD04_N17	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	79	Water									x		
RB1903_CTD04_N18	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	79	Water	EC9866								x		
RB1903_CTD04_N19	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	50	Water	EC9867		x								
RB1903_CTD04_N20	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	50	Water			x								
RB1903_CTD04_N21	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	50	Water			x								
RB1903_CTD04_N22	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	Surface	Water									x		
RB1903_CTD04_N23	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	Surface	Water					x		x				x
RB1903_CTD04_N24	CTD04	Richardson Hills	April 10th, 2019	19:42:00	31 53.6742	77 21.9046	Surface	Water	EC9868				x						x
RB1903_Albox01_01	Albox01	Richardson Hills	04/13/19					Amphipods			CM_00277								
RB1903_CTD05_N01	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water											x
RB1903_CTD05_N02	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water											x
RB1903_CTD05_N03	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water											
RB1903_CTD05_N04	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							
RB1903_CTD05_N05	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							
RB1903_CTD05_N06	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							
RB1903_CTD05_N07	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							
RB1903_CTD05_N08	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							
RB1903_CTD05_N09	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							
RB1903_CTD05_N10	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							
RB1903_CTD05_N11	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							
RB1903_CTD05_N12	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							
RB1903_CTD05_N13	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water				x							



# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatirni	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_CTD07_N19	CTD07	Richardson Hills	April 13th, 2019	20:11:00	31 56.53	77 29.37	Surface	Water					x						x
RB1903_CTD07_N20	CTD07	Richardson Hills	April 13th, 2019	20:11:00	31 56.53	77 29.37	Surface	Water					x						x
RB1903_CTD07_N21	CTD07	Richardson Hills	April 13th, 2019	20:11:00	31 56.53	77 29.37	Surface	Water	EC9889									x	
RB1903_CTD07_N22	CTD07	Richardson Hills	April 13th, 2019	20:11:00	31 56.53	77 29.37	Surface	Water											x
RB1903_CTD07_N23	CTD07	Richardson Hills	April 13th, 2019	20:11:00	31 56.53	77 29.37	Surface	Water											x
RB1903_CTD07_N24	CTD07	Richardson Hills	April 13th, 2019	20:11:00	31 56.53	77 29.37	Surface	Water											
RB1903_J2-1129_M1_01	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Live lophelia	EC9919										
RB1903_J2-1129_M1_02	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Dead lophelia	EC9920										
RB1903_J2-1129_M1_03	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Ophiacantha bidentata	EC9921										
RB1903_J2-1129_M1_04	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Hexactenellid 1	EC9922										
RB1903_J2-1129_M1_05	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Shrimp	EC9923										
RB1903_J2-1129_M1_06	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Hexactenellid 2	EC9924										
RB1903_J2-1129_M1_07	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Brittle Star	EC9925										
RB1903_J2-1129_M1_08	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Hydroid 1	EC9926										
RB1903_J2-1129_M1_09	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Hydroid 2	EC9927										
RB1903_J2-1129_M1_10	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Anemone 1	EC9928										
RB1903_J2-1129_M1_11	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Anemone 2	EC9929										
RB1903_J2-1129_M1_12	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705	Annelid	EC9930										
RB1903_J2-1129_M1_Sieved	J2-1129	Richardson A4963	April 13th-14th, 2019	3:30:00	31.98416	-77.41138	705						x						
RB1903_J2-1129_M2_01	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704	Live lophelia	EC9931										
RB1903_J2-1129_M2_02	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704	Dead lophelia	EC9932										
RB1903_J2-1129_M2_03	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704	Hydroid 1	EC9933										
RB1903_J2-1129_M2_04	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704	Theccopsammia	EC9934										
RB1903_J2-1129_M2_05	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704	Eunice	EC9935										
RB1903_J2-1129_M2_06	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704	Shrimp	EC9936										
RB1903_J2-1129_M2_07	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704	Crinoid	EC9937										
RB1903_J2-1129_M2_08	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704	Hydroid 2	EC9938										
RB1903_J2-1129_M2_09	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704	Ophiroid	EC9939										
RB1903_J2-1129_M2_Sieved	J2-1129	Richardson A4963	April 13th-14th, 2019	4:20:00	31.98397	-77.41131	704						x						
RB1903_J2-1129_M3_01	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Live lophelia	EC9940										
RB1903_J2-1129_M3_02	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Dead lophelia	EC9941										
RB1903_J2-1129_M3_03	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Limpet	EC9942					X					
RB1903_J2-1129_M3_04	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Asteroid	EC9943										
RB1903_J2-1129_M3_05	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Eunice	EC9944										
RB1903_J2-1129_M3_06	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Ophiacantha bidentata	EC9945										
RB1903_J2-1129_M3_07	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Gastropod	EC9946										
RB1903_J2-1129_M3_08	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Shrimp	EC9947										
RB1903_J2-1129_M3_09	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Hexac (saccocalyx)	EC9948										
RB1903_J2-1129_M3_10	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Nethed	EC9949										
RB1903_J2-1129_M3_11	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Annelid	EC9950										
RB1903_J2-1129_M3_12	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Anemone	EC9951										
RB1903_J2-1129_M3_13	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709	Hydroid	EC9952										
RB1903_J2-1129_M3_Sieved	J2-1129	Richardson A4963	April 13th-14th, 2019	11:07:00	31.98419	-77.41154	709						x						
RB1903_J2-1129_N01	J2-1129	Richardson A4963	April 13th-14th, 2019	11:27:01	31.98465	-77.41157	698	Water					x						
RB1903_J2-1129_N02	J2-1129	Richardson A4963	April 13th-14th, 2019	11:27:01	31.98465	-77.41157	698	Water	EC9918				x						
RB1903_J2-1129_B1_01	J2-1129	Richardson A4963	April 13th-14th, 2019	5:20:00	31.98410	-77.41107	693	Madrepora	EC9914		CM_00282	x	x,xx						
RB1903_J2-1129_B1_02	J2-1129	Richardson A4963	April 13th-14th, 2019	5:20:00	31.98410	-77.41107	693	Lophelia	EC9915		CM_00289	x	x,x						
RB1903_J2-1129_B1_03	J2-1129	Richardson A4963	April 13th-14th, 2019	5:20:00	31.98410	-77.41107	693	Eunicid			CM_00291		xx,x						
RB1903_J2-1129_B2_01	J2-1129	Richardson A4963	April 13th-14th, 2019	4:35:00	31.98408	-77.41112	696	Lophelia			CM_00286	x	x						
RB1903_J2-1129_B2_Sieved	J2-1129	Richardson A4963	April 13th-14th, 2019	4:35:00	31.98408	-77.41112	696						x						
RB1903_J2-1129_B3_01	J2-1129	Richardson A4963	April 13th-14th, 2019	10:33:22	31.98418	-77.41124	698	Madrepora			CM_00278	x	x,x						
RB1903_J2-1129_B3_02	J2-1129	Richardson A4963	April 13th-14th, 2019	10:33:22	31.98418	-77.41124	698	Plumarella				x	x					XX	
RB1903_J2-1129_B3_03	J2-1129	Richardson A4963	April 13th-14th, 2019	10:33:22	31.98418	-77.41124	698	Plumarella					x						X



# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatirni	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_J2-1129_Q7_01	J2-1129	Richardson A4963	April 13th -14th, 2019	3:55:00	31.98416	-77.41137	705	Plumarella	EC9899			x	x	XX					
RB1903_J2-1129_Q7_02	J2-1129	Richardson A4963	April 13th -14th, 2019	3:56:00	31.98416	-77.41138	705	White plexaurid	EC9902			x	x	X					
RB1903_J2-1129_Q7_03	J2-1129	Richardson A4963	April 13th -14th, 2019	3:45:00	31.98416	-77.41139	705	Sponge	EC9906		CM_00283		xx	XX					
RB1903_J2-1129_Q7_04	J2-1129	Richardson A4963	April 13th -14th, 2019	3:45:00	31.98416	-77.41139	705	Zooanthids	EC9907		CM_00284		xx	XX					
RB1903_J2-1129_Q7_05	J2-1129	Richardson A4963	April 13th -14th, 2019	3:59:00	31.98415	-77.41137	705	Round Sponge	EC9908		CM_00285		xx	X					
RB1903_J2-1129_Q7_06	J2-1129	Richardson A4963	April 13th -14th, 2019	3:59:00	31.98415	-77.41137	705	Hydroids					xx						
RB1903_J2-1129_Q7_Sieved	J2-1129	Richardson A4963	April 13th -14th, 2019	3:59:00	31.98415	-77.41137	705						x						
RB1903_J2-1129_Q8_01	J2-1129	Richardson A4963	April 13th -14th, 2019	2:46:00	31.98425	-77.41138	700	Plumarella	EC9916			x	xx	XX					
RB1903_J2-1129_Q8_02	J2-1129	Richardson A4963	April 13th -14th, 2019	2:53:00	31.98425	-77.41137	700	Latothela	EC9917		CM_00290	x	xx	XX					
RB1903_J2-1129_Q8_03	J2-1129	Richardson A4963	April 13th -14th, 2019	2:53:00	31.98425	-77.41137	700	Eunicid			CM_00292		xx,x						
RB1903_J2-1129_Q8_04	J2-1129	Richardson A4963	April 13th -14th, 2019	2:53:00	31.98425	-77.41137	700	Hydroids					xx,x						
RB1903_J2-1129_Q8_Annelid	J2-1129	Richardson A4963	April 13th -14th, 2019	2:53:00	31.98425	-77.41137	700	Annelid					x						
RB1903_J2-1129_Q8_Amphipod	J2-1129	Richardson A4963	April 13th -14th, 2019	2:53:00	31.98425	-77.41137	700	Amphipod					x						
RB1903_J2-1129_Q8_Sieved	J2-1129	Richardson A4963	April 13th -14th, 2019	2:53:00	31.98425	-77.41137	700						x						
RB1903_J2-1129_Q8_Annelid	J2-1129	Richardson A4963	April 13th -14th, 2019	2:53:00	31.98425	-77.41137	700	Annelid					x						
RB1903_J2-1129_Q8_Amphipod	J2-1129	Richardson A4963	April 13th -14th, 2019	2:53:00	31.98425	-77.41137	700	Amphipod					x						
RB1903_J2-1129_Swing Arm_066	J2-1129	Richardson A4963	April 13th -14th, 2019	Came up on swing arm	Came up on swing arm	Came up on swing arm	Came up on swing arm	Lophelia					x						
RB1903_J2-1129_Swing Arm_067	J2-1129	Richardson A4963	April 13th -14th, 2019	Came up on swing arm	Came up on swing arm	Came up on swing arm	Came up on swing arm	Latothela					x						
RB1903_J2-1129_Swing Arm_068	J2-1129	Richardson A4963	April 13th -14th, 2019	Came up on swing arm	Came up on swing arm	Came up on swing arm	Came up on swing arm	Yellow Sponge					x						
RB1903_Albox01_Isopod	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Isopod					x						
RB1903_Albox01_Amphipod_01	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_02	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_03	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_04	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_05	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_06	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_07	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_08	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_09	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_10	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_Albox01_Amphipod_11	Albox01	Richardson Hills	April 13th, 2019	14:43:00	31 53.970	77 21.222	815	Amphipod					x						
RB1903_CTD08_N01	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water			x				x				
RB1903_CTD08_N02	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water			x				x				
RB1903_CTD08_N03	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water			x				x				
RB1903_CTD08_N04	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water							x				
RB1903_CTD08_N05	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water								x			
RB1903_CTD08_N06	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water	EC9953						x				
RB1903_CTD08_N07	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water					x						
RB1903_CTD08_N08	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	488	Water	EC9954		x				x				
RB1903_CTD08_N09	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	488	Water			x			x					
RB1903_CTD08_N10	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	488	Water			x					x			
RB1903_CTD08_N11	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	382	Water	EC9955		x				x				
RB1903_CTD08_N12	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	382	Water (DID NOT FIRE)											
RB1903_CTD08_N13	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	382	Water			x						x		
RB1903_CTD08_N14	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	240	Water	EC9956		x				x				
RB1903_CTD08_N15	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	240	Water			x			x					
RB1903_CTD08_N16	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	240	Water			x					x			
RB1903_CTD08_N17	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	80	Water	EC9957						x				
RB1903_CTD08_N18	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	80	Water						x					
RB1903_CTD08_N19	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	80	Water								x			



# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miens	Hillary Close
RB1903_CTD08_N20	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31.44.6662	79.12.5975	surface	Water			x				x				
RB1903_CTD08_N21	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31.44.6662	79.12.5975	surface	Water			x				x				
RB1903_CTD08_N22	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31.44.6662	79.12.5975	surface	Water			x		x						
RB1903_CTD08_N23	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31.44.6662	79.12.5975	surface	Water	EC9958				x						
RB1903_CTD08_N24	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31.44.6662	79.12.5975	surface	Water								x			
RB1903_J2_1130_M1-1	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Live lophelia	EC10025										
RB1903_J2_1130_M1-2	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Dead Lophelia	EC10026										
RB1903_J2_1130_M1-3	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Ophiacantha bidentata	EC10027										
RB1903_J2_1130_M1-4	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Eunice	EC10028										
RB1903_J2_1130_M1-5	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Cidaris	EC10029										
RB1903_J2_1130_M1-6	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Amphipod	EC10030										
RB1903_J2_1130_M1-7	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Annelid	EC10031										
RB1903_J2_1130_M1-8	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Hydroid1	EC10032										
RB1903_J2_1130_M1-9	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Hydroid2	EC10033										
RB1903_J2_1130_M1-10	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31.75279	-79.19600	541	Sargassum	EC10034										
RB1903_J2_1130_M2-1	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Live lophelia	EC10035			x	x (sieve)						
RB1903_J2_1130_M2-2	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Dead Lophelia	EC10036										
RB1903_J2_1130_M2-3	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Crinoid	EC10037										
RB1903_J2_1130_M2-4	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Urchin (Echinus)	EC10038										
RB1903_J2_1130_M2-5	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Gooseneck barnacle	EC10039										
RB1903_J2_1130_M2-6	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Eunice	EC10040										
RB1903_J2_1130_M2-7	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Ophiuroid1	EC10041										
RB1903_J2_1130_M2-8	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Ophiacantha bidentata	EC10042										
RB1903_J2_1130_M2-9	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Galatheid	EC10043										
RB1903_J2_1130_M2-10	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Amphipod	EC10044										
RB1903_J2_1130_M2-11	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31.75386	-79.19471	524	Hydroid	EC10045										
RB1903_J2_1130_M3-1	J2-1130	Savannah Banks	April 17th, 2019	9:54:00	31.75925	-79.19118	519	Dead Lophelia	EC10046				x (sieve)						
RB1903_J2_1130_M3-2	J2-1130	Savannah Banks	April 17th, 2019	9:54:00	31.75925	-79.19118	519	Galatheid1	EC10047										
RB1903_J2_1130_M3-3	J2-1130	Savannah Banks	April 17th, 2019	9:54:00	31.75925	-79.19118	519	Galatheid2	EC10048										
RB1903_J2_1130_M3-4	J2-1130	Savannah Banks	April 17th, 2019	9:54:00	31.75925	-79.19118	519	Ophiacantha bidentata	EC10049										
RB1903_J2_1130_M3-5	J2-1130	Savannah Banks	April 17th, 2019	9:54:00	31.75925	-79.19118	519	Hydroid1	EC10050										
RB1903_J2_1130_M3-6	J2-1130	Savannah Banks	April 17th, 2019	9:54:00	31.75925	-79.19118	519	Hydroid2	EC10051										
RB1903_J2_1130_M3-7	J2-1130	Savannah Banks	April 17th, 2019	9:54:00	31.75925	-79.19118	519	Crinoid	EC10052										
RB1903_J2_1130_M3-8	J2-1130	Savannah Banks	April 17th, 2019	9:54:00	31.75925	-79.19118	519	Hexactinellid	EC10053										
RB1903_J2_1130_B1_01	J2-1130	Savannah Banks	April 17th, 2019	4:57:00	31.75385	-79.19472	523	Plumarella	EC9975			x	x, whirlpak	RB-19-051xx					
RB1903_J2_1130_B1_02	J2-1130	Savannah Banks	April 17th, 2019	4:57:00	31.75385	-79.19472	523	Lophelia		CM_00307			x						
RB1903_J2_1130_B1_03	J2-1130	Savannah Banks	April 17th, 2019	4:57:00	31.75385	-79.19472	523	Hexactinellid	EC9976				x, whirlpak						
RB1903_J2_1130_B1_04	J2-1130	Savannah Banks	April 17th, 2019	4:57:00	31.75385	-79.19472	523	Cladhorizid	EC9977				x						
RB1903_J2_1130_B1_05	J2-1130	Savannah Banks	April 17th, 2019	4:57:00	31.75385	-79.19472	523	Eunicid		CM_00335			x						
RB1903_J2_1130_B2_01	J2-1130	Savannah Banks	April 17th, 2019	3:49:00	31.75279	-79.19600	541	Alcyonacea	EC9980			x	x (sieve)x	RB-19-052xx					
RB1903_J2_1130_B2_02	J2-1130	Savannah Banks	April 17th, 2019	3:55:00	31.75281	-79.19601	540	Stylasterid	EC9981		CM_00310		x, whirlpak						
RB1903_J2_1130_B2_03	J2-1130	Savannah Banks	April 17th, 2019	3:49:00	31.75279	-79.19600	541	Alcyonacea	EC9982			x		RB-19-053x					
RB1903_J2_1130_B2_04	J2-1130	Savannah Banks	April 17th, 2019	3:49:00	31.75279	-79.19600	541	Hydroid				x, whirlpak							
RB1903_J2_1130_B2_05	J2-1130	Savannah Banks	April 17th, 2019	3:49:00	31.75279	-79.19600	541	Hydroid				x							
RB1903_J2_1130_B2_06	J2-1130	Savannah Banks	April 17th, 2019	3:49:00	31.75279	-79.19600	541	Brittle Star	EC9983				x						
RB1903_J2_1130_B2_07	J2-1130	Savannah Banks	April 17th, 2019	3:49:00	31.75279	-79.19600	541	Sponge	EC9984				x						
RB1903_J2_1130_B3_01	J2-1130	Savannah Banks	April 17th, 2019	5:17:00	31.75420	-79.19443	515	Lophelia	EC10024			x	x (sieve)						
RB1903_J2_1130_B3_02	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Hexactinellid (Saccocalyx?)											
RB1903_J2_1130_B3_03	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Polynoid					x						
RB1903_J2_1130_B3_04	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Sargassum					x						
RB1903_J2_1130_B3_05	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Ophiuroid					x, whirlpak						
RB1903_J2_1130_B3_06	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Ophiuroid					x						
RB1903_J2_1130_B3_07	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Ophiuroid					x						

# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_J2_1130_B3_08	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Ophiroid					x						
RB1903_J2_1130_B3_09	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Snail					x, whirlpak						
RB1903_J2_1130_B3_10	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Lophelia					x						
RB1903_J2_1130_B3_11	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31.75420	-79.19443	515	Plumarella					x						
RB1903_J2_1130_B4_01	J2-1130	Savannah Banks	April 17th, 2019	5:53:00	31.75448	-79.19417	510	Hexactinellid	EC9985				x (sieve)x						
RB1903_J2_1130_B4_02	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Madrepora	EC9986	CM_00313	x		x						
RB1903_J2_1130_B4_03	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Alyconacean	EC9987				x	RB-19-054x					
RB1903_J2_1130_B4_04	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Squat Lobster	EC9988	CM_00312			x, whirlpak						
RB1903_J2_1130_B4_05	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Hyroid					x, whirlpak						
RB1903_J2_1130_B4_06	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Eunicid		CM_00334			x						
RB1903_J2_1130_B4_07	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Glass Sponge					x						
RB1903_J2_1130_B4_08	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Polynoid					x						
RB1903_J2_1130_B4_09	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Amphipod					x						
RB1903_J2_1130_B4_10	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Brittle Star					x						
RB1903_J2_1130_B4_11	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31.75448	-79.19417	510	Snail					x, whirlpak						
RB1903_J2_1130_B5_01	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.75877	-79.19135	520	Yellow Enallopsammia	EC9995	CM_00314	x		x (sieve)x, whirlpak						
RB1903_J2_1130_B5_02	J2-1130	Savannah Banks	April 17th, 2019	8:41:00	31.75877	-79.19135	520	White Enallopsammia	EC9996	CM_00315	x		x, whirlpak						
RB1903_J2_1130_B5_03	J2-1130	Savannah Banks	April 17th, 2019	8:50:00	31.75877	-79.19135	520	Alyconacean	EC9997		x		x	RB-19-055x					
RB1903_J2_1130_B5_04	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.75877	-79.19135	520	Crinoid	EC9998				x						
RB1903_J2_1130_B5_05	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.75877	-79.19135	520	Brittle Star	EC9999										
RB1903_J2_1130_B5_06	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.75877	-79.19135	520	Squat Lobster					x						
RB1903_J2_1130_B5_07	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.75877	-79.19135	520	Brittle Star					x						
RB1903_J2_1130_B6_01	J2-1130	Savannah Banks	April 17th, 2019	10:09:00	31.75960	-79.19103	516	Plumarella	EC10000			x	x (sieve)x	RB-19-056xx					
RB1903_J2_1130_B6_02	J2-1130	Savannah Banks	April 17th, 2019	10:09:00	31.75960	-79.19103	516	Plumarella	EC10001			x	x	RB-19-057xx					
RB1903_J2_1130_B6_03	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Lophelia	EC10002	CM_00317	x								
RB1903_J2_1130_B6_04	J2-1130	Savannah Banks	April 17th, 2019	10:47:00	31.76051	-79.19060	509	Yellow Enallopsammia	EC10003	CM_00318	x								
RB1903_J2_1130_B6_05	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Crinoid	EC10004				x						
RB1903_J2_1130_B6_06	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Crinoid	EC10005				x						
RB1903_J2_1130_B6_07	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Crinoid	EC10006				x						
RB1903_J2_1130_B6_08	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Squat Lobster	EC10007	CM_00316			x						
RB1903_J2_1130_B6_09	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Barnacle	EC10008				x						
RB1903_J2_1130_B6_10	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Stylasterid	EC10009										
RB1903_J2_1130_B6_11	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Hyroid					x						
RB1903_J2_1130_B6_12	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Anemone					x	RB-19-058x					
RB1903_J2_1130_B6_13	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Sponge	EC10010				x						
RB1903_J2_1130_B6_14	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Eunicid					x						
RB1903_J2_1130_B6_15	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Brittle Star	EC10011				x						
RB1903_J2_1130_B6_16	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Brittle Star					x						
RB1903_J2_1130_B6_17	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Hyroid					x, whirlpak						
RB1903_J2_1130_B6_18	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Hyroid					x						
RB1903_J2_1130_B6_19	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Sponge					x						
RB1903_J2_1130_B6_20	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Enallopsammia					x, whirlpak						
RB1903_J2_1130_B6_21	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Crinoid					x						
RB1903_J2_1130_B6_22	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Hyroid					x						
RB1903_J2_1130_B6_23	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Lophelia					x, whirlpak						
RB1903_J2_1130_B6_24	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Hydroid					x, whirlpak						
RB1903_J2_1130_B6_25	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.75960	-79.19103	516	Hyroid					x						
RB1903_J2_1130_Q1_01	J2-1130	Savannah Banks	April 17th, 2019	6:38:00	31.75482	-79.19398	509	Enallopsammia	EC9992	x	CM_00309	x	x (sieve)x, whirlpak						
RB1903_J2_1130_Q1_02	J2-1130	Savannah Banks	April 17th, 2019	6:38:00	31.75482	-79.19398	509	Crinoid	EC9993				x						
RB1903_J2_1130_Q1_03	J2-1130	Savannah Banks	April 17th, 2019	6:38:00	31.75482	-79.19398	509	Brittle Star	EC9994				x						
RB1903_J2_1130_Q1_04	J2-1130	Savannah Banks	April 17th, 2019	6:38:00	31.75482	-79.19398	509	Worm?					x						
RB1903_J2_1130_Q1_05	J2-1130	Savannah Banks	April 17th, 2019	6:38:00	31.75482	-79.19398	509	Annelid					x						
RB1903_J2_1130_Q2_01	J2-1130	Savannah Banks	April 17th, 2019	8:17:00	31.75874	-79.19134	519	White Enallopsammia	EC9989	x	CM_00308	x	x (sieve)x, whirlpak						





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Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatrin	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miens	Hillary Close
RB1903_J2_1130_PC_06	J2-1130	Savannah Banks	April 17th, 2019		NA	NA	NA	Sediment					x						
RB1903_J2_1130_PC_07	J2-1130	Savannah Banks	April 17th, 2019		NA	NA	NA	Sediment					x						
RB1903_J2_1130_PC_08	J2-1130	Savannah Banks	April 17th, 2019	9:04:00	31.75872	-79.19133	520	Sediment					xx						
RB1903_J2_1130_PC_09	J2-1130	Savannah Banks	April 17th, 2019	9:02:00	31.75872	-79.19133	520	Sediment					x						
RB1903_J2_1130_PC_10	J2-1130	Savannah Banks	April 17th, 2019	10:37:00	31.76051	-79.19061	509	Sediment									x		
RB1903_J2_1130_PC_11	J2-1130	Savannah Banks	April 17th, 2019	10:38:00	31.76051	-79.19061	509	Sediment					x						
RB1903_J2_1130_PC_12	J2-1130	Savannah Banks	April 17th, 2019	10:42:00	31.76051	-79.19060	509	Sediment					x						
RB1903_J2_1130_PC_13	J2-1130	Savannah Banks	April 17th, 2019	10:43:00	31.76051	-79.19060	509	Sediment					x						
RB1903_J2_1130_N_01	J2-1130	Savannah Banks	April 17th, 2019	11:29:00	31.76121	-79.19059	516	Water		x									
RB1903_J2_1130_N_02	J2-1130	Savannah Banks	April 17th, 2019	11:29:00	31.76121	-79.19059	516	Water											
RB1903_J2_1130_N_03	J2-1130	Savannah Banks	April 17th, 2019	11:29:00	31.76121	-79.19059	516	Water											
RB1903_J2_1130_N_04	J2-1130	Savannah Banks	April 17th, 2019	11:29:00	31.76121	-79.19059	516	Water											
RB1903_CTD09_N01	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1386	Water			x								
RB1903_CTD09_N02	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1386	Water			x								
RB1903_CTD09_N03	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1386	Water			x								
RB1903_CTD09_N04	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1386	Water											
RB1903_CTD09_N05	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1386	Water					x						
RB1903_CTD09_N06	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1386	Water										x	
RB1903_CTD09_N07	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1386	Water	EC10094										
RB1903_CTD09_N08	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1200	Water	EC10095									x	
RB1903_CTD09_N09	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1050	Water	EC10096		x								
RB1903_CTD09_N10	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1050	Water			x							x	
RB1903_CTD09_N11	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	1050	Water			x								x
RB1903_CTD09_N12	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	840	Water	EC10097										x
RB1903_CTD09_N13	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	600	Water	EC10098										x
RB1903_CTD09_N14	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	500	Water	EC10100									x	x
RB1903_CTD09_N15	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	400	Water	EC10101									x	x
RB1903_CTD09_N16	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	300	Water	EC10102									x	x
RB1903_CTD09_N17	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	200	Water	EC10103									x	x
RB1903_CTD09_N18	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	90	Water	EC10105									x	x
RB1903_CTD09_N19	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	Surface	Water	EC10106									x	
RB1903_CTD09_N20	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	Surface	Water											x
RB1903_CTD09_N21	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	Surface	Water					x						
RB1903_CTD09_N22	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	Surface	Water			x								x
RB1903_CTD09_N23	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	Surface	Water			x								
RB1903_CTD09_N24	CTD09	Blake Deep	April 18th, 2019	17:09:00	31.18.8044	77.13.2781	Surface	Water			x								
RB1903_J2_1131_B1_01	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Solenosmilia	EC10058	CM_00343	x		x (sieve)whirlpak						
RB1903_J2_1131_B1_02	J2-1131	Blake Deep	April 18th, 2019	5:47:00	31.28802	-77.23610	1318	White plexaurid	EC10059	CM_00347			230x, whirlpak	RB-19-065xx					
RB1903_J2_1131_B1_03	J2-1131	Blake Deep	April 18th, 2019	4:33:00	31.28772	-77.23673	1331	Metalgorgia	EC10060	CM_00346			235x, whirlpak	RB-19-066xx					
RB1903_J2_1131_B1_04	J2-1131	Blake Deep	April 18th, 2019	5:44:00	31.28802	-77.23610	1318	Yellow Plexaurid	EC10061	CM_00345	x		232x	RB-19-067xx					
RB1903_J2_1131_B1_05	J2-1131	Blake Deep	April 18th, 2019	4:33:00	31.28772	-77.23673	1331	Asteroschema	EC10062				237x	RB-19-068x					
RB1903_J2_1131_B1_06	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Bamboo Coral	EC10063	CM_00344	x		236x	RB-19-069xx					
RB1903_J2_1131_B1_07	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Anemone											
RB1903_J2_1131_B1_08	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Eunicid					238x						
RB1903_J2_1131_B1_09	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Eunicid				CM_00348	239x						
RB1903_J2_1131_B1_10	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Sponge	EC10064				245x						
RB1903_J2_1131_B1_11a	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Asteroschema					241x						
RB1903_J2_1131_B1_11b	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Sponge carnivorous					246x						
RB1903_J2_1131_B1_12	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Sponge					244x						
RB1903_J2_1131_B1_13	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Sponge (yellow)					247x						
RB1903_J2_1131_B1_14	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.29021	-77.23391	1333	Hydroid					249x						
RB1903_J2_1131_B2_01	J2-1131	Blake Deep	April 18th, 2019	9:34:30	31.29023	-77.23389	1334	Chrysogorgia	EC10065	CM_00349			240x	RB-19-071xx					
RB1903_J2_1131_B2_02	J2-1131	Blake Deep	April 18th, 2019	9:39:33	31.29022	-77.23389	1334	Bamboo Coral	EC10066	CM_00350	x		242x	RB-19-072xx					



# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_J2_1131_Q1_01	J2-1131	Blake Deep	April 18th, 2019	5:15:00	31.28796	-77.23654	1320	Chrysogorgia	EC10107				287, 316x (sieve)x	RB-19-088xx					
RB1903_J2_1131_Q1_02	J2-1131	Blake Deep	April 18th, 2019	5:15:00	31.28796	-77.23654	1320	Bamboo Coral	EC10108				286x	RB-19-089x					
RB1903_J2_1131_Q2_01	J2-1131	Blake Deep	April 18th, 2019	13:50:55	31.29017	-77.23447	1318	Chrysogorgia	EC10109				319x (sieve)x	RB-19-090xx					
RB1903_J2_1131_Q3_01	J2-1131	Blake Deep	April 18th, 2019	3:15:39	31.28646	-77.23734	1359	Iridogorgia					290x (sieve)x	RB-19-091x					
RB1903_J2_1131_Q3_02	J2-1131	Blake Deep	April 18th, 2019	3:25:48	31.28645	-77.23734	1359	Orange antipatharian	EC10110				291x						
RB1903_J2_1131_Q4_01	J2-1131	Blake Deep	April 18th, 2019	4:56:00	31.28790	-77.23670	1321	Desmophyllum		x	CM_00336								
RB1903_J2_1131_Q5_01	J2-1131	Blake Deep	April 18th, 2019	7:08:00	31.28863	-77.23419	1317	Swiftia	EC10092				283x	RB-19-086x					
RB1903_J2_1131_Q5_02	J2-1131	Blake Deep	April 18th, 2019	12:54:26	31.29018	-77.23429	1320	Plexaurid	EC10091			x	284x	RB-19-087x					
RB1903_J2_1131_Q6_01	J2-1131	Blake Deep	April 18th, 2019	5:28:00	31.28795	-77.23655	1320	Desmophyllum		x	CM_00338								
RB1903_J2_1131_Q7_01	J2-1131	Blake Deep	April 18th, 2019	1:37:27	31.28566	-77.23726	1365	Isidiidae	EC10090				281x	RB-19-084x					
RB1903_J2_1131_Q7_02	J2-1131	Blake Deep	April 18th, 2019	10:39:38	31.29012	-77.23395	1330	Primnoid	EC10091				282x	RB-19-085x					
RB1903_J2_1131_Q7_03	J2-1131	Blake Deep	April 18th, 2019	10:39:38	31.29012	-77.23395	1330	Desmophyllum				x							
RB1903_J2_1131_Q8_01	J2-1131	Blake Deep	April 18th, 2019	5:01:00	31.28790	-77.23670	1321	Desmophyllum		x	CM_00342								
RB1903_J2_1131_Q9_01	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Desmophyllum				x							
RB1903_J2_1131_Q9_02a	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Desmophyllum	EC10127										
RB1903_J2_1131_Q9_02b	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Desmophyllum											
RB1903_J2_1131_Q9_03a	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Desmophyllum	EC10128										
RB1903_J2_1131_Q9_03b	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Desmophyllum											
RB1903_J2_1131_Q9_04	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Desmophyllum											
RB1903_J2_1131_Sblack_01	J2-1131	Blake Deep	April 18th, 2019	9:44:14	31.29022	-77.23389	1334	Solenosmilia	EC10112		CM_00366	x	x (sieve)whirlpak						
RB1903_J2_1131_Sblack_02	J2-1131	Blake Deep	April 18th, 2019	9:44:14	31.29022	-77.23389	1334	Sponge	EC10113										
RB1903_J2_1131_Sblack_03	J2-1131	Blake Deep	April 18th, 2019	9:44:14	31.29022	-77.23389	1334	Chrysogorgia					306x						
RB1903_J2_1131_Sblack_04	J2-1131	Blake Deep	April 18th, 2019	9:44:14	31.29022	-77.23389	1334	Cladhorizid					309x						
RB1903_J2_1131_Sblue_01	J2-1131	Blake Deep	April 18th, 2019	8:55:00	31.29013	-77.23375	1338	Desmophyllum			CM_00367	x	300x (sieve)x						
RB1903_J2_1131_Sblue_02	J2-1131	Blake Deep	April 18th, 2019	8:55:00	31.29013	-77.23375	1338	Desmophyllum	EC10114		CM_00368		303x, whirlpak						
RB1903_J2_1131_Sblue_03	J2-1131	Blake Deep	April 18th, 2019	8:55:00	31.29013	-77.23375	1338	Desmophyllum	EC10115		CM_00369		whirlpak						
RB1903_J2_1131_Sblue_04-1	J2-1131	Blake Deep	April 18th, 2019	8:55:00	31.29013	-77.23375	1338	Hermit crab eggs					302x						
RB1903_J2_1131_Sblue_04-2	J2-1131	Blake Deep	April 18th, 2019	8:55:00	31.29013	-77.23375	1338	Hermit crab					305x						
RB1903_J2_1131_Sblue_05	J2-1131	Blake Deep	April 18th, 2019	8:55:00	31.29013	-77.23375	1338	Cup coral	EC10116										
RB1903_J2_1131_Sblue_06	J2-1131	Blake Deep	April 18th, 2019	8:55:00	31.29013	-77.23375	1338	Sponge					308x						
RB1903_J2_1131_Sblue_08	J2-1131	Blake Deep	April 18th, 2019	8:55:00	31.29013	-77.23375	1338	Annelid					307x						
RB1903_J2_1131_Sred_01	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Desmophyllum			CM_00362	x	296x (sieve)x						
RB1903_J2_1131_Sred_02	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Desmophyllum	EC10111		CM_00363		297x, whirlpak						
RB1903_J2_1131_Sred_03	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Desmophyllum			CM_00364		298x, whirlpak						
RB1903_J2_1131_Sred_04	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Desmophyllum			CM_00365		299x, whirlpak						
RB1903_J2_1131_Sred_05	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Desmophyllum											
RB1903_J2_1131_Sred_07	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Hermit crab					vial						
RB1903_J2_1131_Sred_08	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Annelid					293x						
RB1903_J2_1131_Sred_09	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Hydroid					292x						
RB1903_J2_1131_Sred_10	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Gastropod					294x						
RB1903_J2_1131_Sred_11	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Sponge					295x						
RB1903_J2_1131_Sred_12	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Amphipod					vial						
RB1903_J2_1131_Sred_13	J2-1131	Blake Deep	April 18th, 2019	10:28:42	31.29013	-77.23395	1330	Amphipod					301x						
RB1903_J2_1131_RockBox_01	J2-1131	Blake Deep	April 18th, 2019	7:43:00	31.28947	-77.23403	1316	Felled Bamboo coral							x				
RB1903_J2_1131_RockBox_01-1	J2-1131	Blake Deep	April 18th, 2019	7:43:00	31.28947	-77.23403	1316	Sponge					333x						
RB1903_J2_1131_RockBox_01-2	J2-1131	Blake Deep	April 18th, 2019	7:43:00	31.28947	-77.23403	1316	Sponge					334x						
RB1903_J2_1131_RockBox_01-3	J2-1131	Blake Deep	April 18th, 2019	7:43:00	31.28947	-77.23403	1316	Stylasterid					335x						
RB1903_J2_1131_RockBox_01-4	J2-1131	Blake Deep	April 18th, 2019	7:43:00	31.28947	-77.23403	1316	Glass sponge					336x						
RB1903_J2_1131_RockBox_01-5	J2-1131	Blake Deep	April 18th, 2019	7:43:00	31.28947	-77.23403	1316	sponge w/green growth					337x						
RB1903_J2_1131_RockBox_01-6	J2-1131	Blake Deep	April 18th, 2019	7:43:00	31.28947	-77.23403	1316	crinoid					338x						
RB1903_J2_1131_RockBox_01-7	J2-1131	Blake Deep	April 18th, 2019	7:43:00	31.28947	-77.23403	1316	glass sponge					339x						
RB1903_J2_1131_RockBox_02	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.28759	-77.23678	1337	Bamboo coral											
RB1903_J2_1131_RockBox_02-1	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.28759	-77.23678	1337	Anemone					312x		x				

# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_J2_1131_RockBox_02-2	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.28759	-77.23678	1337	Tunicate					313x						
RB1903_J2_1131_RockBox_02-3	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.28759	-77.23678	1337	Tunicate					314x						
RB1903_J2_1131_RockBox_02-4	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.28759	-77.23678	1337	Sponge					315x						
RB1903_J2_1131_RockBox_02-5	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.28759	-77.23678	1337	Sponge					317x						
RB1903_J2_1131_RockBox_02-6	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.28759	-77.23678	1337	Sponge					318x						
RB1903_J2_1131_RockBox_02-7	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.28759	-77.23678	1337	Hydroid					320x						
RB1903_J2_1131_RockBox_02-8	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.28759	-77.23678	1337	Hydroid					321x						
RB1903_J2_1131_RockBox_03	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	Medium rock											
RB1903_J2_1131_RockBox_03-1	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	cup coral					310x						
RB1903_J2_1131_RockBox_03-2	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	hydroid					311x						
RB1903_J2_1131_RockBox_03-3	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	chrysogorgia					322x						
RB1903_J2_1131_RockBox_03-4	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	glass sponge					323x						
RB1903_J2_1131_RockBox_03-5	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	polychaete					324x						
RB1903_J2_1131_RockBox_03-6	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	glass sponge					325x						
RB1903_J2_1131_RockBox_03-7	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	Glass sponge					326x						
RB1903_J2_1131_RockBox_03-8	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	hydroid					327x						
RB1903_J2_1131_RockBox_03-9	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	glass sponge					328x						
RB1903_J2_1131_RockBox_03-10	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	sponge					329x						
RB1903_J2_1131_RockBox_03-11	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	polychaete					330x						
RB1903_J2_1131_RockBox_03-12	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.29018	-77.23428	1320	glass sponge					332x						
RB1903_J2_1131_RockBox_04	J2-1131	Blake Deep	April 18th, 2019	14:17:56	31.29020	-77.23495	1319	Rock											
RB1903_J2_1131_RockBox_05	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Bamboo coral					331x						
RB1903_J2_1131_RockBox_06	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	rock											
RB1903_J2_1131_RockBox_07	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Desmophyllum		CM_00370	x		whirlpak						
RB1903_J2_1131_RockBox_08	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Desmophyllum			x		whirlpak						
RB1903_J2_1131_RockBox_09	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	rock					264x						
RB1903_J2_1131_RockBox_10	J2-1131	Blake Deep	April 18th, 2019		NA	NA	NA	Desmophyllum			x								
RB1903_J2_1131_N01	J2-1131	Blake Deep	April 18th, 2019	11:51:36	31.28987	-77.23404	1318	Water							x				
RB1903_J2_1131_N02	J2-1131	Blake Deep	April 18th, 2019	11:52:15	31.28987	-77.23403	1318	Water											
RB1903_J2_1131_N03	J2-1131	Blake Deep	April 18th, 2019	11:57:10	31.28987	-77.23402	1318	Water		x									
RB1903_J2_1131_N04	J2-1131	Blake Deep	April 18th, 2019	11:55:57	31.28987	-77.23402	1318	Water		x									
RB1903_J2_1131_PC_06	J2-1131	Blake Deep	April 18th, 2019	6:26:00	31.28797	-77.23473	1318	Sediment					x						
RB1903_J2_1131_PC_07	J2-1131	Blake Deep	April 18th, 2019	6:28:00	31.28798	-77.23473	1318	Sediment											
RB1903_J2_1131_PC_08	J2-1131	Blake Deep	April 18th, 2019	6:30:00	31.28798	-77.23473	1318	Sediment							x				
RB1903_J2_1131_PC_09	J2-1131	Blake Deep	April 18th, 2019	6:32:00	31.28798	-77.23473	1318	Sediment					x						
RB1903_J2_1131_PC_11	J2-1131	Blake Deep	April 18th, 2019	10:11:16	31.29020	-77.23391	1334	Sediment								x			
RB1903_J2_1131_PC_12	J2-1131	Blake Deep	April 18th, 2019	10:10:16	31.29020	-77.23391	1334	Sediment											
RB1903_J2_1131_PC_15	J2-1131	Blake Deep	April 18th, 2019	10:09:04	31.29020	-77.23391	1334	Sediment					x						
RB1903_J2_1131_PC_16	J2-1131	Blake Deep	April 18th, 2019	10:07:49	31.29020	-77.23391	1334	Sediment					x						
RB1903_J2_1132_M3_01	J2-1132	Pamlico Canyon	April 21-22, 2019	5:20:00	34.93119	-75.15139	1584	Dead Solenosamellia	EC10183										
RB1903_J2_1132_M3_02	J2-1132	Pamlico Canyon	April 21-22, 2019	5:20:00	34.93119	-75.15139	1584	Dead Desmophyllum	EC10184						x				
RB1903_J2_1132_M3_03	J2-1132	Pamlico Canyon	April 21-22, 2019	5:20:00	34.93119	-75.15139	1584	Bivalve	EC10185										
RB1903_J2_1132_M3_04	J2-1132	Pamlico Canyon	April 21-22, 2019	5:20:00	34.93119	-75.15139	1584	Gastropod	EC10186										
RB1903_J2_1132_M3_05	J2-1132	Pamlico Canyon	April 21-22, 2019	5:20:00	34.93119	-75.15139	1584	Ophiroid	EC10187										
RB1903_J2_1132_B1_01	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Solenosamellia	EC10177		CM-00445	x							
RB1903_J2_1132_B1_02	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Acesta		CM-00443			412x						
RB1903_J2_1132_B1_03	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Acesta	EC10178				413x						
RB1903_J2_1132_B1_04	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Desmophyllum		CM-00444			435x						
RB1903_J2_1132_B1_05	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Sipunculid		CM-00449			446x						
RB1903_J2_1132_B1_06	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Sipunculid					whirlpak						
RB1903_J2_1132_B1_07	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Peanut Worm					450x						
RB1903_J2_1132_B1_08	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Peanut Worm					451x						
RB1903_J2_1132_B1_09	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Peanut Worm					452x						

# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatirini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hilliary Close
RB1903_J2_1132_B1_10	J2-1132	Pamlico Canyon	April 21-22, 2019	1:08:45	34.93120	-75.14975	1610	Peanut Worm					453x						
RB1903_J2_1132_B2_01	J2-1132	Pamlico Canyon	April 21-22, 2019	7:50:00	34.93216	-75.15230	1512	Acesta	EC10180		CM-00448		432x						
RB1903_J2_1132_B2_02	J2-1132	Pamlico Canyon	April 21-22, 2019	8:08:40	34.93301	-75.15279	1511	Black Coral	EC10181, EC10182				433x						
RB1903_J2_1132_B2_03	J2-1132	Pamlico Canyon	April 21-22, 2019	11:13:55	34.93446	-75.15359	1405	Solenosamellia	EC10179		CM-00447	x	whirlpak						
RB1903_J2_1132_B2_04	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Acesta					443x		x				
RB1903_J2_1132_B2_05	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Acesta					442x						
RB1903_J2_1132_B2_06	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Scale Worm					444x						
RB1903_J2_1132_B2_07	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Desmophyllum					445x						
RB1903_J2_1132_B4_01	J2-1132	Pamlico Canyon	April 21-22, 2019	7:34:00	34.93216	-75.15230	1513	Solenosamellia	EC10162		CM-00438	x	whirlpak						
RB1903_J2_1132_B4_02	J2-1132	Pamlico Canyon	April 21-22, 2019	8:31:10	34.93368	-75.15318	1479	Acanthogorgia	EC10163			x	430x	RB-19-107xx					
RB1903_J2_1132_B4_03	J2-1132	Pamlico Canyon	April 21-22, 2019	8:31:10	34.93368	-75.15318	1479	Scale Worm					431x						
RB1903_J2_1132_B5_01	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Solenosamellia	EC10173		CM-00446	x	whirlpak						
RB1903_J2_1132_B5_02	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Desmophyllum	EC10174		CM-00439	x	427x						
RB1903_J2_1132_B5_03	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Desmophyllum			CM-00440	x	448x						
RB1903_J2_1132_B5_04	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Desmophyllum			CM-00441	x	440x						
RB1903_J2_1132_B5_05	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Desmophyllum			CM-00442		437x						
RB1903_J2_1132_B5_06	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Eunicid					438x						
RB1903_J2_1132_B5_07	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583		EC10175										
RB1903_J2_1132_B5_08	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Acesta					421x						
RB1903_J2_1132_B5_09	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Acesta					422x						
RB1903_J2_1132_B5_10	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Sponge	EC10176				whirlpak						
RB1903_J2_1132_B5_11	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Hydroid					436x						
RB1903_J2_1132_B5_12	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.93102	-75.15101	1583	Hydroid					447x						
RB1903_J2_1132_O1_01	J2-1132	Pamlico Canyon	April 21-22, 2019	8:50:19	34.93369	-75.15318	1476	Acanthogorgia	EC10144	x	CM-00404	x	369x	RB-19-095xx					
RB1903_J2_1132_O1_02	J2-1132	Pamlico Canyon	April 21-22, 2019	8:50:19	34.93369	-75.15318	1476	Annelid					346x						
RB1903_J2_1132_O2_01	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Acanthogorgia		x	CM-00377		347x						
RB1903_J2_1132_O3_01	J2-1132	Pamlico Canyon	April 21-22, 2019	3:21:26	34.93104	-75.15076	1567	Desmophyllum		x	CM-00379	x	342, 351xx						
RB1903_J2_1132_O3_02	J2-1132	Pamlico Canyon	April 21-22, 2019	3:21:26	34.93104	-75.15076	1567	Desmophyllum					341x						
RB1903_J2_1132_O3_03	J2-1132	Pamlico Canyon	April 21-22, 2019	3:21:26	34.93104	-75.15076	1567	Desmophyllum					343x						
RB1903_J2_1132_O3_04	J2-1132	Pamlico Canyon	April 21-22, 2019	3:21:26	34.93104	-75.15076	1567	Desmophyllum					344x						
RB1903_J2_1132_O4_01	J2-1132	Pamlico Canyon	April 21-22, 2019	3:25:51	34.93104	-75.15077	1567	Desmophyllum		x	CM-00380		356x						
RB1903_J2_1132_O5_01	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Acanthogorgia	EC10145	x	CM-00403	x	373, 434xx	RB-19-096xx					
RB1903_J2_1132_O5_02	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Polychaete			CM-00407		372x						
RB1903_J2_1132_O6_01	J2-1132	Pamlico Canyon	April 21-22, 2019	11:26:32	34.93464	-75.15372	1403	Acanthogorgia	EC10146	x	CM-00408	x	378x	RB-19-097xx					
RB1903_J2_1132_O6_02	J2-1132	Pamlico Canyon	April 21-22, 2019	11:26:32	34.93464	-75.15372	1403	Scale Worm			CM-00409		379x						
RB1903_J2_1132_O7_01	J2-1132	Pamlico Canyon	April 21-22, 2019	2:48:59	34.93105	-75.15071	1564	Yellow Plexaurid	EC10135		CM-00392			RB-19-093x					
RB1903_J2_1132_O7_02	J2-1132	Pamlico Canyon	April 21-22, 2019	2:48:59	34.93105	-75.15071	1564	Ophiroid	EC10136		CM-00391		358x	RB-19-094x					
RB1903_J2_1132_O7_03	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.93613	-75.15631	1427	Desmophyllum			CM-00388	x	364x						
RB1903_J2_1132_O7_04	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.93613	-75.15631	1427	Desmophyllum	EC10137		CM-00393	x	359x						
RB1903_J2_1132_O7_05	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.93613	-75.15631	1427	Desmophyllum			CM-00390	x	360x						
RB1903_J2_1132_O7_06	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.93613	-75.15631	1427	Desmophyllum			CM-00389	x	357x						
RB1903_J2_1132_O7_07a	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.93613	-75.15631	1427	Desmophyllum	EC10138		CM-00394	x							
RB1903_J2_1132_O7_07b	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.93613	-75.15631	1427	Desmophyllum					371x						
RB1903_J2_1132_O7_08	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.93613	-75.15631	1427	Solenosamellia	EC10139		CM-00387	x	whirlpak						
RB1903_J2_1132_O7_09	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.93613	-75.15631	1427	Acesta	EC10140				365x						
RB1903_J2_1132_O7_10	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.93613	-75.15631	1427	Sponge					361x						
RB1903_J2_1132_O8_01	J2-1132	Pamlico Canyon	April 21-22, 2019	3:33:19	34.93104	-75.15077	1567	Desmophyllum		x	CM-00381		367x						
RB1903_J2_1132_O9_01	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.93104	-75.15077	1567	Desmophyllum			CM-00373	x							
RB1903_J2_1132_O9_02	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.93104	-75.15077	1567	Desmophyllum			CM-00374	x							
RB1903_J2_1132_O9_03	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.93104	-75.15077	1567	Desmophyllum			CM-00375	x							
RB1903_J2_1132_O9_04	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.93104	-75.15077	1567	Desmophyllum			CM-00376	x							
RB1903_J2_1132_O9_05	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.93104	-75.15077	1567	Acanthogorgia	EC10129			x	340x	RB-19-092xx					



# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miens	Hillary Close
RB1903_J2_1132_O9_07	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.93104	-75.15077	1567	Acanthogorgia			CM-00372								
RB1903_J2_1132_O10_01	J2-1132	Pamlico Canyon	April 21-22, 2019	7:16:00	34.93214	-75.15227	1511	Flabellum	EC10147		CM-00405		374x						
RB1903_J2_1132_O10_02	J2-1132	Pamlico Canyon	April 21-22, 2019	9:42:00	34.93369	-75.15318	1476	Solenosamella	EC10148		CM-00406	x	whirlpak						
RB1903_J2_1132_O11_01	J2-1132	Pamlico Canyon	April 21-22, 2019	6:27:00	34.93204	-75.15220	1557	Acanthogorgia	EC10149		CM-00411	x	383x	RB-19-098x					
RB1903_J2_1132_O11_02	J2-1132	Pamlico Canyon	April 21-22, 2019	6:35:00	34.93204	-75.15220	1557	Swiftia	EC10150		CM-00410		384x	RB-19-099xx					
RB1903_J2_1132_O11_03	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Anemone						RB-19-100x					
RB1903_J2_1132_O11_04	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Amphipod					382x						
RB1903_J2_1132_O12_01	J2-1132	Pamlico Canyon	April 21-22, 2019	20:52:00	34.92872	-75.14800	1701	Acanthogorgia	EC10152			x	393x	RB-19-102xx					
RB1903_J2_1132_O13_01	J2-1132	Pamlico Canyon	April 21-22, 2019	4:00:00	34.93104	-75.15077	1567	Paragorgia	EC10151				394x	RB-19-101xx					
RB1903_J2_1132_SBlue_01	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Solenosamella	EC10141		CM-00395	x	whirlpak						
RB1903_J2_1132_SBlue_02	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Desmophyllum			CM-00396		381x						
RB1903_J2_1132_SBlue_03	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Brittle Star	EC10142				370x						
RB1903_J2_1132_SBlue_04	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Desmophyllum			CM-00399		380x						
RB1903_J2_1132_SBlue_05	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Desmophyllum			CM-00401		375x						
RB1903_J2_1132_SBlue_06	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Scale Worm			CM-00397		362x						
RB1903_J2_1132_SBlue_07	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Desmophyllum	EC10143		CM-00402		376x						
RB1903_J2_1132_SBlue_08	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Scale Worm			CM-00398		363x						
RB1903_J2_1132_SBlue_09	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Sponge					377x						
RB1903_J2_1132_SBlue_10	J2-1132	Pamlico Canyon	April 21-22, 2019	23:09:00	34.93084	-75.14946	1661	Feather Worm			CM-00400		366x						
RB1903_J2_1132_SBlackYellow_01	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Desmophyllum			CM-00412	x							
RB1903_J2_1132_SBlackYellow_02	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Desmophyllum											
RB1903_J2_1132_SBlackYellow_03	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Solenosamella			CM-00413								
RB1903_J2_1132_SBlackYellow_04	J2-1132	Pamlico Canyon	April 21-22, 2019		NA	NA	NA	Acanthogorgia											
RB1903_J2_1132_SBlack_01	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Solenosamella	EC10130		CM-00378	x	whirlpak						
RB1903_J2_1132_SBlack_02a	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Desmophyllum			CM-00382		348x						
RB1903_J2_1132_SBlack_02b	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Desmophyllum	EC10133		CM-00383	x							
RB1903_J2_1132_SBlack_02c	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Desmophyllum											
RB1903_J2_1132_SBlack_03a	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Desmophyllum			CM-00385								
RB1903_J2_1132_SBlack_03b	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Desmophyllum			CM-00384		349x						
RB1903_J2_1132_SBlack_04	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Desmophyllum			CM-00386		354x						
RB1903_J2_1132_SBlack_05	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Sponge	EC10131				352x						
RB1903_J2_1132_SBlack_06	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Brisingid	EC10132				350x						
RB1903_J2_1132_SBlack_07	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Acesta					353x						
RB1903_J2_1132_SBlack_08	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646		EC10134										
RB1903_J2_1132_SBlack_09	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.93087	-75.14960	1646	Sponge					355x						
RB1903_J2_1132_SWhite_01	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum	EC10156		CM-00414	x	386x						
RB1903_J2_1132_SWhite_02	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum	EC10157		CM-00415	x	387x						
RB1903_J2_1132_SWhite_03	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00416	x	385x						
RB1903_J2_1132_SWhite_04	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum	EC10158		CM-00417	x	429x						
RB1903_J2_1132_SWhite_05	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00418	x	390x						
RB1903_J2_1132_SWhite_06	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00419	x	395x						
RB1903_J2_1132_SWhite_07	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00420	x	396x						
RB1903_J2_1132_SWhite_08	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00421	x	402x						
RB1903_J2_1132_SWhite_09	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum	EC10159		CM-00422	x	403x						
RB1903_J2_1132_SWhite_10	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00423	x	392x						
RB1903_J2_1132_SWhite_11	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00424	x	391x						
RB1903_J2_1132_SWhite_12	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00425	x	405x						
RB1903_J2_1132_SWhite_13	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00426	x	406x						
RB1903_J2_1132_SWhite_14	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum	EC10160		CM-00427	x	397x						
RB1903_J2_1132_SWhite_15	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00428	x	408x						
RB1903_J2_1132_SWhite_16	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum	EC10161		CM-00431	x	409x						
RB1903_J2_1132_SWhite_17	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00432	x	410x						
RB1903_J2_1132_SWhite_18	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00433	x	404x						

# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_J2_1132_SWhite_19	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00434	x	399x						
RB1903_J2_1132_SWhite_20	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00435	x	400x						
RB1903_J2_1132_SWhite_21	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Desmophyllum			CM-00436	x	whirlpak						
RB1903_J2_1132_SWhite_22	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Solenosamella	EC10153			x							
RB1903_J2_1132_SWhite_23	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Hydroid					441x						
RB1903_J2_1132_SWhite_24	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Acesta					449x						
RB1903_J2_1132_SWhite_25	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Acanthogorgia	EC10154					RB-19-106x					
RB1903_J2_1132_SWhite_26a	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Squat Lobster			CM-00437		398x						
RB1903_J2_1132_SWhite_26b	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Squat Lobster eggs					401x						
RB1903_J2_1132_SWhite_27	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Acesta	EC10155										
RB1903_J2_1132_SWhite_28a	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Eunicid			CM-00429		388x						
RB1903_J2_1132_SWhite_28b	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Eunicid					439x						
RB1903_J2_1132_SWhite_29	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Acesta											
RB1903_J2_1132_SWhite_30	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Anemone						RB-19-103x					
RB1903_J2_1132_SWhite_31	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Anemone						RB-19-104x					
RB1903_J2_1132_SWhite_32	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Anemone						RB-19-105x					
RB1903_J2_1132_SWhite_33	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Acesta					407x						
RB1903_J2_1132_SWhite_34	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Annelid			CM-00430		389x						
RB1903_J2_1132_SWhite_35	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Limpet					411x						
RB1903_J2_1132_SWhite_36	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Sponge					414x						
RB1903_J2_1132_SWhite_37	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Sponge					415x						
RB1903_J2_1132_SWhite_38	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Sponge					416x						
RB1903_J2_1132_SWhite_39	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Sponge					417x						
RB1903_J2_1132_SWhite_40	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Sponge					418x						
RB1903_J2_1132_SWhite_41	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Red annelid					419x						
RB1903_J2_1132_SWhite_42	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Green annelid					420x						
RB1903_J2_1132_SWhite_43	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Green annelid					423x						
RB1903_J2_1132_SWhite_44	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Sponge					424x						
RB1903_J2_1132_SWhite_45	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Hydroid					425x						
RB1903_J2_1132_SWhite_46	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Acesta					426x						
RB1903_J2_1132_SWhite_47	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.93118	-75.14998	1592	Red Annelid					428x						
RB1903_J2_1132_PC_01	J2-1132	Pamlico Canyon	April 21-22, 2019	13:04:00	34.93549	-75.15431	1350	Sediment					x						
RB1903_J2_1132_PC_02	J2-1132	Pamlico Canyon	April 21-22, 2019	13:07:00	34.93548	-75.15431	1350	Sediment					x						
RB1903_J2_1132_PC_03	J2-1132	Pamlico Canyon	April 21-22, 2019	12:58:00	34.93550	-75.15430	1350	Sediment							x				
RB1903_J2_1132_PC_04	J2-1132	Pamlico Canyon	April 21-22, 2019	0:27:07	34.93104	-75.14961	1629	Sediment					x						
RB1903_J2_1132_PC_05	J2-1132	Pamlico Canyon	April 21-22, 2019	13:00:00	34.93549	-75.15430	1350	Sediment								x			
RB1903_J2_1132_PC_06	J2-1132	Pamlico Canyon	April 21-22, 2019	13:02:00	34.93549	-75.15431	1350	Sediment					x						
RB1903_J2_1132_PC_07	J2-1132	Pamlico Canyon	April 21-22, 2019	0:36:16	34.93104	-75.14962	1630	Sediment									x		
RB1903_J2_1132_PC_08	J2-1132	Pamlico Canyon	April 21-22, 2019	0:30:58	34.93104	-75.14961	1630	Sediment							x				
RB1903_J2_1132_PC_09	J2-1132	Pamlico Canyon	April 21-22, 2019	0:29:08	34.93104	-75.14961	1629	Sediment							x				
RB1903_J2_1132_PC_10	J2-1132	Pamlico Canyon	April 21-22, 2019	0:38:35	34.93104	-75.14962	1630	Sediment					x						
RB1903_J2_1132_PC_11	J2-1132	Pamlico Canyon	April 21-22, 2019	0:33:40	34.93104	-75.14961	1630	Sediment					x						
RB1903_J2_1132_PC_12	J2-1132	Pamlico Canyon	April 21-22, 2019	12:54:00	34.93550	-75.15429	1350	Sediment							x				
RB1903_J2_1132_PC_13	J2-1132	Pamlico Canyon	April 21-22, 2019	21:49:00	34.92949	-75.14808	1664	Sediment							x				
RB1903_J2_1132_PC_14	J2-1132	Pamlico Canyon	April 21-22, 2019	21:51:00	34.92949	-75.14809	1664	Sediment								x			
RB1903_J2_1132_PC_15	J2-1132	Pamlico Canyon	April 21-22, 2019	12:56:00	34.93550	-75.15429	1350	Sediment											
RB1903_J2_1132_PC_16	J2-1132	Pamlico Canyon	April 21-22, 2019	21:54:00	34.92950	-75.14809	1664	Sediment							x				
RB1903_J2_1132_PC_17	J2-1132	Pamlico Canyon	April 21-22, 2019	21:48:00	34.92949	-75.14808	1663	Sediment					x						
RB1903_J2_1132_PC_18	J2-1132	Pamlico Canyon	April 21-22, 2019	21:50:00	34.92949	-75.14809	1664	Sediment					x						
RB1903_J2_1132_PC_19	J2-1132	Pamlico Canyon	April 21-22, 2019	21:53:00	34.92950	-75.14809	1664	Sediment					x						
RB1903_J2_1132_PC_20	J2-1132	Pamlico Canyon	April 21-22, 2019	21:52:00	34.92949	-75.14809	1664	Sediment					x						
RB1903_J2_1132_PC_21	J2-1132	Pamlico Canyon	April 21-22, 2019	20:01:00	34.92824	-75.14786	1763	Sediment							x				
RB1903_J2_1132_PC_22	J2-1132	Pamlico Canyon	April 21-22, 2019	20:02:00	34.92824	-75.14786	1763	Sediment					x						





