



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 biobox, 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 2nd cast was to the northeast, downstream from the site, and the 3rd 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 synphobranchids. 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 over night.

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 16th 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

(*Pseudodrifia*) 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 (*Pseudodrifia*), 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*, *Pseudodrifia*, 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 *Pseudodrifia* 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 moncore 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 moncore, 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 25th. 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. heckerae*) 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. heckerae*. 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 holothurian 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. Chrlotte 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. Andea Quattrini - Postdoctoral Researcher, Harvey Mudd College
28. Ivan Hurzeler - Filmmaker

Master Sample Sheet

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

Plans of the Day (PODs)

A compilation 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	Dive.CTD.Multicore.N umber	Site	Date.Collecte	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl			
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
1	RB1903_CTD01_N01	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	585	Water	NA					NA				NA				
2	RB1903_CTD01_N02	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	585	Water	NA					NA				NA				
3	RB1903_CTD01_N03	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	585	Water	NA	EC9801				NA	X			NA				
4	RB1903_CTD01_N04	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	585	Water	NA					NA				NA				
5	RB1903_CTD01_N05	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	585	Water	NA					NA				NA				
6	RB1903_CTD01_N06	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	500	Water	NA	EC9802				NA	X			NA				
7	RB1903_CTD01_N07	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	500	Water	NA					NA				NA				
8	RB1903_CTD01_N08	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	500	Water	NA					NA				NA				
9	RB1903_CTD01_N09	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	400	Water	NA	EC9803				NA	X			NA				
10	RB1903_CTD01_N10	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	400	Water	NA					NA				NA				
11	RB1903_CTD01_N11	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	400	Water	NA					NA				NA				
12	RB1903_CTD01_N12	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	300	Water	NA	EC9804				NA	X			NA				
13	RB1903_CTD01_N13	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	300	Water	NA					NA				NA				
14	RB1903_CTD01_N14	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	300	Water	NA					NA				NA				
15	RB1903_CTD01_N15	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	152	Water	NA	EC9805				NA	X			NA				
16	RB1903_CTD01_N16	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	152	Water	NA					NA				NA				
17	RB1903_CTD01_N17	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	152	Water	NA					NA				NA				
18	RB1903_CTD01_N18	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	64 (chl max)	Water	NA	EC9806				NA	X			NA				
19	RB1903_CTD01_N19	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	64 (chl max)	Water	NA					NA				NA				
20	RB1903_CTD01_N20	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	64 (chl max)	Water	NA					NA				NA				
21	RB1903_CTD01_N21	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	Surface	Water	NA	EC9807				NA	X			NA				
22	RB1903_CTD01_N22	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	Surface	Water	NA					NA				NA				
23	RB1903_CTD01_N23	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	Surface	Water	NA					NA				NA				
24	RB1903_CTD01_N24	CTD01	Stetson Shallow	April 9th, 2019	2:50:00	31.89211	78.4544333	Surface	Water	NA					NA				NA				
25	RB1903_CTD02_N01	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32.0.278	77.25.876	813	Water	NA					NA				NA				
26	RB1903_CTD02_N02	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32.0.278	77.25.876	813	Water	NA					NA				NA				
27	RB1903_CTD02_N03	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32.0.278	77.25.876	813	Water	NA					NA				NA				
28	RB1903_CTD02_N04	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32.0.278	77.25.876	813	Water	NA					NA				NA				
29	RB1903_CTD02_N05	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32.0.278	77.25.876	813	Water	NA					NA				NA				
30	RB1903_CTD02_N06	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32.0.278	77.25.876	813	Water	NA					NA				NA				
31	RB1903_CTD02_N07	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32.0.278	77.25.876	813	Water	NA					NA				NA				
32	RB1903_CTD02_N08	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32.0.278	77.25.876	813	Water	NA					NA				NA				
33	RB1903_CTD02_N09	CTD02	Richardson Hills	April 10th, 2019	8:31:00	32.0.278	77.25.876																

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl			
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
68	RB1903_J2-1128_B4_004	J2-1128	Richardson Hills	April 10th - 11th, 2019					Cladorhizid	NA	EC9834		X		NA				NA		CM_002	X	
69	RB1903_J2-1128_B4_005	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:29:00	31.8865	77.3686	762	Madrepora	NA	EC9836		X		NA				NA		CM_002	X	
70	RB1903_J2-1128_B4_006	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:39:00	31.8866	77.3688	763	Ophiuroid	NA	EC9852		X		NA				NA				
71	RB1903_J2-1128_B4_007	J2-1128	Richardson Hills	April 10th - 11th, 2019					Hydroids	NA					NA				NA				
72	RB1903_J2-1128_B4_008	J2-1128	Richardson Hills	April 10th - 11th, 2019					Annelid	NA					NA				NA				
73	RB1903_J2-1128_B4_Sieve	J2-1128	Richardson Hills	April 10th - 11th, 2019						NA					NA				NA				
74	RB1903_J2-1128_B5_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	31 53.202	77 22.0774	761	Ophiuroid	NA	EC9809		X		NA				NA		CM_002	X	
75	RB1903_J2-1128_B5_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	31 53.202	77 22.0774	761	Plumarella	NA	EC9810		X		NA				NA				
76	RB1903_J2-1128_B5_003	J2-1128	Richardson Hills	April 10th - 11th, 2019					Enallopsammia (w	NA	EC9830		X		NA				NA		CM_002	X	
77	RB1903_J2-1128_B5_004	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	31 53.202	77 22.0774	761	id Enallopsam	NA					NA				NA				
78	RB1903_J2-1128_B5_005	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	31 53.202	77 22.0774	761	Hydroids	NA					NA				NA				
79	RB1903_J2-1128_B5_006	J2-1128	Richardson Hills	April 10th - 11th, 2019	19:15:00	31 53.202	77 22.0774	761	Sponge	NA					NA				NA				
80	RB1903_J2-1128_B5_Sieve	J2-1128	Richardson Hills	April 10th - 11th, 2019					Sieved	NA					NA				NA				
81	RB1903_J2-1128_B6_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:55:00	31 52.997	77 22.33	756	Lophelia	NA					NA				NA	X	M_002	X	
82	RB1903_J2-1128_B6_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	5:55:00	31 52.997	77 22.33	756	Annelid	NA					NA				NA		CM_002	X	
83	RB1903_J2-1128_B6_Sieve	J2-1128	Richardson Hills	April 10th - 11th, 2019					Sieved	NA					NA				NA				
84	RB1903_J2-1128_Q1_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:12:00	31.8863	77.3689	752	White plexauri	NA	EC9813		X		NA				NA				
85	RB1903_J2-1128_Q1_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:12:00	31.8863	77.3689	752	Ophiuroid	NA					NA				NA				
86	RB1903_J2-1128_Q1_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	8:12:00	31.8863	77.3689	752	Hydroids	NA					NA				NA				
87	RB1903_J2-1128_Q2_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:10:00	31.8878	77.3658	754	Plumarella	NA	EC9814		X		NA				NA				
88	RB1903_J2-1128_Q2_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:15:00	31.8878	77.3657	754	White plexauri	NA					NA				NA				
89	RB1903_J2-1128_Q2_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:08:00	31.8878	77.3658	754	Enallopsammia	NA	EC9816		X		NA				NA		CM_002	X	
90	RB1903_J2-1128_Q2_004	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:15:00	31.8878	77.3657	754	Lophelia	NA	EC9817		X		NA				NA		CM_002	X	
91	RB1903_J2-1128_Q2_005	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:15:00	31.8878	77.3657	754	Ophiuroid	NA	EC9815		X		NA				NA				
92	RB1903_J2-1128_Q2_006	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:15:00	31.8878	77.3657	754	Eunicid	NA					NA				NA				
93	RB1903_J2-1128_Q2_007	J2-1128	Richardson Hills	April 10th - 11th, 2019					Amphipod	NA					NA				NA				
94	RB1903_J2-1128_Q2_008	J2-1128	Richardson Hills	April 10th - 11th, 2019					Annelid	NA					NA				NA				
95	RB1903_J2-1128_Q3_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:29:00	31.888	77.3657	756	Madrepora	NA	EC9826		X		NA				NA		CM_002	X	
96	RB1903_J2-1128_Q3_002	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:32:00	31.888	77.3657	756	Lophelia	NA	EC9827		X		NA				NA		CM_002	X	
97	RB1903_J2-1128_Q3_003	J2-1128	Richardson Hills	April 10th - 11th, 2019	10:32:00	31.888	77.3657	756	Ophiuroid	NA	EC9828		X		NA				NA				
98	RB1903_J2-1128_Q4_001	J2-1128	Richardson Hills	April 10th - 11th, 2019	3:05:00	31.8801	77.3738	792	Plumarella	NA	EC9818		X										

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth..m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl			
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
135	RB1903_J2-1228_M1-5	J2-1128	Richardson Hills	April 10th - 11th, 2019	7:09:00	31 57.991	77 22.354	757	Anemone	NA	EC9849		x		NA				NA				
136	RB1903_J2-1228_M1-Sieved	J2-1128	Richardson Hills	April 10th - 11th, 2019	7:09:00	31 57.991	77 22.354	757		NA					NA				NA				
137	RB1903_J2-1228_M3-1	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Live lophelia	NA	EC9850			x	NA				NA				
138	RB1903_J2-1228_M3-2	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Dead lophelia	NA	EC9851			x	NA				NA				
139	RB1903_J2-1228_M3-3	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	iacantha bider	NA	EC9853		x		NA				NA				
140	RB1903_J2-1228_M3-4	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Anemone	NA	EC9854		x		NA				NA				
141	RB1903_J2-1228_M3-5	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Annelid	NA	EC9855		x		NA				NA				
142	RB1903_J2-1228_M3-6	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Hydroid1	NA	EC9856		x		NA				NA				
143	RB1903_J2-1228_M3-7	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Urchin1	NA	EC9857		x		NA				NA				
144	RB1903_J2-1228_M3-8	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Eunice	NA	EC9858		x		NA				NA				
145	RB1903_J2-1228_M3-9	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Crinoid	NA	EC9859		x		NA				NA				
146	RB1903_J2-1228_M3-10	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Hexactenellid	NA	EC9860		x		NA				NA				
147	RB1903_J2-1228_M3-11	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Urchin2	NA	EC9861		x		NA				NA				
148	RB1903_J2-1228_M3-12	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731	Hydroid2	NA	EC9862		x		NA				NA				
149	RB1903_J2-1228_M3-Sieved	J2-1128	Richardson Hills	April 10th - 11th, 2019	11:29:00	31 53.349	77 21.945	731		NA					NA				NA				
150	RB1903_CTD03_N01	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA				NA				
151	RB1903_CTD03_N02	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
152	RB1903_CTD03_N03	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
153	RB1903_CTD03_N04	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
154	RB1903_CTD03_N05	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
155	RB1903_CTD03_N06	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
156	RB1903_CTD03_N07	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
157	RB1903_CTD03_N08	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
158	RB1903_CTD03_N09	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
159	RB1903_CTD03_N10	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
160	RB1903_CTD03_N11	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
161	RB1903_CTD03_N12	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
162	RB1903_CTD03_N13	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
163	RB1903_CTD03_N14	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
164	RB1903_CTD03_N15	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
165	RB1903_CTD03_N16	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
166	RB1903_CTD03_N17	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X			NA				
167	RB1903_CTD03_N18	CTD03	Richardson Hills	April 10th, 2019	18:02:00	31 53.576	77 21.8972	790	Water	NA					NA	X							

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth..m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg					Cheryl		
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
202	RB1903_CTD05_N04	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
203	RB1903_CTD05_N05	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
204	RB1903_CTD05_N06	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
205	RB1903_CTD05_N07	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
206	RB1903_CTD05_N08	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
207	RB1903_CTD05_N09	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
208	RB1903_CTD05_N10	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
209	RB1903_CTD05_N11	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
210	RB1903_CTD05_N12	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
211	RB1903_CTD05_N13	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
212	RB1903_CTD05_N14	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
213	RB1903_CTD05_N15	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
214	RB1903_CTD05_N16	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
215	RB1903_CTD05_N17	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
216	RB1903_CTD05_N18	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
217	RB1903_CTD05_N19	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
218	RB1903_CTD05_N20	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
219	RB1903_CTD05_N21	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
220	RB1903_CTD05_N22	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	737	Water	NA					NA				NA				
221	RB1903_CTD05_N23	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	Surface	Water	NA					NA				NA				
222	RB1903_CTD05_N24	CTD05	Richardson Hills	April 13th, 2019	14:30:00	31 59.0998	77 24.5122	Surface	Water	NA					NA				NA				
223	RB1903_CTD06_N01	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	774	Water	NA	EC9873				NA	x			NA			x	
224	RB1903_CTD06_N02	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	774	Water	NA					NA				NA			x	
225	RB1903_CTD06_N03	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	774	Water	NA					NA				NA			x	
226	RB1903_CTD06_N04	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	702	Water	NA	EC9874				NA	x			NA			x	
227	RB1903_CTD06_N05	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	702	Water	NA					NA				NA			x	
228	RB1903_CTD06_N06	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	702	Water	NA					NA				NA			x	
229	RB1903_CTD06_N07	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	559	Water	NA	EC9875				NA	x			NA			x	
230	RB1903_CTD06_N08	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	559	Water	NA					NA				NA			x	
231	RB1903_CTD06_N09	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	559	Water	NA					NA				NA			x	
232	RB1903_CTD06_N10	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	399	Water	NA	EC9876				NA	x			NA			x	
233	RB1903_CTD06_N11	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	399	Water	NA					NA				NA			x	
234	RB1903_CTD06_N12	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	399	Water	NA					NA				NA			x	
235	RB1903_CTD06_N13	CTD06	Richardson Hills	April 13th, 2019	16:30:00	31 59.4825	77 23.8062	299	Water	NA	EC9877				NA	x			NA				
236	RB1903_CTD06_N14	CTD06	Richardson Hills	April 13																			

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
269	RB1903_CTD07_N23	CTD07	Richardson Hills	April 13th, 2019	20:11:00	31 56.53	77 29.37	Surface	Water	NA					NA				NA				
270	RB1903_CTD07_N24	CTD07	Richardson Hills	April 13th, 2019	20:11:00	31 56.53	77 29.37	Surface	Water	NA					NA				NA				
271	RB1903_J2-1129_M1_01	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	Live lophelia	NA	EC9919	x		NA					NA				
272	RB1903_J2-1129_M1_02	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	Dead lophelia	NA	EC9920	x		NA					NA				
273	RB1903_J2-1129_M1_03	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	iacantha bider	NA	EC9921	x		NA					NA				
274	RB1903_J2-1129_M1_04	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	hexactenellid	NA	EC9922	x		NA					NA				
275	RB1903_J2-1129_M1_05	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	Shrimp	NA	EC9923	x		NA					NA				
276	RB1903_J2-1129_M1_06	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	hexactenellid 2	NA	EC9924	x		NA					NA				
277	RB1903_J2-1129_M1_07	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	Brittle Star	NA	EC9925	x		NA					NA				
278	RB1903_J2-1129_M1_08	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	Hydroid 1	NA	EC9926	x		NA					NA				
279	RB1903_J2-1129_M1_09	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	Hydroid 2	NA	EC9927	x		NA					NA				
280	RB1903_J2-1129_M1_10	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	Anemone 1	NA	EC9928	x		NA					NA				
281	RB1903_J2-1129_M1_11	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	Anemone 2	NA	EC9929	x		NA					NA				
282	RB1903_J2-1129_M1_12	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704	Annelid	NA	EC9930	x		NA					NA				
283	RB1903_J2-1129_M1_Sieved	J2-1129	Richardson A4963	April 13th-April 14th, 2019	3:30:00	31 59.049	77 24.682	704		NA				NA					NA				
284	RB1903_J2-1129_M2_01	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704	Live lophelia	NA	EC9931	x		NA					NA				
285	RB1903_J2-1129_M2_02	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704	Dead lophelia	NA	EC9932	x		NA					NA				
286	RB1903_J2-1129_M2_03	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704	Hydroid 1	NA	EC9933	x		NA					NA				
287	RB1903_J2-1129_M2_04	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704	hecopsammii	NA	EC9934	x		NA					NA				
288	RB1903_J2-1129_M2_05	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704	Eunice	NA	EC9935	x		NA					NA				
289	RB1903_J2-1129_M2_06	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704	Shrimp	NA	EC9936	x		NA					NA				
290	RB1903_J2-1129_M2_07	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704	Crinoid	NA	EC9937	x		NA					NA				
291	RB1903_J2-1129_M2_08	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704	Hydroid 2	NA	EC9938	x		NA					NA				
292	RB1903_J2-1129_M2_09	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704	Ophiuroid	NA	EC9939	x		NA					NA				
293	RB1903_J2-1129_M2_Sieved	J2-1129	Richardson A4963	April 13th-April 14th, 2019	4:20:00	31.9838	77.4112	704		NA				NA					NA				
294	RB1903_J2-1129_M3_01	J2-1129	Richardson A4963	April 13th-April 14th, 2019	11:07:00	31.9842	77.41149	708	Live lophelia	NA	EC9940	x		NA					NA				
295	RB1903_J2-1129_M3_02	J2-1129	Richardson A4963	April 13th-April 14th, 2019	11:07:00	31.9842	77.41149	708	Dead lophelia	NA	EC9941	x		NA					NA				
296	RB1903_J2-1129_M3_03	J2-1129	Richardson A4963	April 13th-April 14th, 2019	11:07:00	31.9842	77.41149	708	Limpet	NA	EC9942	x		NA					NA				
297	RB1903_J2-1129_M3_04	J2-1129	Richardson A4963	April 13th-April 14th, 2019	11:07:00	31.9842	77.41149	708	Asteroid	NA	EC9943	x		NA					NA				
298	RB1903_J2-1129_M3_05	J2-1129	Richardson A4963	April 13th-April 14th, 2019	11:07:00	31.9842	77.41149	708	Eunice	NA	EC9944	x		NA					NA				
299	RB1903_J2-1129_M3_06	J2-1129	Richardson A4963	April 13th-April 14th, 2019	11:07:00	31.9842	77.41149	708	iacantha bider	NA	EC9945	x		NA					NA				
300	RB1903_J2-1129_M3_07	J2-1129	Richardson A4963	April 13th-April 14th,																			