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Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatrin	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_CTD011_N14	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	554	Water	EC10168		x								
RB1903_CTD011_N15	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	554	Water			x								
RB1903_CTD011_N16	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	400	Water	EC10169							x			
RB1903_CTD011_N17	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	251	Water	EC10170							x			
RB1903_CTD011_N18	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	150	Water	EC10171							x			
RB1903_CTD011_N20	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	surface	Water	EC10173							x			
RB1903_CTD011_N21	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	surface	Water					x						
RB1903_CTD011_N22	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	surface	Water		x						x			
RB1903_CTD011_N23	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	surface	Water		x									
RB1903_CTD011_N24	CTD011	Pamlico Canyon	04/22/19	18:08:00	34 54.4109	75 11.8746	surface	Water		x						x			
RB1903_CTD012_N1	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	381	Water		x									
RB1903_CTD012_N2	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	381	Water		x									
RB1903_CTD012_N3	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	381	Water		x									
RB1903_CTD012_N4	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	381	Water											
RB1903_CTD012_N5	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	381	Water					x						
RB1903_CTD012_N6	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	381	Water					x						
RB1903_CTD012_N7	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	381	Water	EC10189										
RB1903_CTD012_N8	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	370	Water	EC10190							x			
RB1903_CTD012_N9	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	360	Water	EC10191							x			
RB1903_CTD012_N10	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	320	Water	EC10192							x			
RB1903_CTD012_N11	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	280	Water	EC10193							x			
RB1903_CTD012_N12	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	240	Water	EC10194							x			
RB1903_CTD012_N13	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	200	Water			x					x			
RB1903_CTD012_N14	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	200	Water	EC10195		x								
RB1903_CTD012_N15	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	200	Water			x								
RB1903_CTD012_N16	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	160	Water	EC10196							x			
RB1903_CTD012_N17	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	120	Water	EC10197							x			
RB1903_CTD012_N18	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	80	Water	EC10198							x			
RB1903_CTD012_N19	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	45	Water	EC10199							x			
RB1903_CTD012_N20	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	surface	Water	EC10200								x		
RB1903_CTD012_N21	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	surface	Water					x						
RB1903_CTD012_N22	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	surface	Water			x		x						
RB1903_CTD012_N23	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	surface	Water			x								
RB1903_CTD012_N24	CTD012	Pea Island Off-Seep	04/23/19	16:56:00	35 54.4977	74 47.7714	surface	Water			x								
RB1903_CTD013_N1	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	289	Water			x								
RB1903_CTD013_N2	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	289	Water			x					x			
RB1903_CTD013_N3	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	289	Water			x					x			
RB1903_CTD013_N4	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	289	Water											
RB1903_CTD013_N5	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	289	Water					x						
RB1903_CTD013_N6	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	289	Water					x						
RB1903_CTD013_N7	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	289	Water											
RB1903_CTD013_N8	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	289	Water	EC10206							x			
RB1903_CTD013_N9	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	280	Water	EC10207							x			
RB1903_CTD013_N10	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	270	Water	EC10208							x			
RB1903_CTD013_N11	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	240	Water	EC10209							x			
RB1903_CTD013_N12	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	210	Water			x						x		
RB1903_CTD013_N13	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	210	Water	EC10210										
RB1903_CTD013_N14	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	210	Water											
RB1903_CTD013_N15	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	180	Water	EC10211										
RB1903_CTD013_N16	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	150	Water	EC10212							x			
RB1903_CTD013_N17	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	120	Water	EC10213							x			
RB1903_CTD013_N18	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	80	Water	EC10214							x			
RB1903_CTD013_N19	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	37	Water	EC10215							x			

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Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatrin	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miens	Hillary Close
RB1903_CTD013_N20	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	surface	Water	EC10216					x		x			
RB1903_CTD013_N21	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	surface	Water					x						
RB1903_CTD013_N22	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	surface	Water			x				x				
RB1903_CTD013_N23	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	surface	Water			x				x				
RB1903_CTD013_N24	CTD013	Pea Island Seep	04/23/19	19:05:00	35 40.4228	74 47.9031	surface	Water			x				x				
RB1903_J2_1133_B1_01	J2-1133	Pea Island	April 22-23, 2019	10:42:00	35.67533	-74.79430	323	rock							x				
RB1903_J2_1133_B2_01	J2-1133	Pea Island	April 22-23, 2019	11:39:00	35.67544	-74.79688	306	rock							x				
RB1903_J2_1133_B2_04	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	Tubeworm Vestimentum	EC10202										
RB1903_J2_1133_B2_04	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	Remains of tubeworm	EC10204										
RB1903_J2_1133_B2_04	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	Tubeworm Trophosome	EC10203										
RB1903_J2_1133_B2_04	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	Tubeworm tube	EC10205										
RB1903_J2_1133_B4_01.1	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	Anemone							x				
RB1903_J2_1133_B4_02.1	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	Anemone							x				
RB1903_J2_1133_B4_05	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	rock											
RB1903_J2_1133_B4_06	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	rock											
RB1903_J2_1133_B4_07	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	fuzzy rock											
RB1903_J2_1133_B4_01 (rock)	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	rock							x				
RB1903_J2_1133_B4_02 (rock)	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35.67410	-74.79357	328	rock							x				
RB1903_J2_1133_B5_01	J2-1133	Pea Island	April 22-23, 2019	7:25:50	35.67500	-74.79238	333	fuzzy rock							x				
RB1903_J2_1133_B5_02	J2-1133	Pea Island	April 22-23, 2019	7:25:50	35.67500	-74.79238	333	fly trap anemone							x				
RB1903_J2_1133_Q3_01	J2-1133	Pea Island	April 22-23, 2019	13:01:00	35.67358	-74.79777	296	Lophelia	EC10188	x	CM-00450	x							
RB1903_J2_1133_N01	J2-1133	Pea Island	April 22-23, 2019	14:51:00	35.67351	-74.79731	299	Water							x				
RB1903_J2_1133_N02	J2-1133	Pea Island	April 22-23, 2019	14:54:00	35.67352	-74.79719	298	Water							x				
RB1903_J2_1133_N03	J2-1133	Pea Island	April 22-23, 2019	14:57:00	35.67352	-74.79719	298	Water		x					x				
RB1903_J2_1133_N04	J2-1133	Pea Island	April 22-23, 2019	15:01:00	35.67352	-74.79719	299	Water	EC10201	x					x				
RB1903_J2_1133_SBlue_01	J2-1133	Pea Island	April 22-23, 2019	8:13:13	35.67522	-74.79268	330	bacterial mat - white											
RB1903_J2_1133_SBlue_02	J2-1133	Pea Island	April 22-23, 2019	10:20:30	35.67472	-74.79405	320	bacterial mat											
RB1903_J2_1133_Basket_01	J2-1133	Pea Island	April 22-23, 2019		NA	NA	NA	cancer crab	EC10217										
RB1903_J2_1133_PC01	J2-1133	Pea Island	April 22-23, 2019	8:06:56	35.67521	-74.79268	331	Sediment (white bacterial mat)											
RB1903_J2_1133_PC02	J2-1133	Pea Island	April 22-23, 2019	8:06:10	35.67520	-74.79268	331	Sediment (white bacterial mat)					x						
RB1903_J2_1133_PC03	J2-1133	Pea Island	April 22-23, 2019	8:04:45	35.67521	-74.79269	331	Sediment (white bacterial mat)								x			
RB1903_J2_1133_PC04	J2-1133	Pea Island	April 22-23, 2019	8:05:55	35.67520	-74.79268	331	Sediment (white bacterial mat)								x			
RB1903_J2_1133_PC05	J2-1133	Pea Island	April 22-23, 2019	8:04:11	35.67521	-74.79269	331	Sediment (white bacterial mat)					x						
RB1903_J2_1133_PC06	J2-1133	Pea Island	April 22-23, 2019	8:02:52	35.67521	-74.79269	331	Sediment (white bacterial mat)					x						
RB1903_J2_1133_PC07	J2-1133	Pea Island	April 22-23, 2019	8:02:07	35.67521	-74.79269	331	Sediment (white bacterial mat)					x						
RB1903_J2_1133_PC08	J2-1133	Pea Island	April 22-23, 2019	8:00:44	35.67521	-74.79269	331	Sediment (white bacterial mat)									x	x	
RB1903_J2_1133_PC09	J2-1133	Pea Island	April 22-23, 2019	10:12:44	35.67470	-74.79403	320	Sediment (white bacterial mat)					x						
RB1903_J2_1133_PC10	J2-1133	Pea Island	April 22-23, 2019	10:13:37	35.67470	-74.79403	320	Sediment (white bacterial mat)					x						
RB1903_J2_1133_PC11	J2-1133	Pea Island	April 22-23, 2019	10:14:24	35.67470	-74.79403	320	Sediment (white bacterial mat)					x						
RB1903_J2_1133_PC12	J2-1133	Pea Island	April 22-23, 2019	15:42:00	35.67337	-74.79730	301	Sediment (non seep)											
RB1903_J2_1133_PC13	J2-1133	Pea Island	April 22-23, 2019	15:39:00	35.67337	-74.79730	301	Sediment (non seep)					x						
RB1903_J2_1133_PC14	J2-1133	Pea Island	April 22-23, 2019	15:37:00	35.67337	-74.79730	301	Sediment (non seep)					x						
RB1903_J2_1133_PC15	J2-1133	Pea Island	April 22-23, 2019	15:44:00	35.67337	-74.79730	301	Sediment (non seep)					x						
RB1903_J2_1133_PC16	J2-1133	Pea Island	April 22-23, 2019	15:48:00	35.67337	-74.79730	301	Sediment (non seep)									x		
RB1903_J2_1133_PC17	J2-1133	Pea Island	April 22-23, 2019	15:40:00	35.67337	-74.79730	301	Sediment (non seep)							x				
RB1903_J2_1133_PC18	J2-1133	Pea Island	April 22-23, 2019	14:14:00	35.67362	-74.79722	299	Sediment (in bubble near carbonate)							x	x			
RB1903_J2_1133_PC19	J2-1133	Pea Island	April 22-23, 2019	14:19:00	35.67362	-74.79722	299	Sediment (in bubble near carbonate)					x						
RB1903_J2_1133_PC20	J2-1133	Pea Island	April 22-23, 2019	15:49:00	35.67337	-74.79730	301	Sediment (non seep)								x			
RB1903_J2_1133_PC21	J2-1133	Pea Island	April 22-23, 2019	14:10:00	35.67362	-74.79722	299	Sediment (in bubble near carbonate)								x			

# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hillary Close
RB1903_J2_1133_PC22	J2-1133	Pea Island	April 22-23, 2019	14:15:00	35.67362	-74.79721	299	Sediment (in bubble near carbonate)								x			
RB1903_J2_1133_PC23	J2-1133	Pea Island	April 22-23, 2019	15:35:00	35.67337	-74.79730	301	Sediment (non seep)					x						
RB1903_J2_1133_PC24	J2-1133	Pea Island	April 22-23, 2019	14:12:00	35.67363	-74.79721	299	Sediment (in bubble near carbonate)					x						
RB1903_J2_1133_PC25	J2-1133	Pea Island	April 22-23, 2019	14:24:00	35.67362	-74.79722	299	Sediment (in bubble near carbonate)					x						
RB1903_J2_1133_PC26	J2-1133	Pea Island	April 22-23, 2019	14:17:00	35.67362	-74.79722	299	Sediment (in bubble near carbonate)							x				
RB1903_J2_1133_PC27	J2-1133	Pea Island	April 22-23, 2019	14:21:00	35.67362	-74.79722	299	Sediment (in bubble near carbonate)					x						
RB1903_J2_1133_PC28	J2-1133	Pea Island	April 22-23, 2019	10:20:27	35.67472	-74.79405	320	Sediment (white bacterial)							x		x		
RB1903_J2_1133_PC29	J2-1133	Pea Island	April 22-23, 2019	10:09:25	35.67469	-74.79403	320	Sediment (white bacterial)								x			
RB1903_J2_1133_PC30	J2-1133	Pea Island	April 22-23, 2019	10:08:28	35.67469	-74.79403	320	Sediment (white bacterial)								x			
RB1903_J2_1133_PC31	J2-1133	Pea Island	April 22-23, 2019	10:07:24	35.67469	-74.79403	320	Sediment (white bacterial)								x			
RB1903_J2_1133_PC32	J2-1133	Pea Island	April 22-23, 2019	10:11:43	35.67470	-74.79403	320	Sediment (white bacterial)					x						
RB1903_J2_1133_R1	J2-1133	Pea Island	April 22-23, 2019	9:33:41	35.67379	-74.79361	332	rock							x				
RB1903_CTD014_N01	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	230	Water							x				
RB1903_CTD014_N02	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	230	Water							x				
RB1903_CTD014_N03	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	230	Water							x				
RB1903_CTD014_N04	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	230	Water							x				
RB1903_CTD014_N05	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	230	Water								x			
RB1903_CTD014_N06	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	230	Water								x			
RB1903_CTD014_N07	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	230	Water	EC10236				x						
RB1903_CTD014_N08	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	230	Water					x						
RB1903_CTD014_N09	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	230	Water					x						
RB1903_CTD014_N10	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	220	Water	EC10237						x				
RB1903_CTD014_N11	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	210	Water	EC10238						x				
RB1903_CTD014_N12	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	200	Water	EC10239						x				
RB1903_CTD014_N13	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	200	Water				x							
RB1903_CTD014_N14	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	200	Water				x							
RB1903_CTD014_N15	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	170	Water	EC10240						x				
RB1903_CTD014_N16	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	140	Water	EC10241						x				
RB1903_CTD014_N17	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	1110	Water	EC10242						x				
RB1903_CTD014_N18	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	80	Water	EC10243						x				
RB1903_CTD014_N19	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	29	Water	EC10244						x				
RB1903_CTD014_N20	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	surface	Water	EC10245						x				
RB1903_CTD014_N21	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	surface	Water					x						
RB1903_CTD014_N22	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	surface	Water								x			
RB1903_CTD014_N23	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	surface	Water								x			
RB1903_CTD014_N24	CTD014	Kitty Hawk Seep	04/24/19	16:49:00	35.56.0103	74.49.1444	surface	Water								x			
RB1903_J2_1134_B1_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	3:00:00	35.92604	-74.80534	437	Tubeworm Vestimentum	EC10230										
RB1903_J2_1134_B1_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	3:00:00	35.92604	-74.80534	437	Tubeworm Trophosome	EC10231, EC10232										
RB1903_J2_1134_B1_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	3:00:00	35.92604	-74.80534	437	Tubeworm Tube	EC10234										
RB1903_J2_1134_B2_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.92778	-74.80808	395	Tubeworm Vestimentum	EC10227										
RB1903_J2_1134_B2_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.92778	-74.80808	395	Tubeworm Trophosome	EC10228										
RB1903_J2_1134_B2_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.92778	-74.80808	395	Remainder of Tubeworm	EC10229										
RB1903_J2_1134_B2_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.92778	-74.80808	395	Tubeworm Tube	EC10233										
RB1903_J2_1134_B2_02	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.92778	-74.80808	395	carbonate rock							x				
RB1903_J2_1134_B2_03	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:48:26	35.92777	-74.80809	396	Bathy shell							x				
RB1903_J2_1134_B4_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	10:59:13	35.93418	-74.81747	235	rock							x				
RB1903_J2_1134_B4_02	J2-1134	Kitty Hawk Seep	April 23-24, 2019	11:08:15	35.93418	-74.81744	235	rock							x				



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Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatrin	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miens	Hillary Close
RB1903_J2_1135_B4_01	J2-1135	Cape Lookout DEEP	04/25/19		NA	NA	NA	Chrysogorgia	EC10246		CM-00463								
RB1903_J2_1135_B4_02	J2-1135	Cape Lookout DEEP	04/25/19		NA	NA	NA	Squat Lobster	EC10247		CM-00462								
RB1903_J2_1135_B5_01	J2-1135	Cape Lookout DEEP	04/25/19	20:34:00	33.91664	-75.83406	977	Bamboo coral	EC10248		CM-00464			RB-19-110x					
RB1903_J2_1135_B5_02	J2-1135	Cape Lookout DEEP	04/25/19	20:34:00	33.91664	-75.83406	977	rock							x				
RB1903_J2_1135_Q3_01	J2-1135	Cape Lookout DEEP	04/25/19	21:48:00	33.91891	-75.83344	945	Acanthogorgia	EC10249		CM-00465	x		RB-19-111x					
RB1903_J2_1135_Q3_02	J2-1135	Cape Lookout DEEP	04/25/19	21:48:00	33.91891	-75.83344	945	Hermit Crab											
RB1903_J2_1135_Q3_03	J2-1135	Cape Lookout DEEP	04/25/19	21:48:00	33.91891	-75.83344	945	Aplacophoran											
RB1903_J2_1135_Q3_04	J2-1135	Cape Lookout DEEP	04/25/19	21:48:00	33.91891	-75.83344	945	Aplacophoran											
RB1903_J2_1135_Q3_05	J2-1135	Cape Lookout DEEP	04/25/19	21:48:00	33.91891	-75.83344	945	Scale worm											
RB1903_J2_1135_Q3_06	J2-1135	Cape Lookout DEEP	04/25/19	21:48:00	33.91891	-75.83344	945	Scale worm											
RB1903_J2_1135_Q12_01	J2-1135	Cape Lookout DEEP	04/25/19	21:04:00	33.91751	-75.83403	960	Acanthogorgia	EC10250		CM-00466	x		RB-19-112x					
RB1903_J2_1135_Sblue_01	J2-1135	Cape Lookout DEEP	04/25/19	9:53:07	NA	NA	NA	Bacterial Mat											
RB1903_J2_1135_N01	J2-1135	Cape Lookout DEEP	04/25/19	22:00:00	33.91893	-75.83331	948	Water							x				
RB1903_J2_1135_N02	J2-1135	Cape Lookout DEEP	04/25/19	22:00:00	33.91893	-75.83331	948	Water							x				
RB1903_J2_1135_N03	J2-1135	Cape Lookout DEEP	04/25/19	22:00:00	33.91893	-75.83331	948	Water		x									
RB1903_J2_1135_N04	J2-1135	Cape Lookout DEEP	04/25/19	22:00:00	33.91893	-75.83331	948	Water	EC10262	x									
RB1903_J2_1135_PC12	J2-1135	Cape Lookout DEEP	04/25/19	19:45:29	33.91580	-75.83184	1027	Sediment											
RB1903_J2_1135_PC20	J2-1135	Cape Lookout DEEP	04/25/19	19:45:49	33.91580	-75.83184	1027	Sediment											
RB1903_J2_1135_PC21	J2-1135	Cape Lookout DEEP	04/25/19	19:45:49	33.91580	-75.83184	1027	Sediment								x			
RB1903_J2_1135_PC22	J2-1135	Cape Lookout DEEP	04/25/19	19:43:30	33.91580	-75.83184	1027	Sediment								x			
RB1903_CTD015_N01	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	1177	Water											
RB1903_CTD015_N02	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	1177	Water							x				
RB1903_CTD015_N03	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	1177	Water							x				
RB1903_CTD015_N04	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	1177	Water							x				
RB1903_CTD015_N05	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	1177	Water					x						
RB1903_CTD015_N06	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	1177	Water					x						
RB1903_CTD015_N07	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	1177	Water	EC10251										
RB1903_CTD015_N08	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	1000	Water	EC10252						x				
RB1903_CTD015_N09	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	801	Water	EC10253						x				
RB1903_CTD015_N10	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	701	Water	EC10254						x				
RB1903_CTD015_N11	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	601	Water	EC10255						x				
RB1903_CTD015_N12	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	501	Water	EC10256						x				
RB1903_CTD015_N13	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	399	Water	EC10257						x				
RB1903_CTD015_N14	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	300	Water	EC10258						x				
RB1903_CTD015_N15	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	180	Water	EC10259						x				
RB1903_CTD015_N16	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	180	Water											
RB1903_CTD015_N17	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	180	Water							x				
RB1903_CTD015_N18	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	180	Water							x				
RB1903_CTD015_N19	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	86	Water	EC10260						x	x			
RB1903_CTD015_N20	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	surface	Water	EC10261							x			
RB1903_CTD015_N21	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	surface	Water					x						
RB1903_CTD015_N22	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	surface	Water							x				
RB1903_CTD015_N23	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	surface	Water							x				
RB1903_CTD015_N24	CTD015	Cape Lookout DEEP	04/25/19	23:15:00	33 56.6465	75 48.4260	surface	Water							x				
RB1903_CTD016_N01	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	2181	Water					x						
RB1903_CTD016_N02	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	2181	Water					x						
RB1903_CTD016_N03	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	2181	Water	EC10263						x				
RB1903_CTD016_N04	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	2157	Water	EC10264						x				
RB1903_CTD016_N05	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	2130	Water	EC10265						x				
RB1903_CTD016_N06	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	2085	Water	EC10266						x				
RB1903_CTD016_N07	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	1903	Water	EC10267						x				
RB1903_CTD016_N08	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	1699	Water	EC10268						x				
RB1903_CTD016_N09	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	1505	Water	EC10269						x				

# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quatrin	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miens	Hilliary Close
RB1903_CTD016_N10	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	1299	Water	EC10270							x			
RB1903_CTD016_N11	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	1101	Water	EC10271							x			
RB1903_CTD016_N12	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	1001	Water	EC10272							x			
RB1903_CTD016_N13	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	876	Water	EC10273							x			
RB1903_CTD016_N14	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	750	Water	EC10274							x			
RB1903_CTD016_N15	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	650	Water	EC10275							x			
RB1903_CTD016_N16	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	550	Water	EC10276							x			
RB1903_CTD016_N17	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	451	Water	EC10277							x			
RB1903_CTD016_N18	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	351	Water	EC10278							x			
RB1903_CTD016_N19	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	250	Water	EC10279							x			
RB1903_CTD016_N20	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	151	Water	EC10280							x			
RB1903_CTD016_N21	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	100	Water	EC10281							x			
RB1903_CTD016_N22	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	surface	Water	EC10282							x			
RB1903_CTD016_N23	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	surface	Water					x						
RB1903_CTD016_N24	CTD016	Blake Ridge	04/27/19	14:11:00	32 29.681	76 11.466	surface	Water					x						
RB1903_CTD017_N01	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2609	Water			x								
RB1903_CTD017_N02	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2609	Water			x								
RB1903_CTD017_N03	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2609	Water			x								
RB1903_CTD017_N04	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2609	Water											
RB1903_CTD017_N05	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2609	Water	EC10373							x			
RB1903_CTD017_N06	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2609	Water					x						
RB1903_CTD017_N07	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2609	Water					x						
RB1903_CTD017_N08	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2598	Water	EC10374							x			
RB1903_CTD017_N09	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2586	Water	EC10375							x			
RB1903_CTD017_N10	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2510	Water	EC10376							x			
RB1903_CTD017_N11	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	2000	Water	EC10377							x			
RB1903_CTD017_N12	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	1500	Water	EC10378							x			
RB1903_CTD017_N13	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	1200	Water	EC10379							x			
RB1903_CTD017_N14	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	750	Water	EC10380							x			
RB1903_CTD017_N15	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	500	Water	EC10381							x			
RB1903_CTD017_N16	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	200	Water	EC10382		x					x			
RB1903_CTD017_N17	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	200	Water	EC10383							x			
RB1903_CTD017_N18	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	200	Water	EC10384							x			
RB1903_CTD017_N19	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	135	Water	EC10385							x			
RB1903_CTD017_N20	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	surface	Water					x						
RB1903_CTD017_N21	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	surface	Water	EC10386							x			
RB1903_CTD017_N22	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	surface	Water			x								
RB1903_CTD017_N23	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	surface	Water			x								
RB1903_CTD017_N24	CTD017	Cape Fear	04/28/19	12:00:00	32 58.8174	75 55.7206	surface	Water			x								
RB1903_J2_1136_B1_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10291	CM-00475	x			RB-19-115x					
RB1903_J2_1136_B1_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10292	CM-00476	x			RB-19-116x					
RB1903_J2_1136_B1_03	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10295	CM-00477	x			RB-19-117x					
RB1903_J2_1136_B1_04	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10297	CM-00478	x			RB-19-118x					
RB1903_J2_1136_B1_05	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10299	CM-00479	x			RB-19-119x					
RB1903_J2_1136_B1_06	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10300	CM-00480	x			RB-19-120x					
RB1903_J2_1136_B1_07	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10301	CM-00481	x			RB-19-121x					
RB1903_J2_1136_B1_08	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10302	CM-00482	x			RB-19-122x					
RB1903_J2_1136_B1_09	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10303	CM-00483	x			RB-19-123x					
RB1903_J2_1136_B1_10	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10304					RB-19-124x					
RB1903_J2_1136_B1_11	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10305			x		RB-19-125x					
RB1903_J2_1136_B1_12	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10306			x		RB-19-126x					
RB1903_J2_1136_B1_13	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10307	CM-00484	x			RB-19-127x					
RB1903_J2_1136_B1_14	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10308			x		RB-19-128x					



# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miens	Hillary Close
RB1903_J2_1136_B1_15	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10309			x		RB-19-129x					
RB1903_J2_1136_B1_16	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10310					RB-19-130x					
RB1903_J2_1136_B1_17	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10311			x		RB-19-131x					
RB1903_J2_1136_B1_18	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae											
RB1903_J2_1136_B1_19	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	B. heckeriae	EC10313			x		RB-19-132x					
RB1903_J2_1136_B1_20	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	Sepunculid											
RB1903_J2_1136_B1_21	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.49396	-76.19096	2167	Anemone						x					
RB1903_J2_1136_B2_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10312		CM-00485	x		RB-19-133x					
RB1903_J2_1136_B2_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10314		CM-00486	x		RB-19-134x					
RB1903_J2_1136_B2_03	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10315		CM-00487	x		RB-19-135x					
RB1903_J2_1136_B2_04	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10316		CM-00488	x		RB-19-136x					
RB1903_J2_1136_B2_05	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10317		CM-00489	x		RB-19-137x					
RB1903_J2_1136_B2_06	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10318		CM-00490	x		RB-19-138x					
RB1903_J2_1136_B2_07	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10319		CM-00491	x		RB-19-139x					
RB1903_J2_1136_B2_08	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10320		CM-00492	x		RB-19-140x					
RB1903_J2_1136_B2_09	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10321		CM-00493	x		RB-19-141x					
RB1903_J2_1136_B2_10	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10322		CM-00494	x		RB-19-142x					
RB1903_J2_1136_B2_11	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10323			x		RB-19-143x					
RB1903_J2_1136_B2_12	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10324					RB-19-144x					
RB1903_J2_1136_B2_13	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	B. heckeriae	EC10325					RB-19-145x					
RB1903_J2_1136_B2_14	J2-1136	Blake Ridge Seep	April 27-28, 2019	05:57:00	32.49391	-76.19131	2167	clam (dead)											
RB1903_J2_1136_B4_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10333		CM-00497	x		RB-19-150x					
RB1903_J2_1136_B4_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10334		CM-00498	x		RB-19-151x					
RB1903_J2_1136_B4_03	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10335			x		RB-19-152x					
RB1903_J2_1136_B4_04	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10336			x		RB-19-153x					
RB1903_J2_1136_B4_05	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10337			x		RB-19-154x					
RB1903_J2_1136_B4_06	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10338		CM-00499	x		RB-19-155x					
RB1903_J2_1136_B4_07	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae				x							
RB1903_J2_1136_B4_08	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae				x							
RB1903_J2_1136_B4_09	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae				x							
RB1903_J2_1136_B4_10	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10345			x		RB-19-156x					
RB1903_J2_1136_B4_11	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10346		CM-00500	x		RB-19-157x					
RB1903_J2_1136_B4_12	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10347			x		RB-19-158x					
RB1903_J2_1136_B4_13	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10348			x		RB-19-159x					
RB1903_J2_1136_B4_14	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10349		CM-00501	x		RB-19-160x					
RB1903_J2_1136_B4_15	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10350		CM-00502	x		RB-19-161x					
RB1903_J2_1136_B4_16	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10351		CM-00503	x		RB-19-162x					
RB1903_J2_1136_B4_17	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10352		CM-00504	x		RB-19-163x					
RB1903_J2_1136_B4_18	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10353		CM-00505	x		RB-19-164x					
RB1903_J2_1136_B4_19	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae				x							
RB1903_J2_1136_B4_20	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae				x							
RB1903_J2_1136_B4_21	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae				x							
RB1903_J2_1136_B4_22	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae				x							
RB1903_J2_1136_B4_23	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae				x							
RB1903_J2_1136_B4_24	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae				x							
RB1903_J2_1136_B4_25	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10354		CM-00506	x		RB-19-165x					
RB1903_J2_1136_B4_26	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10355		CM-00507	x		RB-19-166x					
RB1903_J2_1136_B4_27	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10356			x		RB-19-167x					
RB1903_J2_1136_B4_28	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10357			x		RB-19-168x					
RB1903_J2_1136_B4_29	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10358			x		RB-19-169x					
RB1903_J2_1136_B4_30	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10359			x		RB-19-170x					
RB1903_J2_1136_B4_31	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10360			x		RB-19-171x					
RB1903_J2_1136_B4_32	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.49364	-76.19096	2166	B. heckeriae	EC10361			x		RB-19-172x					









# RB1903 Master Sample Sheet

Sample Number	Sample Type	Site	Date Collected	Time	Latitude	Longitude	Depth (m)	Tentative ID	Erik Cordes	Chris Kellogg	Cheryl Morrison	Sandra Brooke	Amanda Demopoulos	Andrea Quattrini	Nancy Prouty	Mandy Joye	Jason Chaylor	Furu Miemis	Hilliary Close
RB1903_J2_1137_PC01	J2-1137	Cape Fear Seep	04/28/19	20:24:00	32.97959	-75.92686	2593	Sediment (bacterial mat)					x						
RB1903_J2_1137_PC02	J2-1137	Cape Fear Seep	04/28/19	20:23:00	32.97959	-75.92686	2593	Sediment (bacterial mat)											
RB1903_J2_1137_PC03	J2-1137	Cape Fear Seep	04/28/19	20:22:00	32.97960	-75.92686	2593	Sediment (bacterial mat)					x						
RB1903_J2_1137_PC04	J2-1137	Cape Fear Seep	04/28/19	20:21:00	32.97960	-75.92687	2593	Sediment (bacterial mat)											
RB1903_J2_1137_PC05	J2-1137	Cape Fear Seep	04/28/19	20:25:00	32.97958	-75.92686	2593	Sediment (bacterial mat)											
RB1903_J2_1137_PC06	J2-1137	Cape Fear Seep	04/28/19	20:20:00	32.97960	-75.92687	2593	Sediment (bacterial mat)					x						
RB1903_J2_1137_PC07	J2-1137	Cape Fear Seep	04/28/19	20:21:00	32.97960	-75.92687	2593	Sediment (bacterial mat)											
RB1903_J2_1137_PC08	J2-1137	Cape Fear Seep	04/28/19	20:19:00	32.97960	-75.92687	2593	Sediment (bacterial mat)					x						
RB1903_J2_1137_PC13	J2-1137	Cape Fear Seep	04/28/19	2:03:59	NA	NA	NA	Sediment (mud)					x						
RB1903_J2_1137_PC14	J2-1137	Cape Fear Seep	04/28/19	19:16:12	32.97968	-75.92828	2591	Sediment (bacterial mat)											
RB1903_J2_1137_PC16	J2-1137	Cape Fear Seep	04/28/19	19:14:53	32.97968	-75.92828	2591	Sediment (bacterial mat)											
RB1903_J2_1137_PC19	J2-1137	Cape Fear Seep	04/28/19	19:13:33	32.97968	-75.92828	2591	Sediment (bacterial mat)					x						
RB1903_J2_1137_PC20	J2-1137	Cape Fear Seep	04/28/19	19:21:05	32.97968	-75.92828	2591	Sediment (bacterial mat)											
RB1903_J2_1137_PC21	J2-1137	Cape Fear Seep	04/28/19	19:19:55	32.97968	-75.92828	2591	Sediment (bacterial mat)					x						
RB1903_J2_1137_PC22	J2-1137	Cape Fear Seep	04/28/19	2:01:00	NA	NA	NA	Sediment (mud)					x						
RB1903_J2_1137_PC23	J2-1137	Cape Fear Seep	04/28/19	1:56:58	32.97394	-75.91419	2572	Sediment (mud)					x						
RB1903_J2_1137_PC25	J2-1137	Cape Fear Seep	04/28/19	2:05:55	NA	NA	NA	Sediment (mud)					x						
RB1903_J2_1137_PC26	J2-1137	Cape Fear Seep	04/28/19	2:02:52	NA	NA	NA	Sediment (mud)											
RB1903_J2_1137_PC27	J2-1137	Cape Fear Seep	04/28/19	1:57:57	32.97394	-75.91419	2573	Sediment (mud)											
RB1903_J2_1137_PC28	J2-1137	Cape Fear Seep	04/28/19	19:18:42	32.97968	-75.92828	2591	Sediment (bacterial mat)					x						
RB1903_J2_1137_PC29	J2-1137	Cape Fear Seep	04/28/19	19:17:28	32.97968	-75.92828	2591	Sediment (bacterial mat)					x						
RB1903_J2_1137_PC31	J2-1137	Cape Fear Seep	04/28/19	19:22:11	32.97968	-75.92828	2591	Sediment (bacterial mat)					x						
RB1903_CTD018_N01	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water			x				x				
RB1903_CTD018_N02	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water			x				x				
RB1903_CTD018_N03	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water			x				x				
RB1903_CTD018_N04	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water							x				
RB1903_CTD018_N05	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water							x				
RB1903_CTD018_N06	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water					x						
RB1903_CTD018_N07	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water					x						
RB1903_CTD018_N08	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water											
RB1903_CTD018_N09	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water	EC10424										
RB1903_CTD018_N10	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water				x							
RB1903_CTD018_N11	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water				x							
RB1903_CTD018_N12	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water				x							
RB1903_CTD018_N13	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water				x							
RB1903_CTD018_N14	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water				x							
RB1903_CTD018_N15	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	742	Water				x							
RB1903_CTD018_N16	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	surface	Water				x							
RB1903_CTD018_N17	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	surface	Water	EC10423										
RB1903_CTD018_N19	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	surface	Water					x						
RB1903_CTD018_N20	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	surface	Water					x						
RB1903_CTD018_N21	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	surface	Water											
RB1903_CTD018_N22	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	surface	Water			x								
RB1903_CTD018_N23	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	surface	Water			x								
RB1903_CTD018_N24	CTD018	Richardson West	04/29/19	15:26:00	31.54.3920	77.41.6884	surface	Water			x								
RB1903_J2_1138_B2_01	J2-1138	Richardson West	04/29/19	22:00:45	31.89500	-77.69863	663	White Plexaurid	EC10444		CM-00529	x		RB-19-221x					
RB1903_J2_1138_B3_01	J2-1138	Richardson West	04/29/19	21:44:10	31.89495	-77.69870	664	Black coral			CM-00538								
RB1903_J2_1138_B4_01	J2-1138	Richardson West	04/29/19	21:09:49	31.89463	-77.69932	677	Lophelia	EC10445		CM-00530								
RB1903_J2_1138_B4_02	J2-1138	Richardson West	04/29/19	21:09:49	31.89463	-77.69932	677	Hydroids											
RB1903_J2_1138_B4_03	J2-1138	Richardson West	04/29/19	21:09:49	31.89463	-77.69932	677	Yellow Sponge	EC10473		CM-00531								
RB1903_J2_1138_B4_04	J2-1138	Richardson West	04/29/19	21:09:49	31.89463	-77.69932	677	White Sponge											
RB1903_J2_1138_B4_05	J2-1138	Richardson West	04/29/19	21:09:49	31.89463	-77.69932	677	Unicid			CM-00537	x							
RB1903_J2_1138_B5_01	J2-1138	Richardson West	04/29/19	21:28:00	31.89493	-77.69872	665	Yellow Enallopsammia	EC10470		CM-00532	x		RB-19-222x					





## **Appendix B - Plans of the Day (PODs)**

## RB1903 Plan of the Day

09 April 2019

depart Charleston

transit towards the Hoyt Hills site

31.66 -78.13

31 39.6 N 78 07.799 W

upon clearing the sea buoy, meeting on bridge to discuss Jason launch and recovery –

Chief Sci, Expedition leader, officers, bosun

1500 tour of Jason for science party

2200 (approximate time) When we reach ~500 m depth, evaluate the weather

if conditions are appropriate for USBL calibration, launch elevator

if seas/wind are too high, proceed to multibeam ops

survey plan will be provided by Brian Andrews

upon completion of either task, proceed to Richardson Hills

31.98443 -77.41139

31 59.065 N 77 24.683 W

10 April 2019

0700 CTD-02 @ Richardson Hills

0900 Launch elevator for USBL calibration

1800 recover elevator, evaluate weather conditions

if weather is conducive, Launch Jason dive J2-1128

or mapping around Richardson Hills

2000 arrive on station for ROV or MBES ops



## **RB-1903 Plan of the Day**

11 April 2019

0800 recover ROV

proceed to lander deployment near ROV recovery location

lander seafloor target: 31d53.656 N, 77d21.599 W

survey over lander to determine precise location

1200 Launch J2-1129 @ Richardson Hills A4963 location

ROV seafloor target: 31d59.065 N, 77d24.683 W

1600 recover J2-1129

transit to next ROV deployment location

ROV seafloor target: 31d47.351 N, 77d29.870 W

2000 Launch J2-1130 @ Richardson Hills mounds site

12 April 2019

2000 Recover J2-1130

transit to lander location and recover lander

then CTD-03 near lander recovery site

## **RB-1903 Plan of the Day**

11 April 2019

1800 Start multibeam mapping from Richardson to Blake Deep

12 April 2019

Waiting On Weather (WOW) – if coming down, proceed to ROV ops

    If weather improves near Blake Deep, proceed to that dive plan  
    otherwise continue mapping

TBD Launch J2-1129 @ Richardson Hills A4963 location

    ROV seafloor target: 31d59.065      N, 77d24.683 W

        4 hr dive (might do this short dive on the 13<sup>th</sup> if WOW is long)

transit to next ROV deployment location

    ROV seafloor target: 31d47.351 N, 77d29.870 W

Launch J2-1130 @ Richardson Hills mounds site

    dive time will depend on length of WOW

after recovery of J2-1130, transit to lander location

13 April 2019

CTD-05 near lander recovery site

Recover lander at first light

0800 Launch J2-1131 at Blake Deep

14 April 2019

J2-1132 at Stetson Banks

## **RB-1903 Plan of the Day**

12 April 2019

on arrival CTD-05 @ Stetson Banks bowl site

followed by Launch J2-1129 @ Stetson Banks bowl site

32d07.415 N, 77d39.449 W, 670 m depth

13 April 2019

0800 recover J2-1129

transit to lander location

triangulated position: 31d53.97 N, 77d21.222 W

1000 recover lander

transit to transit to Blake Deep, CTD-06 on arrival

1200 Launch J2-1130 at Blake Deep

31d17.58 N, 85d26.35, 1400 m

14 April 2019

0400 recover J2-1130

0800 launch J2-1131 @ Richardson A4963

ROV seafloor target: 31d59.065 N, 77d24.683 W, 750 m

1200 recover J2-1131

1400 re-deploy lander at previous location

drop it (approximately) here: 31d53.82 N, 77d21.32 W

triangulate lander

transit to Blake (Popenoe) Mounds

15 April 2019

CTD-07 on arrival

0800 J2-1132 at Popenoe (Blake) Mounds

31d03.690 N, 79d30.726 W, 700 m

2000 recover J2-1132

transit to Charleston

16 April 2019

0730 arrive at sea buoy

## **RB-1903**

### **Plan of the Day**

13 April 2019

1200 CTD-05 @ Richardson A4963

when the seas come down: launch J2-1129 @ Richardson A4963

ROV seafloor target: 31d59.065 N, 77d24.683 W, 750 m

14 April 2019

1200 recover J2-1129

1400 re-deploy lander at previous location

drop it (approximately) here: 31d53.82 N, 77d21.32 W

triangulate lander

transit to Blake Mounds

15 April 2019

CTD-06 on arrival

0800 J2-1130 at Blake Mounds

31d03.690 N, 79d30.726 W, 700 m

2000 recover J2-1130

transit to Charleston

16 April 2019

0730 arrive at sea buoy

## **RB-1903**

### **Plan of the Day**

14 April 2019

transit to Hoyt Hills to conduct brief MBES patch test and survey  
continue transit to Blake Mounds

15 April 2019

CTD-07 on arrival

0800 J2-1130 at Blake Mounds

two potential starting points

if we get in at 0800: 31d03.001 N, 79d30.764 W, 685 m

if we get in at 1200: 31d03.788 N, 79d31.678 W, 567 m

2000 transit to Charleston

16 April 2019

0730 arrive at sea buoy

## **RB1903 Plan of the Day**

16 April 2019

1000 depart Charleston

transit towards the Savannah Banks site

31.7679 N -79.20477W

31 46.075 N -79 12.29699 W

tour of Jason for new science party, drills, etc.