RB1903 Master Sample Sheet

												Erik Cordes				Chris Kellogg				Cheryl			
	Sample Number	Dive.CTD.Multicore.N umber	Site	Date.Collecte	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
336	RB1903_J2-1129_B3_22	J2-1129	Richardson A4963	April 13th-April 14th, 2019	10:33:22	31.984	77.411		Hydroid	NA					NA				NA				
337	RB1903_J2-1129_B3_23	J2-1129	Richardson A4963	April 13th-April 14th, 2019	10:33:22	31.984	77.411		Eunicid	NA					NA				NA				
338	RB1903_J2-1129_B3_24	J2-1129	Richardson A4963	April 13th-April 14th, 2019	10:33:22	31.984	77.411		Pseudodrifra	NA					NA				NA				
339	RB1903_J2-1129_B3_25	J2-1129	Richardson A4963	April 13th-April 14th, 2019	10:33:22	31.984	77.411		Sponge - Yellow	NA					NA				NA				
340	RB1903_J2-1129_B3_26	J2-1129	Richardson A4963	April 13th-April 14th, 2019	10:33:22	31.984	77.411		Sponge -White	NA					NA				NA				
341	RB1903_J2-1129_B3_Sieved	J2-1129	Richardson A4963	April 13th-April 14th, 2019	10:33:22	31.984	77.411	not listed		NA					NA				NA				
342	RB1903_J2-1129_B3_Polynoid	J2-1129	Richardson A4963	April 13th-April 14th, 2019	10:33:22	31.984	77.411	not listed	Polynoid	NA					NA				NA				
343	RB1903_J2-1129_Q1_01	J2-1129	Richardson A4963	April 13th-April 14th, 2019	2:58:00	31 59.06	77 24.68	700	Plumarella	NA	EC9911	x			NA				NA				
344	RB1903_J2-1129_Q1_02	J2-1129	Richardson A4963	April 13th-April 14th, 2019	2:58:00	31 59.06	77 24.68	700	Plumarella	NA	EC9912	x			NA				NA				
345	RB1903_J2-1129_Q1_03	J2-1129	Richardson A4963	April 13th-April 14th, 2019	2:58:00	31 59.06	77 24.68	700	Plumarella	NA	EC9913	x			NA				NA				
346	RB1903_J2-1129_Q1_04	J2-1129	Richardson A4963	April 13th-April 14th, 2019	2:58:00	31 59.06	77 24.68	700	Hydroid	NA					NA				NA				
347	RB1903_J2-1129_Q1_Annelid	J2-1129	Richardson A4963	April 13th-April 14th, 2019	2:58:00	31 59.06	77 24.68	700	Annelid	NA					NA				NA				
348	RB1903_J2-1129_Q1_Capetellid	J2-1129	Richardson A4963	April 13th-April 14th, 2019	2:58:00	31 59.06	77 24.68	700	Capetellid	NA					NA				NA				
349	RB1903_J2-1129_Q1_Sieved	J2-1129	Richardson A4963	April 13th-April 14th, 2019	2:58:00	31 59.06	77 24.68	700		NA					NA				NA				
350	RB1903_J2-1129_Q2_01	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:03:00	31 98.394	77 41.11	696	Plumarella	NA	EC9909	x			NA				NA				
351	RB1903_J2-1129_Q2_02	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:06:00	31 98.394	77 41.11	696	Cup coral	NA	EC9910	x			NA				NA		CM_00288	x	
352	RB1903_J2-1129_Q4_01	J2-1129	Richardson A4963	April 13th-April 14th, 2019	6:10:00	31 98.473	77 41.077	690	Lophelia	NA					NA				NA		x	M_00287	x
353	RB1903_J2-1129_Q4_02	J2-1129	Richardson A4963	April 13th-April 14th, 2019	6:10:00	31 98.473	77 41.077	690	Hydroid	NA					NA				NA				
354	RB1903_J2-1129_Q4_03	J2-1129	Richardson A4963	April 13th-April 14th, 2019	6:10:00	31 98.473	77 41.077	690	Ophiuroid	NA					NA				NA				
355	RB1903_J2-1129_Q4_04	J2-1129	Richardson A4963	April 13th-April 14th, 2019	6:10:00	31 98.473	77 41.077	690	Anemone	NA					NA				NA				
356	RB1903_J2-1129_Q5_01	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:46:00	31 98.441	77 41.07	not listed	Plumarella	NA					NA				NA				
357	RB1903_J2-1129_Q5_02	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:46:00	31 98.441	77 41.07	not listed	White plexauri	NA					NA				NA				
358	RB1903_J2-1129_Q5_03	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:48:00	31 98.441	77 41.07	not listed	Cup coral	NA					NA				NA		CM_00280	x	
359	RB1903_J2-1129_Q5_04	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:55:00	31 98.441	77 41.07	not listed	ellow plexauri	NA	EC9898	x			NA				NA				
360	RB1903_J2-1129_Q5_05	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:55:00	31 98.441	77 41.07	not listed	Plumarella	NA					NA				NA				
361	RB1903_J2-1129_Q5_06	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:48:00	31 98.441	77 41.07	not listed	Anthomastus	NA	EC9900	x			NA				NA				
362	RB1903_J2-1129_Q5_07	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:55:00	31 98.441	77 41.07	not listed	hecapsammis	NA					NA				NA		CM_00281	x	
363	RB1903_J2-1129_Q5_08	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:55:00	31 98.441	77 41.07	not listed	Plumarella	NA	EC9901	x			NA				NA				
364	RB1903_J2-1129_Q5_09	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:55:00	31 98.441	77 41.07	not listed	urid on Plum	NA	EC9903	x			NA				NA				
365	RB1903_J2-1129_Q5_10	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:55:00	31 98.441	77 41.07	not listed	White plexauri	NA					NA				NA				
366	RB1903_J2-1129_Q5_11	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:55:00	31 98.441	77 41.07	not listed	White plexauri	NA					NA				NA				
367	RB1903_J2-1129_Q5_12	J2-1129	Richardson A4963	April 13th-April 14th, 2019	5:55:00	31 98.441	77 41.07																

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date.Collecte	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl			
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
403	RB1903_CTD08_N02	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water	NA					NA				NA				x
404	RB1903_CTD08_N03	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water	NA					NA				NA				x
405	RB1903_CTD08_N04	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water	NA					NA				NA				
406	RB1903_CTD08_N05	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water	NA					NA				NA				
407	RB1903_CTD08_N06	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water	NA	EC9953				NA	x			NA				
408	RB1903_CTD08_N07	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	535	Water	NA					NA				NA				
409	RB1903_CTD08_N08	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	488	Water	NA	EC9954				NA	x			NA				x
410	RB1903_CTD08_N09	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	488	Water	NA					NA				NA				x
411	RB1903_CTD08_N10	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	488	Water	NA					NA				NA				x
412	RB1903_CTD08_N11	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	382	Water	NA	EC9955				NA	x			NA				x
413	RB1903_CTD08_N12	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	382	Water (DID NOT F	NA					NA				NA				
414	RB1903_CTD08_N13	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	382	Water	NA					NA				NA				x
415	RB1903_CTD08_N14	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	240	Water	NA	EC9956				NA	x			NA				x
416	RB1903_CTD08_N15	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	240	Water	NA					NA				NA				x
417	RB1903_CTD08_N16	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	240	Water	NA					NA				NA				x
418	RB1903_CTD08_N17	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	80	Water	NA	EC9957				NA	x			NA				
419	RB1903_CTD08_N18	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	80	Water	NA					NA				NA				
420	RB1903_CTD08_N19	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	80	Water	NA					NA				NA				
421	RB1903_CTD08_N20	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	surface	Water	NA					NA				NA				x
422	RB1903_CTD08_N21	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	surface	Water	NA					NA				NA				x
423	RB1903_CTD08_N22	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	surface	Water	NA					NA				NA				x
424	RB1903_CTD08_N23	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	surface	Water	NA	EC9958				NA	x			NA				
425	RB1903_CTD08_N24	CTD08	Savannah Banks	April 16th, 2019	22:37:00	31 44.6662	79 12.5975	surface	Water	NA					NA				NA				
426	RB1903_J2_1130_M1-1	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	Live lophelia	NA	EC10025			x	NA				NA				
427	RB1903_J2_1130_M1-2	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	Dead Lophelia	NA	EC10026			x	NA				NA				
428	RB1903_J2_1130_M1-3	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	iacantha bider	NA	EC10027		x		NA				NA				
429	RB1903_J2_1130_M1-4	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	Eunice	NA	EC10028		x		NA				NA				
430	RB1903_J2_1130_M1-5	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	Cidarid	NA	EC10029		x		NA				NA				
431	RB1903_J2_1130_M1-6	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	Amphipod	NA	EC10030		x		NA				NA				
432	RB1903_J2_1130_M1-7	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	Annelid	NA	EC10031		x		NA				NA				
433	RB1903_J2_1130_M1-8	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	Hydroid1	NA	Ec10032		x		NA				NA				
434	RB1903_J2_1130_M1-9	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	Hydroid2	NA	EC10033		x		NA				NA				
435	RB1903_J2_1130_M1-10	J2-1130	Savannah Banks	April 17th, 2019	3:39:00	31 74.82	77 21.03	540	Sargassum	NA	EC10034		x		NA				NA				
436	RB1903_J2_1130_M2-1	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31 74.93	77 20.91	523	Live lophelia	NA	EC10035			x	NA				NA				
437	RB1903_J2_1130_M2-2	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31 74.93	77 20.91	523	Dead Lophelia	NA	EC10036			x	NA				NA				
438	RB1903_J2_1130_M2-3	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31 74.93	77 20.91	523	Crinoid	NA	EC10037		x		NA				NA				
439	RB1903_J2_1130_M2-4	J2-1130	Savannah Banks	April 17th, 2019	4:52:00	31 74.93	77 20.91	523	Irchin (Echinus	NA	EC10038		x		NA								

RB1903 Master Sample Sheet

	Sample Number	Dive CTD, Multicore, Number	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth..m.	Tentative.ID	Confirmed.ID	Erik Cordes				Chris Kellogg				Cheryl				
											Cordes.Number	LN2	ETOH	Voucher,Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA,RNA,Shield	Bacterial,Culture Plates,from,Tissue	CM..	ETOH.1	LN2.2
470	RB1903_J2_1130_B3_04	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31 74.962	77 20.88	515	Sargasum	NA					NA				NA				
471	RB1903_J2_1130_B3_05	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31 74.962	77 20.88	515	Ophiuroid	NA					NA				NA				
472	RB1903_J2_1130_B3_06	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31 74.962	77 20.88	515	Ophiuroid	NA					NA				NA				
473	RB1903_J2_1130_B3_07	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31 74.962	77 20.88	515	Ophiuroid	NA					NA				NA				
474	RB1903_J2_1130_B3_08	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31 74.962	77 20.88	515	Ophiuroid	NA					NA				NA				
475	RB1903_J2_1130_B3_09	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31 74.962	77 20.88	515	Snail	NA					NA				NA				
476	RB1903_J2_1130_B3_10	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31 74.962	77 20.88	515	Lophelia	NA					NA				NA				
477	RB1903_J2_1130_B3_11	J2-1130	Savannah Banks	April 17th, 2019	5:35:00	31 74.962	77 20.88	515	Plumarella	NA					NA				NA				
478	RB1903_J2_1130_B4_01	J2-1130	Savannah Banks	April 17th, 2019	5:53:00	31 74.99	77 20.854	510	Hexactinellid	NA	EC9985	x			NA				NA				
479	RB1903_J2_1130_B4_02	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Madrepora	NA	EC9986	x			NA				NA		CM_003'	x	
480	RB1903_J2_1130_B4_03	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Alyconacean	NA	EC9987	x			NA				NA				
481	RB1903_J2_1130_B4_04	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Squat Lobster	NA	EC9988	x			NA				NA		CM_003'	x	
482	RB1903_J2_1130_B4_05	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Hydroid	NA					NA				NA				
483	RB1903_J2_1130_B4_06	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Eunicid	NA					NA				NA		CM_003'	x	
484	RB1903_J2_1130_B4_07	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Glass Sponge	NA					NA				NA				
485	RB1903_J2_1130_B4_08	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Polynoid	NA					NA				NA				
486	RB1903_J2_1130_B4_09	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Amphipod	NA					NA				NA				
487	RB1903_J2_1130_B4_10	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Brittle Star	NA					NA				NA				
488	RB1903_J2_1130_B4_11	J2-1130	Savannah Banks	April 17th, 2019	5:54:00	31 74.99	77 20.854	510	Snail	NA					NA				NA				
489	RB1903_J2_1130_B5_01	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.7556	77.2038		Yellow Enallopsar	NA	EC9995	x			NA				NA		CM_003'	x	
490	RB1903_J2_1130_B5_02	J2-1130	Savannah Banks	April 17th, 2019	8:41:00	31.7556	77.2038		White Enallopsar	NA	EC9996	x			NA				NA		CM_003'	x	
491	RB1903_J2_1130_B5_03	J2-1130	Savannah Banks	April 17th, 2019	8:50:00	31.7556	77.2038		Alyconacean	NA	EC9997	x			NA				NA				
492	RB1903_J2_1130_B5_04	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.7556	77.2038		Crinoid	NA	EC9998	x			NA				NA				
493	RB1903_J2_1130_B5_05	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.7556	77.2038		Brittle Star	NA	EC9999	x			NA				NA				
494	RB1903_J2_1130_B5_06	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.7556	77.2038		Squat Lobster	NA					NA				NA				
495	RB1903_J2_1130_B5_07	J2-1130	Savannah Banks	April 17th, 2019	8:39:00	31.7556	77.2038		Brittle Star	NA					NA				NA				
496	RB1903_J2_1130_B6_01	J2-1130	Savannah Banks	April 17th, 2019	10:09:00	31.756	77.203		Plumarella	NA	EC10000	x			NA				NA				
497	RB1903_J2_1130_B6_02	J2-1130	Savannah Banks	April 17th, 2019	10:09:00	31.756	77.203		Plumarella	NA	EC10001	x			NA				NA				
498	RB1903_J2_1130_B6_03	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.756	77.203		Lophelia	NA	EC10002	x			NA				NA		CM_003'	x	
499	RB1903_J2_1130_B6_04	J2-1130	Savannah Banks	April 17th, 2019	10:47:00	31.757	77.2031		Yellow Enallopsar	NA	EC10003	x			NA				NA		CM_003'	x	
500	RB1903_J2_1130_B6_05	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.756	77.203		Crinoid	NA	EC10004	x			NA				NA				
501	RB1903_J2_1130_B6_06	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.756	77.203		Crinoid	NA	EC10005	x			NA				NA				
502	RB1903_J2_1130_B6_07	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.756	77.203		Crinoid	NA	EC10006	x			NA				NA				
503	RB1903_J2_1130_B6_08	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.756	77.203		Squat Lobster	NA	EC10007	x			NA				NA		CM_003'	x	
504	RB1903_J2_1130_B6_09	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.756	77.203		Barnacle	NA	EC10008	x			NA				NA				
505	RB1903_J2_1130_B6_10	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.756	77.203		Stylasterid	NA	EC10009	x			NA				NA				
506	RB1903_J2_1130_B6_11	J2-1130	Savannah Banks	April 17th, 2019	10:10:00	31.756	77.203		Hydroid	NA					NA								

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl			
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
537	RB1903_J2_1130_Q6_02	J2-1130	Savannah Banks	April 17th, 2019	7:08:00	31 75.204	77 20.62	507	Pseudodrifra	NA	EC9969		x	NA				NA					
538	RB1903_J2_1130_Q6_03	J2-1130	Savannah Banks	April 17th, 2019	7:06:00	31 75.204	77 20.62	507	Plumarella	NA	EC9968		x	NA				NA		CM_003	x		
539	RB1903_J2_1130_Q6_04	J2-1130	Savannah Banks	April 17th, 2019	7:06:00	31 75.204	77 20.62	507	Thecapsammi	NA	EC9970		x	NA				NA		CM_003	x		
540	RB1903_J2_1130_Q6_05	J2-1130	Savannah Banks	April 17th, 2019	7:06:00	31 75.204	77 20.62	507	Squat Lobster	NA	EC9971		x	NA				NA		CM_003	x		
541	RB1903_J2_1130_Q6_06	J2-1130	Savannah Banks	April 17th, 2019	7:06:00	31 75.204	77 20.62	507	Hydroid	NA				NA				NA					
542	RB1903_J2_1130_Q6_07	J2-1130	Savannah Banks	April 17th, 2019	7:06:00	31 75.204	77 20.62	507	Isopod	NA				NA				NA					
543	RB1903_J2_1130_Q7_01	J2-1130	Savannah Banks	April 17th, 2019	6:15:00	31 74.99	77 20.85	510	Cup coral	NA				NA				NA		CM_002	x		
544	RB1903_J2_1130_Q7_02	J2-1130	Savannah Banks	April 17th, 2019	6:11:00	31 74.99	77 20.85	510	Plumarella	NA	EC9966		x	NA				NA					
545	RB1903_J2_1130_Q7_03	J2-1130	Savannah Banks	April 17th, 2019	6:08:00	31 74.99	77 20.85	510	Lophelia	NA	EC9967		x	NA				NA		CM_002	x		
546	RB1903_J2_1130_Q7_04	J2-1130	Savannah Banks	April 17th, 2019	6:08:00	31 74.99	77 20.85	510	Hydroid	NA				NA				NA					
547	RB1903_J2_1130_Q7_05	J2-1130	Savannah Banks	April 17th, 2019	6:08:00	31 74.99	77 20.85	510	Annelid	NA				NA				NA		CM_003	x		
548	RB1903_J2_1130_Q7_06	J2-1130	Savannah Banks	April 17th, 2019	6:08:00	31 74.99	77 20.85	510	Sponge	NA				NA				NA					
549	RB1903_J2_1130_Q7_07	J2-1130	Savannah Banks	April 17th, 2019	6:08:00	31 74.99	77 20.85	510	Sponge	NA				NA				NA					
550	RB1903_J2_1130_Q7_08	J2-1130	Savannah Banks	April 17th, 2019	6:08:00	31 74.99	77 20.85	510	Sponge	NA				NA				NA					
551	RB1903_J2_1130_Q7_09	J2-1130	Savannah Banks	April 17th, 2019	6:08:00	31 74.99	77 20.85	510	Hydroid	NA				NA				NA					
552	RB1903_J2_1130_Q7_10	J2-1130	Savannah Banks	April 17th, 2019	6:08:00	31 74.99	77 20.85	510	Hydroid	NA				NA				NA					
553	RB1903_J2_1130_Q8_01	J2-1130	Savannah Banks	April 17th, 2019	6:36:00	31 75.047	77 20.802	509	Enallopsammi	NA				NA		x	x	NA		CM_003	x		
554	RB1903_J2_1130_SBlack_01	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Crinoid	NA	EC10016		x	NA				NA					
555	RB1903_J2_1130_SBlack_02	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Crinoid	NA	EC10017		x	NA				NA					
556	RB1903_J2_1130_SBlack_03	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Crinoid	NA	EC10018		x	NA				NA					
557	RB1903_J2_1130_SBlack_04	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Alcyonacea	NA	EC10019		x	NA				NA					
558	RB1903_J2_1130_SBlack_05	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Alcyonacea	NA	EC10020		x	NA				NA					
559	RB1903_J2_1130_SBlack_06	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Alcyonacea	NA	EC10021		x	NA				NA					
560	RB1903_J2_1130_SBlack_07	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Thecapsammi	NA	EC10022		x	NA				NA		CM_003	x		
561	RB1903_J2_1130_SBlack_08	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Thecapsammi	NA	EC10023		x	NA				NA		CM_003	x		
562	RB1903_J2_1130_SBlack_09	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Thecapsammi	NA				NA				NA		CM_003	x		
563	RB1903_J2_1130_SBlack_10	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Thecapsammi	NA				NA				NA		CM_003	x		
564	RB1903_J2_1130_SBlack_11	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Brittle Star	NA	EC10024		x	NA				NA					
565	RB1903_J2_1130_SBlack_12	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Juvenile Crinoid	NA	EC10025		x	NA				NA					
566	RB1903_J2_1130_SBlack_13	J2-1130	Savannah Banks	April 17th, 2019	9:12:00	18:07	77 22.23		Thecapsammi	NA				NA				NA		CM_003	x		
567	RB1903_J2_1130_SBlue_01	J2-1130	Savannah Banks	April 17th, 2019	6:47:00	31 75.12	77 20.7	509	Thecapsammi	NA	EC10012		x	NA				NA		CM_003	x		
568	RB1903_J2_1130_SBlue_02	J2-1130	Savannah Banks	April 17th, 2019	6:47:00	31 75.12	77 20.7	509	Thecapsammi	NA	EC10013		x	NA				NA		CM_003	x		
569	RB1903_J2_1130_SBlue_03	J2-1130	Savannah Banks	April 17th, 2019	6:47:00	31 75.12	77 20.7	509	Thecapsammi	NA				NA				NA		CM_003	x		
570	RB1903_J2_1130_SBlue_04	J2-1130	Savannah Banks	April 17th, 2019	6:47:00	31 75.12	77 20.7	509	Thecapsammi	NA				NA				NA		CM_003	x		
571	RB1903_J2_1130_SBlue_05	J2-1130	Savannah Banks	April 17th, 2019	6:47:00	31 75.12	77 20.7	509	Thecapsammi	NA				NA				NA		CM_003	x		
572	RB1903_J2_1130_SBlue_06	J2-1130	Savannah Banks	April 17th, 2019	6:47:00	31 75.12	77 20.7	509	Thecapsammi	NA				NA				NA		CM_003	x		
573	RB1903_J2_1130_SBlue_07	J2-1130	Savannah Banks	April 17th, 2019	6:47:00	31 75.12	77 20.7	509	Thecapsammi	NA				NA				NA		CM_003	x		
574	RB1903_J2_1130_SBlue_08	J2-1130	Savannah Banks	April 17th, 2019	6:47:00																		