1600 (approximate time) on station- CTD cast

1800 Launch ROV (J2-1130)

17 April 2019

0800 Recover ROV

0900 Head to Blake Deep (9 hrs transit)

31.293 -77.243

31 18.2960 N -77 14.375 W

1800 CTD on arrival

2000 ROV dive (J2-1131)

18 April 2019

0800 recover ROV, transit to Blake Ridge

32.494 -76.199

32 29.638 N -76 11.821W

1600 CTD on arrival

1800 ROV Dive (J2-1132) (weather depending)

19 April 2019

0600 Recover ROV, transit to Lookout Deep

33.923 -75.812

33 55.386 -75 48.716W

1500 CTD or XBT upon arrival, then multibeam map

1800 ROV dive TBD



**RB1903**  
**Plan of the Day**

17 April 2019

~0900 Recover ROV

1000 Head to Blake Deep (9 hrs transit)

31.293 -77.243

31 18.2960 N -77 14.375 W

On arrival ROV dive (J2-1131)

18 April 2019

1200 recover ROV

1300 CTD

Multibeam to cover some holidays at the north end of feature (tracklines will be given to the bridge, target area: 31 23.641N -77 13.408W) and then transit to safe harbor

19 April 2019

Waiting on Weather

20 April 2019

Head to Lookout Deep:

33.923N, -75.812W

33 55.386 -75 48.716W

Activities: CTD or XBT upon arrival, then multibeam map to

refine dive target

ROV dive (12-18 hrs)

**RB1903**  
**Plan of the Day**

**20 April 2019**

Head to Lookout Deep:

Starting line – point #1:

34.02686N, -75.77626 W

34 01.612 -75 46.576W

Activities: Map Map MAP

**21 April 2019**

Head to Pamlico Canyon when mapping is complete

Triangulate the lander if conditions allow

Lander location:

34.92354N, -75.15117W

34 55.413N, -75 09.070W

1936m

CTD\* cast until ROV ops can be initiated

CTD #	Long DD	Lat DD	Long DM	Lat DM	Station	Depth (m)
1	-75.2245	34.97216	-75 13.470	34 58.330	Pamlico	694
2	-75.2006	34.95279	-75 12.036	34 57.167	Pamlico	1113
3	-75.1705	34.93638	-75 10.230	34 56.183	Pamlico	1394
4	-75.1519	34.92395	-75 09.114	34 55.437	Pamlico	1930
5	-75.1248	34.90709	-75 07.488	34 54.435	Pamlico	2524

\*Note, these casts can be done in any order, and starting CTD can be closest to lander location.

ROV dive (24 hrs)

Target onbottom:

34.92796N, -75.1495W

34 55.6776N, -75 08.9700W

Depth: 1820 m

**22 April 2019**

Recover ROV

Transit to Pea Island

CTD cast

ROV dive (24hrs):

35.675N, -74.794W

35 40.473N, -74 47.647W

Depth: 318m

23 April 2019

Recover ROV

Transit to Kitty Hawk

CTD cast

ROV dive

**RB1903**  
**Plan of the Day**

**22 April 2019**

1200 Recover ROV

CTD cast at:

34.93488, -75.165817

34 56.092033N, -75 9.950883W

1607m

Transit to Pea Island (4.5hrs)

CTD cast with monoco

35.673N, -74.795W

35 40.410N, -74 47.71W

~2000: ROV dive (12 hrs):

35.675N, -74.794W

35 40.473N, -74 47.647W

Depth: 318m

**23 April 2019**

0800 Recover ROV

CTD cast at recovery location

Transit to Kitty Hawk (<2 hrs)

CTD cast upon arrival after USBL pole deployment

Approximate location:

35 55.5639N, -74 48.635W

ROV dive (12 hrs)

## **RB1903**

### **Plan of the Day**

#### **23 April 2019**

~0000: ROV dive-J2-1133 (12 hrs):

35.675N, -74.794W

35 40.473N, -74 47.647W

Depth: 318m

1200 Recover ROV

2 CTD casts

CTD #12: background spot, D=353 m

35.6767N, -74.79552W

35 40.600N, -74 47.721W

CTD #13: Mat, bubble spot:

35.67556, -74.79550W, 312m

35 40.5336, -74 47.7306

Transit to Kitty Hawk

#### **24 April 2019**

0000 Dive at Kitty Hawk (12 hrs, J2-1134)

Tentative target:

35.92773N, -74.80815W

35 55.66378N, -74 48.4896W

D=398m

1200 recover Kitty Hawk, set up for 2 CTD casts

CTD #14 target: wherever Jason is recovered

CTD # 15:

35.93414N, -74.8182W, D= 233

35 56.04861N, -74 49.0929W

Transit to Keller Canyon (2hrs)

Tentative location:

35.5447N, -74.7829W

35 32.68217N, -74 46.974W

D=1151m

## **25 April 2019**

Keller Canyon

00:00-12:00-Dive: J2-1135, 12 hrs

CTD at ROV recover location/within the canyon (if feasible)

Transit to Hatteras Canyon (2hrs)

35.2854N, -74.9054W

35 17.1236N, -74 54.325W

D=957m

## **26 April 2019**

Hatteras Canyon

Dive: J2-1136

00:00-12:00, 12 hrs

CTD at ROV recovery location/within the canyon (if feasible)

TBD based on review of new mapping data:

Transit to Cape Lookout (9) or Cape Fear (15hrs)

**RB1903**  
**Plan of the Day**

**25 April 2019**

Transit to Cape Fear Seep (~6 hrs)

32.97N, -75.932W

32 58.42N, -75 55.95W

D= 2600m

Multibeam with water column en route and over site

**26 April 2019**

Transit mapping/Map SW of Blake Ridge Seep

Multibeam en route with water column

CTD upon arrival at Blake Ridge Seep

**27 April 2019**

Transit to Blake Ridge seep (depending on weather report, break off from mapping to arrive 0400/0600)

Blake Ridge Seep (4hrs)

32.494N, -76.199W

32 29657N, -76 11.928W

1200-2359– Dive at Blake Ridge Seep (12hrs) (or earlier if conditions look dive-able)

CTD either before or after dive, depending on conditions

**28 April 2019**

Transit to Cape Fear Seep (~3 hrs)

32.97N, -75.932W

32 58.42N, -75 55.95W

D= 2600m

0400-1800 Dive at Cape Fear Seep (16hrs)

CTD at the dive site

Transit to Blake Mounds (31 21.44N, -79 01.026W, 17 hrs)

1600: Dive on Blake Mounds (24 hrs)

**29 April 2019:**

0800: recover, CTD

Steam to Charleston



## **Appendix C - Dive Plans**

## RB-1903 – DEEP SEARCH

Dive: J2-1128

Launch: 2000 on 04/10/19

Site: Richardson Hills

Seafloor Target: 31d52.813 N, 77d22.433 W

**Basket:** 16 push cores on swing arms, 6 sample quivers on swing arms, 4 niskins, 5-chamber slurp, 2 large bioboxes, 3 coral pots, additional sample quivers

Note: make sure lasers are on for all transits, off for glamor shots

1. Get settled on the bottom, begin transit towards WPT1
2. take one set of 4 push cores at the start if you find a suitable place
3. Start up the slope to WPT2, continue through all WPTs
  - a. Make note of substrate type, current direction, fauna
4. At any point that you find a decent amount of Lophelia, mussel pot
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn mussel pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
5. When you see them, collect a diversity of corals
  - a. Octocorals and antipatharians into quivers
    - i. Plumarella or something else with good numbers
  - b. Scleractinians into biobox (Enallopsamia and Lophelia)
6. Continue across the swales
  - a. Another set of push cores
  - b. More coral collections
  - c. Another mussel pot
7. Near the end, trip the niskins around a lot of live Lophelia
8. Come home

## RB-1903 – DEEP SEARCH

Dive: J2-1129

Launch: 1500 on 04/13/19 Site: Richardson A4963

Seafloor Target: 31d59.07 N, 77d24.75 W, 800 m depth

**Basket:** 11 push cores on port swing arm, 8 sample quivers on stbd swing arm, 4 niskins, 5-chamber slurp, 2 large bioboxes (1 with inserts, 1 without), 3 markers, 3 coral pots, milk crate, McLean Pump

Notes: Make sure lasers are on for all transits, off for glamor shots

When transitioning from sitting to transiting, white balance (one push)

Watch leads should take copious notes in notebook

Quivers 3 and 4 are set up for microbial samples – only 1 species in each

1. Once you are in good coral territory, deploy McLean pump – get a good fix
2. Take a set of push cores if you can and a rock if you see one
3. Begin transit towards Transplant site
  - a. Search for transplants and recover them into biobox
4. Take a coral pot
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn mussel pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
5. When you see them, collect a diversity of corals
  - a. Octocorals and antipatharians into quivers
    - i. Plumarella or white plexaurid with good numbers
  - b. Scleractinians into biobox (Enallopsamia and Lophelia)
6. When further away from 1<sup>st</sup> one, take another mussel pot, and then another
7. Start N towards WPT 2 and 3
  - a. Last mussel pot, more octocoral collections, more push cores
8. Return to McLean deployment location
9. trip the niskins then recover McLean pump

## RB-1903 – DEEP SEARCH

**Dive: J2-1130**

**Launch: 1800 on 04/16/19 Site: Savannah Banks**

**Seafloor Target: 31 46.075 N -79 12.295 W, 535 m depth**

Corals	Ideal collection needs	location
Lophelia	1 big collection, 10 small	biobox, 3 mussel pots
Enallopsammia	>10	quivers
Desmophyllum	>10	quivers or biobox
Madrepora	?	quivers or biobox
Plumarella	10	quivers
white plexaurid	10	quivers
other octocorals	opportunistic	quivers
other cup corals	opportunistic	quivers

Other critter needs	Ideal collection needs	location
Eumunida	opportunistic	slurp
Other squat lobsters	opportunistic	slurp
Asteroschema	opportunistic	biobox/quivers/slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	

**Basket:** 11 push cores on port swing arm, 8 sample quivers on stbd swing arm, 4 niskins, 5-chamber slurp, 2 large bioboxes (6 inserts), 3 markers, 3 coral pots, milk crate for ROCKS

Notes: Make sure lasers are on for all transits, off for glamor shots

When transitioning from sitting to transiting, white balance (one push)

Watch leads should take copious notes in notebook

**All quivers except #7 are set up for microbial samples – only 1 species in each (3 minimum, 5 ideal Enallopsammia or Desmophyllum)**

1. Take a set of push cores if you can and a rock if you see one
2. Transit to WP1, find a good coral collection site
3. When you see them, collect a diversity of corals (**SEE TABLE**)
  - a. Octocorals, antipatharians, Enallopsammia into quivers
  - b. Scleractinians into biobox (Lophelia, Desmophyllum, Madrepora)
4. Take a coral pot
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator

- d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
5. Head towards WPT 2
    - a. Collect corals, 2<sup>nd</sup> coral pot, more push cores, rocks
  6. Head towards WPT 3
    - a. Collect corals, last coral pot, more push cores, rocks
  7. trip the niskins then continue until all the basket is loaded

## RB-1903 – DEEP SEARCH

**Dive: J2-1131**

**Launch: 1800 on 04/17/19 Site: Blake Deep**

**Seafloor Target: 31 17.151 N -77 14.229 W, 1365 m depth**

Corals	Ideal collection needs	location
Solenosmilia	10	quivers/biobox
Desmophyllum	>10	quivers or biobox
Enallopsammia	>10	quivers
Madrepora	some	quivers or biobox
Plumarella	10	quivers
Bamboo corals	10	quivers/biobox
Plexaurids	10	quivers
Antipatharians	opportunistic	quivers/biobox
other octocorals	opportunistic	quivers
other cup corals	opportunistic	quivers

Other critter needs	Ideal collection needs	location
Eumunida	opportunistic	slurp
Other squat lobsters	opportunistic	slurp
Asteroschema	opportunistic	biobox/quivers/slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	biobox/quivers
Acesta (bivalve)	opportunistic	biobox

**Basket:** 11 push cores on port swing arm, 8 sample quivers on stbd swing arm, 4 niskins, 5-chamber slurp, 2 large bioboxes (6 inserts), 3 coral pots, milk crate for ROCKS, 3 markers, 3 small stoppers, SCOOP

Notes: Make sure lasers are on for all transits, off for glamor shots

When transitioning from sitting to transiting, white balance (one push)

Watch leads should take copious notes in notebook

**All quivers except #7 are set up for microbial samples – only 1 species in each (3 minimum, 5 ideal Desmophyllum)**

1. Take a set of push cores if you can and a rock if you see one
2. Transit to WP1, find a good coral collection site
3. When you see them, collect a diversity of corals (**SEE TABLE**)
  - a. Octocorals, antipatharians, Desmophyllum into quivers
  - b. Scleractinians into biobox (Solenosmilia, Madrepora)
4. Take a coral pot
  - a. Only turn T-handle counter-clockwise when handling

- b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
5. Head towards WPT 2
    - a. Collect corals, 2<sup>nd</sup> coral pot, more push cores, rocks
  6. Head towards WPT 3
    - a. Collect corals, last coral pot, more push cores, rocks
  7. Head towards WPT 4
    - a. Collect corals, last coral pot, more push cores, rocks
  8. Head towards WPT 5
    - a. Collect corals, last coral pot, more push cores, rocks
  9. trip the niskins then continue until all the basket is loaded
  10. If you reach the top of the feature, just run across the platform until the end of dive

## RB-1903 – DEEP SEARCH

**Dive: J2-1132      Launch: 1200 on 04/21/19      Site: Pamlico Canyon**  
**Seafloor Target: 34 55.533 N -75 08.955 W, 1820 m depth**

Corals	Ideal collection needs	location
Desmophyllum	>10	quivers or biobox
Paramuricea	>10	quivers or biobox
Solenosmilia	10	quivers/biobox
Dominant octocorals (e.g.):		
Acanthogorgia		
Paragorgia		
Bamboo corals		quivers/biobox
Plexaurids		quivers
Antipatharians	opportunistic	quivers/biobox
other octocorals	opportunistic	quivers
other cup corals	opportunistic	quivers

Other critters	Ideal collection needs	location
Asteroschema	opportunistic	biobox/quivers/slurp
Eumunida	opportunistic	slurp
Other squat lobsters	opportunistic	slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	biobox/quivers
Acesta (bivalve-1 2)	opportunistic	biobox

**Basket:** 16 push cores on skid, 11 push cores on port swing arm, 8 sample quivers on stbd swing arm, 5 quivers on skid, 4 niskins, 5-chamber slurp with small mesh, 1 large biobox (4 inserts), 2 coral pots, 1 milk crate and 1 MP holder for ROCKS and coral bases, 5 markers, 5 small stoppers, SCOOP

### **Imagery:**

Make sure lasers are on for all transits, off for glamor shots  
 White balance (one push) when sitting down or starting transiting  
 Set up shot, then hands off controller for 10-20 secs

Notes: Watch leads should take copious notes in notebook, **if you see trash, pick it up if it doesn't impact science or is dangerous.**

**All quivers ON STARBOARD SWINGARM except #7 are set up for microbial samples – only 1 species in each (3 minimum, 5 ideal Desmophyllum or Paramuricea)**



1. Take a set of 7 push cores if you can and a rock if you see one
2. Transit to WP1, find a good coral collection site
3. When you see them, collect a diversity of corals (**SEE TABLE**)
  - a. Octocorals, antipatharians, *Desmophyllum* into quivers
  - b. Scleractinians into biobox (*Solenosmilia*)
4. Take a coral pot (if possible-**Solenosmilia**)
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
5. Head towards WPT 2
  - a. Collect corals, 2<sup>nd</sup> coral pot, 6 push cores, rocks
6. Head towards WPT 3
  - a. Collect corals, last coral pot, 6 push cores, rocks
7. Head towards WPT 4
  - a. Collect corals, 6 push cores, rocks
8. Head towards WPT 5
  - a. Collect corals, last coral pot, more push cores, rocks
9. trip the niskins **near lots of coral** then continue until all the basket is loaded
10. If you reach the top of the feature, just run across the platform until the end of dive

## RB-1903 – DEEP SEARCH

**Dive: J2-1133**

**Launch: 0000 Site: Pea Island Seep**

**Seafloor Target: 35.675 N, -74.794W, 35 40.473N, -74 47.647W**

**Depth: 318 m**

### m depth

Corals	Ideal collection needs	location
Dominant octocorals (e.g.):		
Bamboo corals		quivers/biobox
Antipatharians cup corals	opportunistic	quivers/biobox
Other critters	Ideal collection needs	location
Mussels/Clams		
Asteroschema	opportunistic	biobox/quivers/slurp
Eumunida	opportunistic	slurp
Other squat lobsters	opportunistic	slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	biobox/quivers
Other seep associates	opportunistic	biobox/quivers

**Basket:** 21 push cores on skid, 11 push cores on port swing arm, 8 sample quivers on stbd swing arm (7 ultracleaned), 4 niskins, 5-chamber slurp with small mesh, 1 large biobox (4 inserts), 2 mussel pots, 1 milk crate and 1 MP holder for ROCKS and coral bases, 5 markers, 5 small stoppers, SCOOP

### **Imagery:**

Make sure lasers are on for all transits, off for glamor shots

White balance (one push) when sitting down or starting transiting

Set up shot, then hands off controller for 10-20 secs

Notes: Watch leads should take copious notes in notebook, **if you see trash, pick it up if it doesn't impact science or is dangerous.**

**All quivers ON STARBOARD SWINGARM except #7 are set up for microbial samples – only 1 species in each (3 minimum, 5 ideal Desmophyllum, Acanthogorgia, or Paramuricea)**

1. Find seep (mat, hydrate, carbonate)
2. Take a set of 8 push cores if you can and a rock if you see one
3. Transit to WP1, find a good collection site