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl			
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
604	RB1903_CTD09_N13	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	600	Water	NA	EC10098				NA	x			NA				
605	RB1903_CTD09_N14	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	500	Water	NA	EC10100				NA	x			NA				
606	RB1903_CTD09_N15	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	400	Water	NA	EC10101				NA	x			NA				
607	RB1903_CTD09_N16	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	300	Water	NA	EC10102				NA	x			NA				
608	RB1903_CTD09_N17	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	200	Water	NA	EC10103				NA	x			NA				
609	RB1903_CTD09_N18	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	90	Water	NA	EC10105				NA	x			NA				
610	RB1903_CTD09_N19	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	Surface	Water	NA	EC10106				NA	x			NA				
611	RB1903_CTD09_N20	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	Surface	Water	NA					NA				NA				
612	RB1903_CTD09_N21	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	Surface	Water	NA					NA				NA				
613	RB1903_CTD09_N22	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	Surface	Water	NA					NA				NA				x
614	RB1903_CTD09_N23	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	Surface	Water	NA					NA				NA				x
615	RB1903_CTD09_N24	CTD09	Blake Deep	April 18th, 2019	17:09:00	31 18.8044	77 13.2781	Surface	Water	NA					NA				NA				x
616	RB1903_J2_1131_B1_01	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	Solenosmilia	NA	EC10058		x		NA				NA		CM_003	x	
617	RB1903_J2_1131_B1_02	J2-1131	Blake Deep	April 18th, 2019	5:47:00	31.2877	77.2362	1318	White plexauri	NA	EC10059		x		NA				NA		CM_003	x	
618	RB1903_J2_1131_B1_03	J2-1131	Blake Deep	April 18th, 2019	4:33:00	31.2874	77.2368	1331	Metallogorgia	NA	EC10060		x		NA				NA		CM_003	x	
619	RB1903_J2_1131_B1_04	J2-1131	Blake Deep	April 18th, 2019	5:44:00	31.2877	77.2361	1318	ellow Plexauri	NA	EC10061		x		NA				NA		CM_003	x	
620	RB1903_J2_1131_B1_05	J2-1131	Blake Deep	April 18th, 2019	4:33:00	31.2874	77.2368	1331	Asteroschema	NA	EC10062		x		NA				NA				
621	RB1903_J2_1131_B1_06	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	Bamboo Coral	NA	EC10063		x		NA				NA		CM_003	x	
622	RB1903_J2_1131_B1_07	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	Anemone	NA					NA				NA				
623	RB1903_J2_1131_B1_08	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	Eunicid	NA					NA				NA				
624	RB1903_J2_1131_B1_09	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	Eunicid	NA					NA				NA		CM_003	x	
625	RB1903_J2_1131_B1_10	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	Sponge	NA	EC10064		x		NA				NA				
626	RB1903_J2_1131_B1_11a	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	Asteroschema	NA					NA				NA				
627	RB1903_J2_1131_B1_11b	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	onge carniverc	NA					NA				NA				
628	RB1903_J2_1131_B1_12	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	Sponge	NA					NA				NA				
629	RB1903_J2_1131_B1_13	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	iponge (yellow	NA					NA				NA				
630	RB1903_J2_1131_B1_14	J2-1131	Blake Deep	April 18th, 2019	9:52:24	31.289	77.234	1334	Hyroid	NA					NA				NA				
631	RB1903_J2_1131_B2_01	J2-1131	Blake Deep	April 18th, 2019	9:34:30	31.289	77.234	1334	Chrysogorgia	NA	EC10065		x		NA				NA		CM_003	x	
632	RB1903_J2_1131_B2_02	J2-1131	Blake Deep	April 18th, 2019	9:39:33				Bamboo Coral	NA	EC10066		x		NA				NA		CM_003	x	
633	RB1903_J2_1131_B2_03	J2-1131	Blake Deep	April 18th, 2019	9:39:33				Desmophyllur	NA	EC10072		x		NA				NA		CM_003	x	
634	RB1903_J2_1131_B2_04	J2-1131	Blake Deep	April 18th, 2019	11:03:30	31.289	77.234	1327	Paramuricea	NA	EC10067		x		NA				NA		CM_003	x	
635	RB1903_J2_1131_B2_05	J2-1131	Blake Deep	April 18th, 2019	10:56:57	31.2898	77.234	1327	Solenosmilia	NA	EC10068		x		NA				NA		CM_003	x	
636	RB1903_J2_1131_B2_06	J2-1131	Blake Deep	April 18th, 2019	9:34:30	31.289	77.234	1334	Brittle Star	NA	EC10069		x		NA				NA		CM_003	x	
637	RB1903_J2_1131_B2_07	J2-1131	Blake Deep	April 18th, 2019	11:03:30	31.289	77.234	1327	Aplacophoran	NA	EC10070		x		NA				NA				
638	RB1903_J2_1131_B2_08	J2-1131	Blake Deep	April 18th, 2019	11:03:30	31.289	77.234	1327	Aplacophoran	NA	EC10071		x		NA				NA				
639	RB1903_J2_1131_B2_09	J2-1131	Blake Deep	April 18th, 2019	11:03:30	31.289	77.234	1327	Crinoid	NA	EC10073		x		NA				NA				
640	RB1903_J2_1131_B3_01	J2-1131	Blake Deep	April 18th, 2019	2:20:32	31.28578	77.23729	1362.38	Solenosmilia	NA	EC10078												

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl		
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1
671	RB1903_J2_1131_B6_04	J2-1131	Blake Deep	April 18th, 2019	11:21:51	31.289	77.234	1320	Sponge	NA	EC10087		x	NA				NA				
672	RB1903_J2_1131_B6_05	J2-1131	Blake Deep	April 18th, 2019					Primnoid	NA	EC10088		x	NA				NA				
673	RB1903_J2_1131_B6_06	J2-1131	Blake Deep	April 18th, 2019					Primnoid	NA	EC10089		x	NA				NA				
674	RB1903_J2_1131_B6_07	J2-1131	Blake Deep	April 18th, 2019	11:21:51	31.289	77.234	1320	Bamboo Coral	NA				NA				NA				
675	RB1903_J2_1131_B6_08	J2-1131	Blake Deep	April 18th, 2019	11:21:51	31.289	77.234	1320	Ophiuroid	NA				NA				NA				
676	RB1903_J2_1131_B6_09	J2-1131	Blake Deep	April 18th, 2019	11:21:51	31.289	77.234	1320	Hydroid	NA				NA				NA				
677	RB1903_J2_1131_B6_10	J2-1131	Blake Deep	April 18th, 2019					Primnoid	NA				NA				NA				
678	RB1903_J2_1131_B6_11	J2-1131	Blake Deep	April 18th, 2019	8:52:20	31.2898	77.233	1339	Anemone	NA				NA				NA				
679	RB1903_J2_1131_B6_12	J2-1131	Blake Deep	April 18th, 2019	8:52:20	31.2898	77.233	1339	Barnacle	NA	EC10091		x	NA				NA				
680	RB1903_J2_1131_B6_13	J2-1131	Blake Deep	April 18th, 2019	8:52:20	31.2898	77.233	1339	Annelid	NA				NA				NA				
681	RB1903_J2_1131_B6_14	J2-1131	Blake Deep	April 18th, 2019	8:52:20	31.2898	77.233	1339	iponge (yellow	NA				NA				NA				
682	RB1903_J2_1131_B6_15	J2-1131	Blake Deep	April 18th, 2019	8:52:20	31.2898	77.233	1339	Sponge (Blue)	NA				NA				NA				
683	RB1903_J2_1131_B6_16	J2-1131	Blake Deep	April 18th, 2019	8:52:20	31.2898	77.233	1339	Hydroid	NA				NA				NA				
684	RB1903_J2_1131_B6_17	J2-1131	Blake Deep	April 18th, 2019	8:52:20	31.2898	77.233	1339	Annelid	NA				NA				NA				
685	RB1903_J2_1131_B6_18	J2-1131	Blake Deep	April 18th, 2019	8:52:20	31.2898	77.233	1339	Ophiuroid	NA				NA				NA				
686	RB1903_J2_1131_Q1_01	J2-1131	Blake Deep	April 18th, 2019	5:15:00	31.2877	77.2366	1320	Chrysogorgia	NA	EC10107		x	NA				NA				
687	RB1903_J2_1131_Q1_02	J2-1131	Blake Deep	April 18th, 2019	5:15:00	31.2877	77.2366	1320	Bamboo Coral	NA	EC10108		x	NA				NA				
688	RB1903_J2_1131_Q2_01	J2-1131	Blake Deep	April 18th, 2019	13:50:55	31.2901	77.2345	1318	Chrysogorgia	NA	EC10109		x	NA				NA				
689	RB1903_J2_1131_Q3_01	J2-1131	Blake Deep	April 18th, 2019	3:15:39	31.2861	77.2373	1358.51	Iridogorgia	NA				NA				NA				
690	RB1903_J2_1131_Q3_02	J2-1131	Blake Deep	April 18th, 2019	3:25:48	31.2861	77.2373	1358.51	nge antipatha	NA	EC10110		x	NA				NA				
691	RB1903_J2_1131_Q4_01	J2-1131	Blake Deep	April 18th, 2019	4:56:00	31.2876	77.2368	1321	Desmophyllur	NA				NA			x	x	NA		CM_003:	x
692	RB1903_J2_1131_Q5_01	J2-1131	Blake Deep	April 18th, 2019	7:08:00	31.2884	77.2343	1317	Swiftia	NA	EC10092		x	NA				NA				
693	RB1903_J2_1131_Q5_02	J2-1131	Blake Deep	April 18th, 2019	12:54:26	31.2901	77.2343	1319	Plexaurid	NA	EC10091		x	NA				NA				
694	RB1903_J2_1131_Q6_01	J2-1131	Blake Deep	April 18th, 2019	5:28:00	31.2876	77.2368	1320	Desmophyllur	NA				NA			x	x	NA		CM_003:	x
695	RB1903_J2_1131_Q7_01	J2-1131	Blake Deep	April 18th, 2019	1:37:27	31.2853	77.2372	1364.56	Isididae	NA	EC10090		x	NA				NA				
696	RB1903_J2_1131_Q7_02	J2-1131	Blake Deep	April 18th, 2019	10:39:38	31.289	77.234	1329	Primnoid	NA	EC10091		x	NA				NA				
697	RB1903_J2_1131_Q7_03	J2-1131	Blake Deep	April 18th, 2019	10:39:38	31.289	77.234	1329	Desmophyllur	NA				NA				NA				
698	RB1903_J2_1131_Q8_01	J2-1131	Blake Deep	April 18th, 2019	5:01:00	31.2876	77.2368	1321	Desmophyllur	NA				NA			x	x	NA		CM_003:	x
699	RB1903_J2_1131_Q9_01	J2-1131	Blake Deep	April 18th, 2019					Desmophyllur	NA				NA					NA			
700	RB1903_J2_1131_Q9_02a	J2-1131	Blake Deep	April 18th, 2019					Desmophyllur	NA	EC10127		x	NA				NA				
701	RB1903_J2_1131_Q9_02b	J2-1131	Blake Deep	April 18th, 2019					Desmophyllur	NA				NA				NA				
702	RB1903_J2_1131_Q9_03a	J2-1131	Blake Deep	April 18th, 2019					Desmophyllur	NA	EC10128		x	NA				NA				
703	RB1903_J2_1131_Q9_03b	J2-1131	Blake Deep	April 18th, 2019					Desmophyllur	NA				NA				NA				
704	RB1903_J2_1131_Q9_04	J2-1131	Blake Deep	April 18th, 2019					Desmophyllur	NA				NA				NA				
705	RB1903_J2_1131_Sblack_01	J2-1131	Blake Deep	April 18th, 2019	9:44:14	31.289	77.234	1334	Solenosmilia	NA	EC10112		x	NA				NA		CM_003:	x	
706	RB1903_J2_1131_Sblack_02	J2-1131	Blake Deep	April 18th, 2019	9:44:14	31.289	77.234	1334	Sponge	NA	EC10113		x	NA				NA				
707	RB1903_J2_1131_Sblack_03	J2-1131	Blake Deep	April 18th, 2019	9:44:14	31.289	77.234	1334	Chrysogorgia	NA				NA				NA				
708	RB1903_J2_1131_Sblack_04	J2-1131	Blake Deep	April 18th, 2019	9:44:14	31.289	77.234	1334	Cladhorizid	NA				NA				NA				
709	RB1903_J2_1131_Sblue_01	J2-1131	Blake Deep	April 18th, 2019	8:55:00	31.2898	77.2338	1337	Desmophyllur	NA				NA				NA		CM_003:	x	
710	RB1903_J2_1131_Sblue_02	J2-1131	Blake Deep	April 18th																		

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl			
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
738	RB1903_J2_1131_RockBox_02-1	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.2873	77.2368	1337	Anemone	NA					NA				NA				
739	RB1903_J2_1131_RockBox_02-2	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.2873	77.2368	1337	Tunicate	NA					NA				NA				
740	RB1903_J2_1131_RockBox_02-3	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.2873	77.2368	1337	Tunicate	NA					NA				NA				
741	RB1903_J2_1131_RockBox_02-4	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.2873	77.2368	1337	Sponge	NA					NA				NA				
742	RB1903_J2_1131_RockBox_02-5	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.2873	77.2368	1337	Sponge	NA					NA				NA				
743	RB1903_J2_1131_RockBox_02-6	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.2873	77.2368	1337	Sponge	NA					NA				NA				
744	RB1903_J2_1131_RockBox_02-7	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.2873	77.2368	1337	Hydroid	NA					NA				NA				
745	RB1903_J2_1131_RockBox_02-8	J2-1131	Blake Deep	April 18th, 2019	4:23:00	31.2873	77.2368	1337	Hydroid	NA					NA				NA				
746	RB1903_J2_1131_RockBox_03	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	Medium rock	NA					NA				NA				
747	RB1903_J2_1131_RockBox_03-1	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	cup coral	NA					NA				NA				
748	RB1903_J2_1131_RockBox_03-2	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	hydroid	NA					NA				NA				
749	RB1903_J2_1131_RockBox_03-3	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	chrysogorgia	NA					NA				NA				
750	RB1903_J2_1131_RockBox_03-4	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	glass sponge	NA					NA				NA				
751	RB1903_J2_1131_RockBox_03-5	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	polychaete	NA					NA				NA				
752	RB1903_J2_1131_RockBox_03-6	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	glass sponge	NA					NA				NA				
753	RB1903_J2_1131_RockBox_03-7	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	Glass sponge	NA					NA				NA				
754	RB1903_J2_1131_RockBox_03-8	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	hydroid	NA					NA				NA				
755	RB1903_J2_1131_RockBox_03-9	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	glass sponge	NA					NA				NA				
756	RB1903_J2_1131_RockBox_03-10	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	sponge	NA					NA				NA				
757	RB1903_J2_1131_RockBox_03-11	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	polychaete	NA					NA				NA				
758	RB1903_J2_1131_RockBox_03-12	J2-1131	Blake Deep	April 18th, 2019	12:59:27	31.2901	77.2343	1319	glass sponge	NA					NA				NA				
759	RB1903_J2_1131_RockBox_04	J2-1131	Blake Deep	April 18th, 2019	14:17:56	31.2901	77.2348	1319	Rock	NA					NA				NA				
760	RB1903_J2_1131_RockBox_05	J2-1131	Blake Deep	April 18th, 2019					Bamboo coral	NA					NA				NA				
761	RB1903_J2_1131_RockBox_06	J2-1131	Blake Deep	April 18th, 2019					rock	NA					NA				NA				
762	RB1903_J2_1131_RockBox_07	J2-1131	Blake Deep	April 18th, 2019					Desmophyllur	NA					NA				NA		CM_003	x	
763	RB1903_J2_1131_RockBox_08	J2-1131	Blake Deep	April 18th, 2019					Desmophyllur	NA					NA				NA				
764	RB1903_J2_1131_RockBox_09	J2-1131	Blake Deep	April 18th, 2019					rock	NA					NA				NA				
765	RB1903_J2_1131_RockBox_10	J2-1131	Blake Deep	April 18th, 2019					Desmophyllur	NA					NA				NA				
766	RB1903_J2_1131_N01	J2-1131	Blake Deep	April 18th, 2019	11:51:36	31.17.392	77.14.044	1318	Water	NA					NA				NA				
767	RB1903_J2_1131_N02	J2-1131	Blake Deep	April 18th, 2019	11:52:15	31.17.392	77.14.044	1318	Water	NA					NA				NA				
768	RB1903_J2_1131_N03	J2-1131	Blake Deep	April 18th, 2019	11:57:10	31.17.392	77.14.044	1318	Water	NA					NA			x	NA				
769	RB1903_J2_1131_N04	J2-1131	Blake Deep	April 18th, 2019	11:55:57	31.17.392	77.14.044	1318	Water	NA					NA			x	NA				
770	RB1903_J2_1131_PC_06	J2-1131	Blake Deep	April 18th, 2019	6:26:00	31.2877	77.2348	1318	Sediment	NA					NA				NA				
771	RB1903_J2_1131_PC_07	J2-1131	Blake Deep	April 18th, 2019	6:28:00	31.2877	77.2348	1318	Sediment	NA					NA				NA				
772	RB1903_J2_1131_PC_08	J2-1131	Blake Deep	April 18th, 2019	6:30:00	31.2877	77.2348	1318	Sediment	NA					NA				NA				
773	RB1903_J2_1131_PC_09	J2-1131	Blake Deep	April 18th, 2019	6:32:00	31.2877	77.2348	1318	Sediment	NA					NA				NA				
774	RB1903_J2_1131_PC_11	J2-1131	Blake Deep	April 18th, 2019	10:11:16	31.2899	77.2341	1333	Sediment	NA					NA				NA				
775	RB1903_J2_1131_PC_12	J2-1131	Blake Deep	April 18th, 2019	10:10:16	31.2899	77.2341	1333	Sediment	NA					NA				NA				
776	RB1903_J2_1131_PC_15	J2-1131	Blake Deep	April 18th, 2019	10:09:04	31.2899	77.2341	1333	Sediment	NA					NA	</							