4. When you see them, collect a diversity of organisms (**SEE TABLE**)
5. **Slurp mat** (use same chamber at multiple sites)
6. Take a mussel pot (if possible **-Bathymodiolus or clams**)
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
7. Head towards WPT 2
  - a. Collect animals, 2<sup>nd</sup> mussel pot, 8 push cores, rocks
8. Head towards WPT 3
  - a. Collect animals, 3<sup>rd</sup> mussel pot, 8 push cores, rocks
9. Head towards WPT 4
  - a. Collect animals, 8 push cores, rocks
10. Head towards WPT 5
  - a. Collect animals, more push cores, rocks
11. trip 3 Niskins **CLOSE TO THE END OF THE DIVE** (near mussels, mats, bubbles, something seepy) then continue until all the basket is loaded
12. If you reach the top of the feature, just run across the platform until the end of dive

Push core plan:

8 in non seep  
8 in bubble  
2 sets of 8 in mats

Niskin plan:

1 niskin (#1 or 2) in bubbles  
3 Niskins in seepy habitat

Rock plan:

Larger the better, variety of sites (Nancy/Jason to guide)  
5 rocks, 4 in biobox inserts, 1 in rockbox/mussel pot holder

## RB-1903 – DEEP SEARCH

**Dive: J2-1134      Launch: 2000 on 04/23/19      Site: Kitty Hawk Seep**  
**Seafloor Target: 35.92515N, -74.8053W, 35 55.509N, -74 48.3156W**  
**Depth: 471m**

	Ideal collection	
Corals	needs	location
Lophelia		
Dominant octocorals (e.g.):		
Bamboo corals		quivers/biobox
Antipatharians	opportunistic	quivers/biobox
cup corals		
	Ideal collection	
Other critters	needs	location
<b>Mussels/Clams</b>		
<b>Tube worms</b>		
<b>Quill worms</b>		
Asteroschema	opportunistic	biobox/quivers/slurp
Eumunida	opportunistic	slurp
Other squat lobsters	opportunistic	slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	biobox/quivers
Other seep associates	opportunistic	biobox/quivers

**Basket:** 21 push cores on skid, 11 push cores on port swing arm, 8 sample quivers on stbd swing arm (7 ultracleaned), 4 niskins, 5-chamber slurp with small mesh, 1 large biobox (4 inserts), 2 mussel pots, 1 milk crate and 1 MP holder for ROCKS and coral bases, 5 markers, 5 small stoppers, SCOOP

### **Imagery:**

Make sure lasers are on for all transits, off for glamor shots  
 White balance (one push) when sitting down or starting transiting  
 Set up shot, then hands off controller for 10-20 secs

Notes: Watch leads should take copious notes in notebook, **if you see trash, pick it up if it doesn't impact science or is dangerous.**

**All quivers ON STARBOARD SWINGARM except #7 are set up for microbial samples – only 1 species in each (3 minimum, 5 ideal Desmophyllum, Acanthogorgia, or Paramuricea)**

1. Find seep (mat, hydrate, carbonate)
2. Take a set of 8 push cores if you can and a rock if you see one

3. Transit to WP1, find a good collection site
4. When you see them, collect a diversity of organisms (**SEE TABLE**)
5. Slurp mat (can use same chamber at multiple sites)
6. Take a mussel pot (if possible-**Bathymodiolus or clams**)
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
7. Head towards WPT 2
  - a. Collect animals, 2<sup>nd</sup> mussel pot, 8 push cores, rocks
8. Head towards WPT 3
  - a. Collect animals, 8 push cores, rocks
9. Head towards WPT 4
  - a. Collect animals, 8 push cores, rocks
10. Head towards WPT 5
  - a. Collect animals, more push cores, rocks
11. Head towards WPT 5
  - a. Collect animals, more push cores, rocks
12. trip 3 Niskins **CLOSE TO THE END OF THE DIVE** (near mussels, mats, bubbles, something seepy) then continue until all the basket is loaded
13. If you reach the top of the feature, just run across the platform until the end of dive

Push core plan:

8 in non seep  
8 in bubble  
2 sets of 8 in mats

Niskin plan:

1 niskin (#1 or 2) in bubbles  
3 Niskins in seepy habitat

Rock plan:

Larger the better, variety of sites (Nancy/Jason to guide)  
5 rocks, 4 in biobox inserts, 1 in rockbox/mussel pot holder

## RB-1903 – DEEP SEARCH

**Dive: J2-1135      Launch: 0000 on 04/25/19    Site: Cape Lookout DEEP  
Seafloor Target: 33 54.9594N -75 49.9632W, 1015 m depth**

Corals	Ideal collection needs	location
Desmophyllum	>10	quivers or biobox
Paramuricea	>10	quivers or biobox
Solenosmilia	10	quivers/biobox
Dominant octocorals (e.g.):		
Acanthogorgia		
Paragorgia		
Bamboo corals		quivers/biobox
Plexaurids		quivers
Antipatharians	opportunistic	quivers/biobox
other octocorals	opportunistic	quivers
other cup corals	opportunistic	quivers

Other critters	Ideal collection needs	location
Asteroschema	opportunistic	biobox/quivers/slurp
Eumunida	opportunistic	slurp
Other squat lobsters	opportunistic	slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	biobox/quivers
Acesta (bivalve-1 2)	opportunistic	biobox

**Basket:** 16 push cores on skid, 11 push cores on port swing arm, 8 sample quivers on stbd swing arm, 5 coral quivers on skid, 4 niskins, 5-chamber slurp with small mesh, 1 large biobox (4 inserts), 2 coral pots, 1 milk crate and 1 MP holder for ROCKS and coral bases (e.g., Desmophyllum, Bamboo), 5 markers, 5 small stoppers, SCOOP

### **Imagery:**

Make sure lasers are on for all transits, off for glamor shots  
White balance (one push) when sitting down or starting transiting  
Set up shot, then hands off controller for 10-20 secs

Notes: Watch leads should take copious notes in notebook, **if you see trash, pick it up if it doesn't impact science or is dangerous.**

**All quivers ON STARBOARD SWINGARM except #7 are set up for microbial samples – only 1 species in each (3 minimum, 5 ideal **Desmophyllum** or **Acanthogorgia**)**

1. Take a set of 7 push cores if you can and a rock if you see one
2. Transit to WP1, find a good coral collection site
3. When you see them, collect a diversity of corals (**SEE TABLE**)
  - a. Octocorals, antipatharians, Desmophyllum into quivers
  - b. Scleractinians into biobox (Solenosmilia)
4. Take a coral pot (if possible-**Solenosmilia**)
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
5. Head towards WPT 2
  - a. Collect corals, 2<sup>nd</sup> coral pot, 6 push cores, rocks
6. Head towards WPT 3
  - a. Collect corals, last coral pot, 6 push cores, rocks
7. Head towards WPT 4
  - a. Collect corals, 6 push cores, rocks
8. Head towards WPT 5
  - a. Collect corals, last coral pot, more push cores, rocks
9. trip the niskins **near lots of coral** then continue until all the basket is loaded
10. If you reach the top of the feature, just run across the platform until the end of dive

## RB-1903 – DEEP SEARCH

**Dive: J2-1135      Launch: 0000 on 04/25/19    Site: Keller Canyon**  
**Seafloor Target: 35.5447 N   -74.7829W, 1000 m depth**

Corals	Ideal collection needs	location
Desmophyllum	>10	quivers or biobox
Paramuricea	>10	quivers or biobox
Solenosmilia	10	quivers/biobox
Dominant octocorals (e.g.):		
Acanthogorgia		
Paragorgia		
Bamboo corals		quivers/biobox
Plexaurids		quivers
Antipatharians	opportunistic	quivers/biobox
other octocorals	opportunistic	quivers
other cup corals	opportunistic	quivers

Other critters	Ideal collection needs	location
Asteroschema	opportunistic	biobox/quivers/slurp
Eumunida	opportunistic	slurp
Other squat lobsters	opportunistic	slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	biobox/quivers
Acesta (bivalve-1 2)	opportunistic	biobox

**Basket:** 16 push cores on skid, 11 push cores on port swing arm, 8 sample quivers on stbd swing arm, 5 coral quivers on skid, 4 niskins, 5-chamber slurp with small mesh, 1 large biobox (4 inserts), 2 coral pots, 1 milk crate and 1 MP holder for ROCKS and coral bases (e.g., Desmophyllum, Bamboo), 5 markers, 5 small stoppers, SCOOP

### **Imagery:**

Make sure lasers are on for all transits, off for glamor shots  
 White balance (one push) when sitting down or starting transiting  
 Set up shot, then hands off controller for 10-20 secs

Notes: Watch leads should take copious notes in notebook, **if you see trash, pick it up if it doesn't impact science or is dangerous.**



**All quivers ON STARBOARD SWINGARM except #7 are set up for microbial samples – only 1 species in each (3 minimum, 5 ideal **Desmophyllum** or **Acanthogorgia**)**

1. Take a set of 7 push cores if you can and a rock if you see one
2. Transit to WP1, find a good coral collection site
3. When you see them, collect a diversity of corals (**SEE TABLE**)
  - a. Octocorals, antipatharians, Desmophyllum into quivers
  - b. Scleractinians into biobox (Solenosmilia)
4. Take a coral pot (if possible-**Solenosmilia**)
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
5. Head towards WPT 2
  - a. Collect corals, 2<sup>nd</sup> coral pot, 6 push cores, rocks
6. Head towards WPT 3
  - a. Collect corals, last coral pot, 6 push cores, rocks
7. Head towards WPT 4
  - a. Collect corals, 6 push cores, rocks
8. Head towards WPT 5
  - a. Collect corals, last coral pot, more push cores, rocks
9. trip the niskins **near lots of coral** then continue until all the basket is loaded
10. If you reach the top of the feature, just run across the platform until the end of dive

## RB-1903 – DEEP SEARCH

**Dive: J2-1136      Launch: xxxx on 04/27/19      Site: Blake Ridge Seep**  
**Seafloor Target: 32.3937N, -76.19115W, 32 29.6248N, -76 11.4692W**  
**Depth: 2193 m**

Corals	Ideal collection needs	location
Dominant octocorals (e.g.):		
Bamboo corals		quivers/biobox
Antipatharians	opportunistic	quivers/biobox
cup corals		
Other critters	Ideal collection needs	location
<b>Mussels/Clams</b>	target mix of sizes	biobox/quivers/slurp (small)
Asteroschema	opportunistic	biobox/quivers/slurp
Eumunida	opportunistic	slurp
Other squat lobsters	opportunistic	slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	biobox/quivers
Other seep associates	opportunistic	biobox/quivers

**Basket:** 21 push cores on skid, 11 push cores on port swing arm, 8 sample quivers on stbd swing arm (7 ultracleaned), 4 niskins, 5-chamber slurp with small mesh, 1 large biobox (4 inserts), 3 mussel pots, 1 milk crate for ROCKS and coral bases, 5 small stoppers, 1 marker, SCOOP

### Imagery:

Make sure lasers are on for all transits, off for glamor shots  
 White balance (one push) when sitting down or starting transiting  
 Set up shot, then hands off controller for 10-20 secs

Notes: Watch leads should take copious notes in notebook, **if you see trash, pick it up if it doesn't impact science or is dangerous.**

**All quivers ON STARBOARD SWINGARM except #7 are set up for microbial samples – only 1 species in each (3 minimum, 5 ideal Desmophyllum, Acanthogorgia, or Paramuricea)**

1. Find seep (mat, hydrate, carbonate)
2. Take a set of 8 push cores if you can and a rock if you see one
3. Transit to WP1, find a good collection site
4. When you see them, collect a diversity of organisms (SEE TABLE)

5. **Slurp mat** (use same chamber at multiple sites)
6. Take a mussel pot (**Bathymodiolus**)
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
7. Head towards WPT 2
  - a. Collect animals, 2<sup>nd</sup> mussel pot, 8 push cores, rocks
8. Head towards WPT 3
  - a. Collect animals, 3<sup>rd</sup> mussel pot, 8 push cores, rocks
9. Head towards WPT 4
  - a. Collect animals, 8 push cores, rocks
10. Head towards WPT 5
  - a. Collect animals, more push cores, rocks
11. trip 3 Niskins **CLOSE TO THE END OF THE DIVE** (near mussels, mats, bubbles, something seepy) then continue until all the basket is loaded
12. If you reach the top of the feature, just run across the platform until the end of dive

Mussel Collections:

3 different patch sizes (small, medium, large, 3-5 each patch)

Target different mussel sizes – no need to actually measure them on the seafloor  
dead shells

Push core plan:

8 by mussels

8 by clams

2 sets of 8 in mats

Niskin plan:

1 niskin (#1 or 2) in bubbles

3 Niskins in seepy habitat

Rock plan:

variety of sites (Nancy/Jason to guide), 2-3

## RB-1903 – DEEP SEARCH

**Dive: J2-1137      Launch: 1200 on 04/28/19      Site: Cape Fear Seep**  
**Seafloor Target:** 32.97918N, -75.92864W, 32 58.7508, -75 55.7184W  
**Depth:** 2676 m

Corals	Ideal collection needs	location
Dominant octocorals (e.g.):		
Bamboo corals		quivers/biobox
Antipatharians	opportunistic	quivers/biobox
cup corals		
Other critters	Ideal collection needs	location
<b>Mussels/Clams</b>	target mix of sizes	biobox/quivers/slurp (small)
Asteroschema	opportunistic	biobox/quivers/slurp
Eumunida	opportunistic	slurp
Other squat lobsters	opportunistic	slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	biobox/quivers
Other seep associates	opportunistic	biobox/quivers

**Basket:** 21 push cores on skid, 11 push cores on port swing arm, 8 sample quivers on stbd swing arm (7 ultracleaned), 4 niskins, 5-chamber slurp with small mesh, 1 large biobox (4 inserts), 3 mussel pots, 1 milk crate for ROCKS and coral bases, 5 small stoppers, 1 marker, SCOOP

### Imagery:

Make sure lasers are on for all transits, off for glamor shots  
 White balance (one push) when sitting down or starting transiting  
 Set up shot, then hands off controller for 10-20 secs

Notes: Watch leads should take copious notes in notebook, **if you see trash, pick it up if it doesn't impact science or is dangerous.**

1. Find seep (mat, hydrate, carbonate)
2. Take a set of 8 push cores if you can and a rock if you see one
3. Transit to WP1, find a good collection site
4. When you see them, collect a diversity of organisms (SEE TABLE)
5. **Slurp mat** (use same chamber at multiple sites)
6. Take a mussel pot (**Bathymodiolus**)
  - a. Only turn T-handle counter-clockwise when handling

- b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
7. Head towards WPT 2
    - a. Collect animals, 2<sup>nd</sup> mussel pot, 8 push cores, rocks
  8. Head towards WPT 3
    - a. Collect animals, 3<sup>rd</sup> mussel pot, 8 push cores, rocks
  9. Head towards WPT 4
    - a. Collect animals, 8 push cores, rocks
  10. Head towards WPT 5
    - a. Collect animals, more push cores, rocks
  11. trip 3 Niskins **CLOSE TO THE END OF THE DIVE** (near mussels, mats, bubbles, something seepy) then continue until all the basket is loaded
  12. If you reach the top of the feature, just run across the platform until the end of dive

Mussel Collections:

3 different patch sizes (small, medium, large, 3-5 each patch)

Target different mussel sizes – no need to actually measure them on the seafloor  
dead shells

Push core plan:

8 by mussels

8 by clams

2 sets of 8 in mats

Niskin plan:

1 niskin (#1 or 2) in bubbles

3 Niskins in seepy habitat

Rock plan:

variety of sites (Nancy/Jason to guide), 2-3

## RB-1903 – DEEP SEARCH

Dive: J2-1138

Launch: 1200 on 04/29/19

Site: Richardson West

31.8884N, -77.6964W

31 53.311N, -77 41.792W

Depth: 723 m

Corals	Ideal collection needs	location
Lophelia	1 big collection, 10 small	biobox, 3 mussel pots
Enallopsammia	>10	quivers
Desmophyllum	>10	quivers or biobox
Madrepora	?	quivers or biobox
Plumarella	10	quivers
white plexaurid	10	quivers
other octocorals	opportunistic	quivers
other cup corals	opportunistic	quivers

Other critter needs	Ideal collection needs	location
Eumunida	opportunistic	slurp
Other squat		
lobsters	opportunistic	slurp
Asteroschema	opportunistic	biobox/quivers/slurp
Echinus	opportunistic	biobox
Sponges	opportunistic	

**Basket:** 11 push cores on port swing arm, 8 sample quivers on stbd swing arm, 2 sample quivers on the sled, 4 niskins, 5-chamber slurp, 2 large bioboxes (6 inserts), 3 markers, 3 coral pots, milk crate for ROCKS

**All quivers ON STARBOARD SWINGARM except #7 are set up for microbial samples – only 1 species in each (3 minimum, 5 ideal Enallopsammia or Lophelia)**

### **Imagery:**

Make sure lasers are on for all transits, off for glamor shots

White balance (one push) when sitting down or starting transiting

Set up shot, then hands off controller for 10-20 secs

Notes: Watch leads should take copious notes in notebook, **if you see trash, pick it up if it doesn't impact science or is dangerous.**

1. Take a set of push cores if you can and a rock if you see one
2. Transit to WP1, find a good coral collection site

3. When you see them, collect a diversity of corals (**SEE TABLE**)
  - a. Octocorals, antipatharians, Enallopsammia into quivers
  - b. Scleractinians into biobox (Lophelia, Desmophyllum, Madrepora)
4. Take a coral pot
  - a. Only turn T-handle counter-clockwise when handling
  - b. Push into coral, turning counter-clockwise
  - c. When it's in, engage ram on manipulator
  - d. Turn pot clockwise
  - e. Keep turning until you see the black mark on string
  - f. Pick it up and return to holster
5. Head towards WPT 2
  - a. Collect corals, 2<sup>nd</sup> coral pot, more push cores, rocks
6. Head towards WPT 3
  - a. Collect corals, last coral pot, more push cores, rocks
7. trip 3 Niskins **CLOSE TO THE END OF THE DIVE** (near lots of corals)
8. Come home

## **Appendix D - Jason Dive Summaries**



## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1128

**Chief Scientist:** Erik Cordes

**Report Date:** 4/11/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 32N 78W

**Weather:** Good for launch/ At limit for recovery

**Dive Times:** GMT

### Dive Activities/Future Activities:

Coral pots, Push cores, Coral samples to quivers, Samples to Bio Box's, Reson and slurp mounted but not utilized

**Reason for Dive Termination:** Objectives completed

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0

### Completed Dive Summaries:

**Vehicle Status:** No problems with vehicle.

## **Weather Forecast:**

Weather models have showers in your vicinity right thru Sat morning. Not much on satellite and radar right now. I think the best chance of a few showers will be tonight. I also think the windiest/roughest conditions will be late today thru tomorrow morning. Keep in mind, 1 heavy shower will be followed by a 30-60 minute wind speed lull, but on the leading edge of a heavy shower, winds could gust to 30-34 kts. Quietest conditions of the next 5 days will be Sat afternoon and evening. S winds will be increasing Sun and Sun night will feature strong, gusty winds and thunderstorms. Clearing skies Mon morning. Windy and rough, but it will start to improve Mon afternoon.

## **Expedition Leader Comments:**

Great dive. Landed right on target. Typical first dive with a few teething pains. Wrap counter and dp to Control vans not functioning yet but should be soon. Bridge driving went very well. Sampling went well. As we started ascent the engineer had to go do wakeups and a bad wrap occurred that was noticed as soon as they got back. Had a little trouble adjusting levelwind but 1 call to Fred and we were getting things in order.

## **Chief Scientist Comments:**

This was a very successful dive. The primary goal was to ground-truth our multibeam and test our conceptual models of coral distribution. We spent a good deal of time in the beginning of the dive going through the camera controls with our cinematographer, and he had some helpful pointers, primarily the utilization of the auto white balance button any time that the distance of the subject changes significantly (i.e. sitting down vs. transiting). We are also getting some of the kinks out in our use of the event logger and the video system, but this is to be expected for the first dive.

There were abundant live corals and mounds of coral rubble throughout. It was truly a target-rich environment, and we utilized most of the different types of sampling gear including the bioboxes, coral quivers, and coral (mussel) pots. All of the pilots did an excellent job with the various collections. We did not use the push cores because of the sediment type (there was no sediment), or the slurp sampler due to a lack of suitable targets. Some of the coral quivers were hard to reach, so we are going to adjust the placement of the cores and quivers on the swing arms. One of the bioboxes (our own, not Jason group's) came up a bit warm, so we worked on the seal during the surface interval. The science party commented that the niskins were in an excellent position and they worked well and the Jason group is thanked for their efforts in rigging these bottles.

## **Contact Numbers:**

**WHOI/NDSF**

**Vessel Other**

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## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1129

**Chief Scientist:** Erik Cordes

**Report Date:** 4/14/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 32N 78W

**Weather:** Had to delay launch for weather. It layed down enough for launch but was coming back up late am so recovered 8am

**Dive Times:** GMT

### Dive Activities/Future Activities:

Coral pots, Coral samples to quivers, Samples to Bio Box's, Reson and McLane pump deploy and recover

**Reason for Dive Termination:** Weather

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0
J2-1129	4/13-4/14	746	1:07	1:20	11:15	13:42	56:53	32:53

### Completed Dive Summaries:

**Vehicle Status:** No problems with vehicle. Need to dial in a few of the views to Both upper and lower Niskins

**Weather Forecast: Forecast to deteriorate significantly today**

Large low pressure system moving NE across the midwest this morning, and is trailing a strong cold front through the south. Strong squall line of thunderstorms (with severe weather) is moving E and will pass across FL Panhandle this afternoon, shifting off the South Carolina coast by close to midnight tonight. Winds will increase from the S this evening up to 30-40kt and gusts to 50+kt possible. I can't rule out the chance for an isolated waterspouts and some thunder/lightning within this squall line, which should pass near you between 2am and 8am tomorrow. S winds shift into the W behind the front, and wind speeds a little lower. Skies should clear within a few hours after the squall line passes, with winds then diminishing and veering through late Mon into Tues. Fair weather and lighter winds/seas expected for most of Tues and Wed. Thurs we could have another cold front moving across the South, poised to shift offshore before the end of the week.

**Expedition Leader Comments:**

Good dive. 1.6 knots of surface current. Had to dial in the levelwind a few times and not sure we have it spot on. Had tested at transition during descent but still had troubles with cable laying in nicely during ascent. Launch and recovery went very well except for Level wind issues. Akel got the ship dialed in spot on. Sampling went well except lower Niskins did not trip. Due to weather call not all objectives were completed.

**Chief Scientist Comments:**

**Contact Numbers:**

**WHOI/NDSF**

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## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1130

**Chief Scientist:** Amanda Demopoulos

**Report Date:** 4/17/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 32N 78W

**Weather:** Very nice for both LAR

**Dive Times:** GMT

### Dive Activities/Future Activities:

Coral pots, Coral samples to quivers, Samples to Bio Box's, Slurp and push cores

**Reason for Dive Termination:** Objectives completed

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0
J2-1129	4/13-4/14	746	1:07	1:20	11:15	13:42	56:53	32:53

### Completed Dive Summaries:

**Vehicle Status:** We have an AC ground fault that appears after submersion but disappears during descent. No other problems.

**Weather Forecast: Short term looks good. Expected to deteriorate significantly Thursday PM.**

**Expedition Leader Comments:**

Good dive. 2.2 knots of surface current. Sampling went well. Adjusted level wind during descent and had to do no other adjustments. One of the large Niskins spit a hose clamp and slid down enough to not fully close when tripped. I was advised this had small impact on Science.

**Chief Scientist Comments:**

The goal of this dive was to traverse a mound feature located at Savannah Banks, from the base to the top of the mound, imaging benthic organisms and their associated habitats and collecting specimens and environmental samples. We planned to collect multiple coral species, several sediment push cores, coral pots, rocks, water samples, and slurp mobile taxa, opportunistically. While we were unsuccessful at finding any rocks to sample as a consequence of the environment, we achieved all of the major dive objectives.

The current on bottom was challenging, but the pilots were able to efficiently maneuver and work with the currents. Despite these conditions, the pilots were able to make excellent collections. One of the niskins didn't close completely, but the issue was resolved prior to the next dive. Because the three other niskins fired, we had sufficient water for our sampling needs for the dive. Overall, this was a highly successful dive and the scientists are still working on the samples collected while we prepare for the next one.



**Contact Numbers:**

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## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1131

**Chief Scientist:** Amanda Demopoulos

**Report Date:** 4/18/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 32N 78W

**Weather:** Very nice for launch. Deteriorating for recovery

**Dive Times:** GMT

### Dive Activities/Future Activities:

Coral pots, Coral samples to quivers, Push cores, rock collection, Samples to Bio Box's, Slurp and push cores

**Reason for Dive Termination:** Objectives completed

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0
J2-1129	4/13-4/14	746	1:07	1:20	11:15	13:42	56:53	32:53
J2-1130	4/17	554	1:19	1:06	8:42	11:07	60:47	0
J2-1131	4/17-4/18	1365	1:55	2:10	13:27	17:32	10:27	0

### Completed Dive Summaries:

**Vehicle Status:** We have an AC ground fault that appears after submersion but disappears during descent. No other problems.

**Weather Forecast:** Looks bad for the next 48 hours.

**Expedition Leader Comments:**

Good dive. .8 knots of surface current. Sampling went well. Level wind continues to drift. We are planning a test cast with the steel pig before the weather comes up.

**Chief Scientist Comments:**

The primary objective of the dive was to investigate a steep feature within the Blake Ridge region. Previous Alvin and D2 (ROV, Okeanos) dives to the north and south of the dive target revealed diverse communities of corals and coral communities, so this exploratory dive had the potential for being very exciting, and it did not disappoint. As soon as we reached the seafloor, we encountered diverse coral communities, with several species of octocorals (isidiids, paramuricids, plexaurids, primnoids), black and stony corals represented. Several enormous dead coral skeletons (either black coral or bamboo) were identified and a few of these were collected for microchemical analysis. We observed very few fish species but imaged an interesting cusk eel loaded with parasites.

All of the science objectives were met, and the basket was full. We appreciate the attention the ROV group paid to ensuring that we dived in the correct location, after accounting for current speed and direction. The pilots did an exceptional job collecting a variety of challenging samples that are now keeping the scientists busy for days. They also helped us collect great imagery for the project. We ended up maxing out the cards recording the 4K imagery, but Scotty resolved the problem quickly. Great work!

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## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1132

**Chief Scientist:** Amanda Demopoulos

**Report Date:** 4/18/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 35W 75.2W

**Weather:** Moderate for launch. Had a pretty good blow during ops. Delayed recovery to let it come down. Blew 30 knots for a few hours.

**Dive Times:** GMT

### Dive Activities/Future Activities:

Coral pots, Coral samples to quivers, Push cores, rock collection, Samples to Bio Box's, Slurp and push cores

**Reason for Dive Termination:** Objectives completed

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0
J2-1129	4/13-4/14	746	1:07	1:20	11:15	13:42	56:53	32:53

### Completed Dive Summaries:

**Vehicle Status:** Aft P+T had a .9 ground during dive. No impact on science.

**Weather Forecast:** Looks better for the next few days.

**Expedition Leader Comments:**

Very productive dive. 2.7 knots of current for launch. 4 knots of current during recovery. As it was a deeper dive wire angle was the best we had all cruise. Ship lost position 2 times because of Current/Wind combination. Very challenging recovery with current so hi. As we went to launch vehicle ship came to the end of a position move. It was noticed while unlatching. Good catch. I have spoken with bridge about not doing short position moves in high current areas

**Chief Scientist Comments:**

We had a great dive at Pamlico Canyon today. The seafloor at the start of the dive was composed of heavily sedimented, sloped terrain, with moderate marine snow in the water column. Throughout the dive, while heading upslope along the waypoints, we observed a few species of coral (Acanthogorgia, Solenosmilia, Desmophyllum) that occupied the underside of ledges and several brisingid seastars on the sides of steep features. Push cores were collected at the base of the canyon, and along the steps opportunistically. Several coral samples were collected into the quivers, bioboxes, and coral pots, sometimes on the fly with a scoop against steep walls.

The dive was incredibly productive, despite some major sampling challenges due to the steep cliffs and locations of target specimens. The pilots did a great job with the difficult sampling and the scientists met all of their collection objectives. Despite the high current

conditions throughout the dive and weather that came on toward the latter half of the dive, the ROV and ship operators were able to keep the ROV in the water, on the bottom, and sampling. Great work!

**Contact Numbers:**

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## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1133

**Chief Scientist:** Amanda Demopoulos

**Report Date:** 4/23/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 35.7W 74.8W

**Weather:** Good weather for LAR

**Dive Times:** GMT

### Dive Activities/Future Activities:

Coral pots, Coral samples to quivers, Push cores, rock collection, Samples to Bio Box's, Slurp and push cores

**Reason for Dive Termination:** Objectives completed

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0
J2-1129	4/13-4/14	746	1:07	1:20	11:15	13:42	56:53	32:53
J2-1130	4/17	554	1:19	1:06	8:42	11:07	60:47	0
J2-1131	4/17-4/18	1365	1:55	2:10	13:27	17:32	10:27	0



J2-1132	4/21-4/22	1840	2:53	1:15	23:40	27:48	71:37	0
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**Completed Dive Summaries:**

**Vehicle Status:** Got a big Tuna stuck in aft bay for a bit. No other issues

**Weather Forecast:** Moderate blow expected this evening.

**Expedition Leader Comments:** Another good dive. All went well till the Tuna attacked. Shut off all lights to try and make it go away. When we turned lights back on Tuna was stuck in aft bay. Went away for a bit once it extracted itself but started on the bow of vehicle again. It hit itself multiple time and seemed to knock itself out and eventually fell backwards off the basket. Not sure Tuna survived.

**Chief Scientist Comments:**

This was an incredible dive in an area that was recently detected through multibeam mapping efforts and previously imaged by Sentry in 2017. We conducted an Alvin dive at a site ~ 1.5 nm to the northwest of today's dive target. The seep dive was incredibly diverse in terms of fishes, including rock fish, snipe eels, long-finned hake, and midwater fishes, plus we saw lots of schooling fish and shoals of squid. Hammerheads, a manta ray, and a tuna also were observed. We collected rocks and many sediment cores within bacterial mats and bubbles, plus water samples. While collecting a rock, we found a tube worm (Vestimentiferan: cf. Lamellibrachia), which to our knowledge has not be collected along the US Atlantic seeps and could represent a discovery. In addition, we found Lophelia growing on carbonate, which was a nice surprise. All of the scientific objectives were met by the dive and the expert collecting capabilities of the pilots and ROV crew.

We were especially grateful for the pre-dive installation of the core umbrella, which helped protect the gassy cores from escaping from the basket during recovery.

**Contact Numbers:**

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## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1134

**Chief Scientist:** Amanda Demopoulos

**Report Date:** 4/24/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 35.9W 74.8W

**Weather:** Good weather for Launch. Blew pretty good through the night. Just letting go for recovery

**Dive Times:** GMT

**Dive Activities/Future Activities:** Coral pots, Coral samples to quivers, Push cores, rock collection, Samples to Bio Box's, Slurp and push cores

**Reason for Dive Termination:** Objectives completed

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0
J2-1129	4/13-4/14	746	1:07	1:20	11:15	13:42	56:53	32:53
J2-1130	4/17	554	1:19	1:06	8:42	11:07	60:47	0
J2-1131	4/17-4/18	1365	1:55	2:10	13:27	17:32	10:27	0

J2-1132	4/21-4/22	1840	2:53	1:15	23:40	27:48	71:37	0
J2-1133	4/23	355	1:10	:32	9:28	11:10	9:15	0

**Completed Dive Summaries:**

**Vehicle Status:** Slurp damaged during ops. Intake broke free of hose. This impacted science. Had 2 AFX trips during first few hours of dive. Thoughts are it was GF monitor related.

**Weather Forecast:** Supposed to lay down this afternoon/evening and come back up tomorrow afternoon

**Expedition Leader Comments:** Another good dive. Aside from AFX trips and Slurp failure it went very well.

**Chief Scientist Comments:**

This was the first ROV dive at a known seep environment previously imaged by Sentry in 2017 and waypoints were selected based on confirmed rock, mat, and fish locations from that imagery. The ROV lost power twice and the slurp hose disconnected, but despite these issues, the dive was very successful and the scientists were able to accomplish all of their objectives. We observed dense fish communities at several hard bottom, carbonate features throughout the dive, but the dive track was dominated by soft sediments with lots of sea stars. Given the recovery of a tube worm at the Pea Island seep on the previous dive, we were keen to see if more could be found at Kitty Hawk, and we were very successful. At least 4 more tube worms were collected on this dive; these animals are previously undocumented from the US Atlantic seeps, by collecting rocks from the seafloor. Rock and shell samples were collected to characterize their mineral

composition, enable approximation of the ages of the seep features and constrain the environmental conditions. Sediment was collected at three target environments, bubbles, mats, and background habitats, for geochemical and ecological assessments. Several squat lobsters and quill worms were slurped to provide tissue for molecular and food web studies. Lastly, the niskin samples will be processed for eDNA and microbial community analysis to facilitate community comparisons among seep, canyon, and coral environments.

I've been very pleased with the skill and efficiency of the ROV team, and their attention to detail, all of which have enabled very successful dives thus far on this mission.

**Contact Numbers:**

**WHOI /NDSF**

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## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1135

**Chief Scientist:** Amanda Demopoulos

**Report Date:** 4/25/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 33.5W 74.8W

**Weather:** Forecast says deteriorating weather. Pretty good for launch. Called dive because winds(mid 20s) were coming up.

**Dive Times:** GMT

**Dive Activities/Future Activities:** Coral samples to quivers, Push cores, rock collection, Samples to Bio Box's, Slurp and push cores

**Reason for Dive Termination:** Weather call

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0
J2-1129	4/13-4/14	746	1:07	1:20	11:15	13:42	56:53	32:53
J2-1130	4/17	554	1:19	1:06	8:42	11:07	60:47	0
J2-1131	4/17-4/18	1365	1:55	2:10	13:27	17:32	10:27	0

J2-1132	4/21-4/22	1840	2:53	1:15	23:40	27:48	71:37	0
J2-1133	4/23	355	1:10	:32	9:28	11:10	9:15	0
J2-1134	4/24	477	:51	:35	14:46	16:12	7:39	0
J2-1135	4/25	1030	2:05	1:02	2:39	5:48	25:54	0

**Completed Dive Summaries:**

**Vehicle Status:** Vehicle in good shape. No problems

**Weather Forecast:** Forecast calls for the weather to deteriorate significantly .

**Expedition Leader Comments:** Very good but abbreviated dive. Had a short weather window and took advantage of it.

**Chief Scientist Comments:**

This exploratory dive examined a target identified in a coral suitability model for the region, representing a validation test of the model. The start of the dive at the base of a steep feature was composed of soft sediments, surprisingly interspersed with small bacterial microbial mats. We collected slurp and core samples at the mats before heading to the steep slope. While traversing upslope, we encountered large boulders that were colonized with encrusting sponges of various colors and a few different corals. These boulders were dramatic features on the scanning sonar and possibly represent a previously unknown landslide feature. The rock collection will be characterized to better understand the broader geological

feature. Attached to these rocks, we observed a fairly diverse assemblage of deep-sea corals from at least five different families. Given the short dive duration, we targeted collections of a few of the dominant corals in order to aid in species identification and contribute to food-web studies. Niskins were tripped at the end of the dive by the corals.

We were pleased that all the equipment worked and that we were able to do this short exploratory dive before the weather picked up. The ROV operators did an excellent job, progressing through the collections in an efficient manner. This helped address a number project objectives and will improve the validate the habitat suitability models developed to improve our understanding of the distribution of deep-sea corals.

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## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1136

**Chief Scientist:** Amanda Demopoulos

**Report Date:** 4/28/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 32.4W 76.2W

**Weather:** Fair

**Dive Times:** GMT

**Dive Activities/Future Activities:** Coral samples to quivers, Mussel pots, Push cores, rock collection, Samples to Bio Box's, Slurp and push cores

**Reason for Dive Termination:** Allotted time up

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0
J2-1129	4/13-4/14	746	1:07	1:20	11:15	13:42	56:53	32:53
J2-1130	4/17	554	1:19	1:06	8:42	11:07	60:47	0
J2-1131	4/17-4/18	1365	1:55	2:10	13:27	17:32	10:27	0

J2-1132	4/21-4/22	1840	2:53	1:15	23:40	27:48	71:37	0
J2-1133	4/23	355	1:10	:32	9:28	11:10	9:15	0
J2-1134	4/24	477	:51	:35	14:46	16:12	7:39	0
J2-1135	4/25	1030	2:05	1:02	2:39	5:48	25:54	0
J2-1136	4/27-4/28	2169	1:33	1:45	8:46	12:04	21:09	0

**Completed Dive Summaries:**

**Vehicle Status:** A Ground fault tripped the AFX right after leaving bottom. Had to give it 2 tries before it came back. Vehicle in good shape otherwise

**Weather Forecast:** Fair seas and Moderate winds

**Expedition Leader Comments:** Very good dive other than afx trip. 1.8 knots of surface current for launch. .4 Knots for recovery. 2200 meter dive so wire angle stayed nice for dive

**Chief Scientist Comments:** This was a great dive exploring Blake Ridge seeps. Our primary goal was to target collections at mussel beds, bacterial mats, and carbonate rock environments, while also characterizing the environment via high resolution imagery. The dive was a great success and we were able to accomplish all of our objectives. We set down on bottom and transited toward waypoints selected based on previous Alvin dives in 2003 and found several old bucket lid markers and Robert Carney's colonization experiment. The

experiment was a bucket filled with oyster shells and rabbit food, and after inspecting the lid, we found Bathymodiolus mussels and anemones attached. During the transit around the site between waypoints, we encountered dense mussel beds, dead clam beds, bacterial mats, and an exciting hydrate mound. We collected some amazing imagery at the mound feature that included two Gaidropsarus sp. fish (rocklings) hanging out in the crevice underneath solid methane hydrate. Really incredible. Several of the collections required precise manipulator skills and the pilots accomplished the tasks with ease. The dive went well and the power failure had no impact on the science.

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## ROV Jason Daily Report

**Cruise Number:** RB 19-03

**Dive number:** J2-1137

**Chief Scientist:** Amanda Demopoulos

**Report Date:** 4/29/2019

**Expedition Leader:** Alberto Collasius Jr.

**Prepared By:** Expedition Leader

**Vessel Location:** Atlantic 32.4W 76.2W

**Weather:** Fair for launch, 24 knots of wind for recovery

**Dive Times:** GMT

**Dive Activities/Future Activities:** Coral samples to quivers, Mussel pots, Push cores, rock collection, Samples to Bio Box's, Slurp and push cores

**Reason for Dive Termination:** Allotted time up

Dive No.	Dates	Max Depth	Hours Descending	Hours Ascending	Hours on Bottom	Hours in water	Time On Deck	Time on Deck not available to science
J2-1128	4/10-4/11	792	:50	2:45	9:30	13:05		0
J2-1129	4/13-4/14	746	1:07	1:20	11:15	13:42	56:53	32:53
J2-1130	4/17	554	1:19	1:06	8:42	11:07	60:47	0
J2-1131	4/17-4/18	1365	1:55	2:10	13:27	17:32	10:27	0

J2-1132	4/21-4/22	1840	2:53	1:15	23:40	27:48	71:37	0
J2-1133	4/23	355	1:10	:32	9:28	11:10	9:15	0
J2-1134	4/24	477	:51	:35	14:46	16:12	7:39	0
J2-1135	4/25	1030	2:05	1:02	2:39	5:48	25:54	0
J2-1136	4/27-4/28	2169	1:33	1:45	8:46	12:04	21:09	0

**Completed Dive Summaries:**

**Vehicle Status:** Vehicle in very good working order

**Weather Forecast:** Fair seas and Moderate winds

**Expedition Leader Comments:** Great dive. No problems at all.

**Chief Scientist Comments:** This dive at Cape Fear helped us groundtruth some seep targets identified by Sentry in 2012. We found extensive bacterial mats, what appeared to be frenulate tubeworm patches, and carbonate rock. On several rock features we found corals, including *Anthomastus* and *Chrysogorgia*, and large sponges, as well as different fishes. We encountered odd shaped tubular mud rocks that have been previously observed at the northeast US Canyons. All of the collections were challenging due to the extremely swift currents at depth (even at 2600m!), complex bathymetry, and fragile specimens, but the pilots rose to the challenge and accomplished all of our dive objectives. Great job!

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