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl		
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1
805	RB1903_J2_1132_B5_03	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582	Desmophyllur	NA	EC10175				NA			NA		CM-0044	x	
806	RB1903_J2_1132_B5_04	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582	Desmophyllur	NA					NA			NA		CM-0044		
807	RB1903_J2_1132_B5_05	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582	Desmophyllur	NA					NA			NA		CM-0044	x	
808	RB1903_J2_1132_B5_06	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582	Eunicid	NA					NA			NA				
809	RB1903_J2_1132_B5_07	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582		NA					NA			NA				
810	RB1903_J2_1132_B5_08	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582	Acesta	NA				NA			NA					
811	RB1903_J2_1132_B5_09	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582	Acesta	NA				NA			NA					
812	RB1903_J2_1132_B5_10	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582	Sponge	NA	EC10176				NA			NA				
813	RB1903_J2_1132_B5_11	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582	Hydroid	NA					NA			NA				
814	RB1903_J2_1132_B5_12	J2-1132	Pamlico Canyon	April 21-22, 2019	4:51:00	34.9307	75.1505	1582	Hydroid	NA					NA			NA				
815	RB1903_J2_1132_Q1_01	J2-1132	Pamlico Canyon	April 21-22, 2019	8:50:19	34.9314	75.1514	1475	Acanthogorgia	NA		EC10144				NA			NA		CM-004C	x
816	RB1903_J2_1132_Q1_02	J2-1132	Pamlico Canyon	April 21-22, 2019	8:50:19	34.9314	75.1514	1475	Annelid	NA						NA			NA			
817	RB1903_J2_1132_Q2_01	J2-1132	Pamlico Canyon	April 21-22, 2019		34.9314	75.1514	1474	Acanthogorgia	NA					NA			NA		CM-0037	x	
818	RB1903_J2_1132_Q3_01	J2-1132	Pamlico Canyon	April 21-22, 2019	3:21:26	34.9307	75.1503	1566.8	Desmophyllur	NA					NA			NA		CM-0037	x	
819	RB1903_J2_1132_Q3_02	J2-1132	Pamlico Canyon	April 21-22, 2019	3:21:26	34.9307	75.1503	1566.8	Desmophyllur	NA					NA			NA				
820	RB1903_J2_1132_Q3_03	J2-1132	Pamlico Canyon	April 21-22, 2019	3:21:26	34.9307	75.1503	1566.8	Desmophyllur	NA				NA			NA					
821	RB1903_J2_1132_Q3_04	J2-1132	Pamlico Canyon	April 21-22, 2019	3:21:26	34.9307	75.1503	1566.8	Desmophyllur	NA				NA			NA					
822	RB1903_J2_1132_Q4_01	J2-1132	Pamlico Canyon	April 21-22, 2019	3:25:51	34.9307	75.1503	1566.8	Desmophyllur	NA				NA			NA		CM-003E	x		
823	RB1903_J2_1132_Q5_01	J2-1132	Pamlico Canyon	April 21-22, 2019					Acanthogorgia	NA	EC10145				NA			NA		CM-004C	x	
824	RB1903_J2_1132_Q5_02	J2-1132	Pamlico Canyon	April 21-22, 2019					Polychaete	NA					NA			NA		CM-004C	x	
825	RB1903_J2_1132_Q6_01	J2-1132	Pamlico Canyon	April 21-22, 2019	11:26:32	34 56.076	75 9.222	1410	Acanthogorgia	NA					NA			NA		CM-004C	x	
826	RB1903_J2_1132_Q6_02	J2-1132	Pamlico Canyon	April 21-22, 2019	11:26:32	34 56.076	75 9.222	1410	Scale Worm	NA					NA			NA		CM-004C	x	
827	RB1903_J2_1132_Q7_01	J2-1132	Pamlico Canyon	April 21-22, 2019	2:48:59	34.9307	75.1503	1563	ellow Plexauri	NA		EC10135			NA			NA		CM-003E	x	
828	RB1903_J2_1132_Q7_02	J2-1132	Pamlico Canyon	April 21-22, 2019	2:48:59	34.9307	75.1503	1563	Ophiuroid	NA	EC10136			NA			NA		CM-003E	x		
829	RB1903_J2_1132_Q7_03	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.9329	75.1539	1429	Desmophyllur	NA				NA			NA		CM-003E	x		
830	RB1903_J2_1132_Q7_04	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.9329	75.1539	1429	Desmophyllur	NA	EC10137			NA			NA		CM-003E	x		
831	RB1903_J2_1132_Q7_05	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.9329	75.1539	1429	Desmophyllur	NA					NA			NA		CM-003E	x	
832	RB1903_J2_1132_Q7_06	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.9329	75.1539	1429	Desmophyllur	NA					NA			NA		CM-003E	x	
833	RB1903_J2_1132_Q7_07a	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.9329	75.1539	1429	Desmophyllur	NA		EC10138			NA			NA		CM-003E	x	
834	RB1903_J2_1132_Q7_07b	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.9329	75.1539	1429	Desmophyllur	NA						NA			NA			
835	RB1903_J2_1132_Q7_08	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.9329	75.1539	1429	Solenosamelli	NA	EC10139				NA			NA		CM-003E	x	
836	RB1903_J2_1132_Q7_09	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.9329	75.1539	1429	Acesta	NA	EC10140				NA			NA				
837	RB1903_J2_1132_Q7_10	J2-1132	Pamlico Canyon	April 21-22, 2019	15:01:00	34.9329	75.1539	1429	Sponge	NA						NA			NA			
838	RB1903_J2_1132_Q8_01	J2-1132	Pamlico Canyon	April 21-22, 2019	3:33:19	34.9307	75.1503	1566.8	Desmophyllur	NA					NA			NA		CM-003E	x	
839	RB1903_J2_1132_Q9_01	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.9307	75.1503	1566.7	Desmophyllur	NA					NA			NA		CM-0037	x	
840	RB1903_J2_1132_Q9_02	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.9307	75.1503	1566.7	Desmophyllur	NA					NA			NA		CM-0037	x	
841	RB1903_J2_1132_Q9_03	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.9307	75.1503	1566.7	Desmophyllur	NA				NA			NA		CM-0037	x		
842	RB1903_J2_1132_Q9_04	J2-1132	Pamlico Canyon	April 21-22, 2019	3:46:00	34.9307	75.1503	1566.7	Desmophyllur	NA				NA			NA		CM-0037	x		
843	RB1903_J2_1132_Q9_05	J2-1132	Pamlico Canyon	April 21																		

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl		
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1
872	RB1903_J2_1132_SBlack_03b	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.9173	75.1849	1645	Desmophyllur	NA					NA				NA		CM-003E	x
873	RB1903_J2_1132_SBlack_04	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.9173	75.1849	1645	Desmophyllur	NA					NA				NA		CM-003E	x
874	RB1903_J2_1132_SBlack_05	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.9173	75.1849	1645	Sponge	NA	EC10131		x	NA				NA				
875	RB1903_J2_1132_SBlack_06	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.9173	75.1849	1645	Brisingid	NA	EC10132		x	NA				NA				
876	RB1903_J2_1132_SBlack_07	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.9173	75.1849	1645	Acesta	NA				NA				NA				
877	RB1903_J2_1132_SBlack_08	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.9173	75.1849	1645	Acesta	NA	EC10134		x	NA				NA				
878	RB1903_J2_1132_SBlack_09	J2-1132	Pamlico Canyon	April 21-22, 2019	23:34:00	34.9173	75.1849	1645	Sponge	NA				NA				NA				
879	RB1903_J2_1132_SWhite_01	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA	EC10156		x	NA				NA			CM-0041	x
880	RB1903_J2_1132_SWhite_02	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA	EC10157		x	NA				NA			CM-0041	x
881	RB1903_J2_1132_SWhite_03	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0041	x
882	RB1903_J2_1132_SWhite_04	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA	EC10158		x	NA				NA			CM-0041	x
883	RB1903_J2_1132_SWhite_05	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0041	x
884	RB1903_J2_1132_SWhite_06	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0041	x
885	RB1903_J2_1132_SWhite_07	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
886	RB1903_J2_1132_SWhite_08	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
887	RB1903_J2_1132_SWhite_09	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA	EC10159		x	NA				NA			CM-0042	x
888	RB1903_J2_1132_SWhite_10	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
889	RB1903_J2_1132_SWhite_11	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
890	RB1903_J2_1132_SWhite_12	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
891	RB1903_J2_1132_SWhite_13	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
892	RB1903_J2_1132_SWhite_14	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA	EC10160		x	NA				NA			CM-0042	x
893	RB1903_J2_1132_SWhite_15	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
894	RB1903_J2_1132_SWhite_16	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA	EC10161		x	NA				NA			CM-0042	x
895	RB1903_J2_1132_SWhite_17	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
896	RB1903_J2_1132_SWhite_18	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
897	RB1903_J2_1132_SWhite_19	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
898	RB1903_J2_1132_SWhite_20	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
899	RB1903_J2_1132_SWhite_21	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Desmophyllur	NA				NA				NA			CM-0042	x
900	RB1903_J2_1132_SWhite_22	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Solenosamella	NA	EC10153		x	NA				NA			CM-0042	x
901	RB1903_J2_1132_SWhite_23	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Hydroid	NA				NA				NA				
902	RB1903_J2_1132_SWhite_24	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Acesta	NA				NA				NA				
903	RB1903_J2_1132_SWhite_25	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Acanthogorgia	NA	EC10154		x	NA				NA				
904	RB1903_J2_1132_SWhite_26a	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Squat Lobster	NA				NA				NA			CM-0042	x
905	RB1903_J2_1132_SWhite_26b	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	uat Lobster eg	NA				NA				NA				
906	RB1903_J2_1132_SWhite_27	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Acesta	NA	EC10155		x	NA				NA			CM-0042	x
907	RB1903_J2_1132_SWhite_28a	J2-1132	Pamlico Canyon	April 21-22, 2019	1:37:30	34.9312	75.1498	1591.57	Eunicid	NA				NA				NA				
908	RB1903_J2_1132_SWhite_28b	J2-1132	Pamlico																			

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes				Chris Kellogg				Cheryl				
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
939	RB1903_J2_1132_PC_12	J2-1132	Pamlico Canyon	April 21-22, 2019	12:54:00	34.9321	75.1523	1350	Sediment	NA					NA				NA				
940	RB1903_J2_1132_PC_13	J2-1132	Pamlico Canyon	April 21-22, 2019	21:49:00	34.9161	75.1838	1662	Sediment	NA					NA				NA				
941	RB1903_J2_1132_PC_14	J2-1132	Pamlico Canyon	April 21-22, 2019	21:51:00	34.9161	75.1838	1662	Sediment	NA					NA				NA				
942	RB1903_J2_1132_PC_15	J2-1132	Pamlico Canyon	April 21-22, 2019	12:56:00	34.9321	75.1523	1350	Sediment	NA					NA				NA				
943	RB1903_J2_1132_PC_16	J2-1132	Pamlico Canyon	April 21-22, 2019	21:54:00	34.9161	75.1838	1662	Sediment	NA					NA				NA				
944	RB1903_J2_1132_PC_17	J2-1132	Pamlico Canyon	April 21-22, 2019	21:48:00	34.9161	75.1838	1662	Sediment	NA					NA				NA				
945	RB1903_J2_1132_PC_18	J2-1132	Pamlico Canyon	April 21-22, 2019	21:50:00	34.9161	75.1838	1662	Sediment	NA					NA				NA				
946	RB1903_J2_1132_PC_19	J2-1132	Pamlico Canyon	April 21-22, 2019	21:53:00	34.9161	75.1838	1662	Sediment	NA					NA				NA				
947	RB1903_J2_1132_PC_20	J2-1132	Pamlico Canyon	April 21-22, 2019	21:52:00	34.9161	75.1838	1662	Sediment	NA					NA				NA				
948	RB1903_J2_1132_PC_21	J2-1132	Pamlico Canyon	April 21-22, 2019	20:01:00	34 55.694	75 8.871	1762	Sediment	NA					NA				NA				
949	RB1903_J2_1132_PC_22	J2-1132	Pamlico Canyon	April 21-22, 2019	20:02:00	34 55.694	75 8.871	1762	Sediment	NA					NA				NA				
950	RB1903_J2_1132_PC_23	J2-1132	Pamlico Canyon	April 21-22, 2019	19:59:00	34 55.694	75 8.871	1762	Sediment	NA					NA				NA				
951	RB1903_J2_1132_PC_24	J2-1132	Pamlico Canyon	April 21-22, 2019	20:03:00	34 55.694	75 8.871	1762	Sediment	NA					NA				NA				
952	RB1903_J2_1132_PC_25	J2-1132	Pamlico Canyon	April 21-22, 2019	20:00:00	34 55.694	75 8.871	1762	Sediment	NA					NA				NA				
953	RB1903_J2_1132_PC_26	J2-1132	Pamlico Canyon	April 21-22, 2019	20:05:00	34 55.694	75 8.871	1762	Sediment	NA					NA				NA				
954	RB1903_J2_1132_PC_27	J2-1132	Pamlico Canyon	April 21-22, 2019	20:04:00	34 55.694	75 8.871	1762	Sediment	NA					NA				NA				
955	RB1903_J2_1132_N_01	J2-1132	Pamlico Canyon	April 21-22, 2019	9:11:55	34.9314	75.151	1476	Water	NA					NA				NA				
956	RB1903_J2_1132_N_02	J2-1132	Pamlico Canyon	April 21-22, 2019	9:12:51	34.9314	75.151	1476	Water	NA					NA				NA				
957	RB1903_J2_1132_N_03	J2-1132	Pamlico Canyon	April 21-22, 2019	9:09:32	34.9314	75.151	1476	Water	NA					NA				NA				
958	RB1903_J2_1132_N_04	J2-1132	Pamlico Canyon	April 21-22, 2019	9:09:50	34.9314	75.151	1476	Water	NA					NA				NA				
959	RB1903_J2_1132_RockBox_01	J2-1132	Pamlico Canyon	April 21-22, 2019	20:18:00	34.9155	75.1835	1759	square-ish rock	NA					NA				NA				
960	RB1903_J2_1132_RockBox_02	J2-1132	Pamlico Canyon	April 21-22, 2019	20:21:00	34.9155	75.1835	1759	Triangle rock	NA					NA				NA				
961	RB1903_J2_1132_RockBox_03	J2-1132	Pamlico Canyon	April 21-22, 2019	5:28:00	34.9365	75.1567	1577	Mud/Slope	NA					NA				NA				
962	RB1903_J2_1132_RockBox_04	J2-1132	Pamlico Canyon	April 21-22, 2019	16:10:40	34 56.201	75 9.461	1477	actangular Ro	NA					NA				NA				
963	RB1903_J2_1132_RockBox_04_01	J2-1132	Pamlico Canyon	April 21-22, 2019	16:10:40	34 56.201	75 9.461	1477	Anemone	NA					NA				NA				
964	RB1903_J2_1132_RockBox_05	J2-1132	Pamlico Canyon	April 21-22, 2019	17:32:56	34 56.389	75 9.671	1338	Acesta shells	NA					NA				NA				
965	RB1903_J2_1132_RockBox_06	J2-1132	Pamlico Canyon	April 21-22, 2019	18:16:04	34 56.413	75 9.685	1279	rock	NA					NA				NA				
966	RB1903_CTD010_N1	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	1308	Water	NA					NA				NA				x
967	RB1903_CTD010_N2	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	1308	Water	NA					NA				NA				x
968	RB1903_CTD010_N3	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	1308	Water	NA					NA				NA				x
969	RB1903_CTD010_N4	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	1308	Water	NA					NA				NA				
970	RB1903_CTD010_N5	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	1308	Water	NA	EC10117				NA	x			NA				
971	RB1903_CTD010_N6	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	1308	Water	NA					NA				NA				
972	RB1903_CTD010_N7	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	1308	Water	NA					NA				NA				
973	RB1903_CTD010_N8	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	1100	Water	NA	EC10118				NA	x			NA				
974	RB1903_CTD010_N9	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	900	Water	NA					NA				NA				x
975	RB1903_CTD010_N10	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	900	Water	NA	EC10119				NA	x			NA				x
976	RB1903_CTD010_N11	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	900	Water	NA					NA				NA				x
977	RB1903_CTD010_N12	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	704	Water	NA	EC10120				NA	x			NA				
978	RB1903_CTD010_N13	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	504	Water	NA	EC10121				NA	x			NA				
979	RB1903_CTD010_N14	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	401	Water	NA	EC10122				NA	x			NA				
980	RB1903_CTD010_N15	CTD010	North of Pamlico Canyon	21-Apr-19	8:18:00	34 56.3425	75 08.5864	300	Water	NA					NA				NA				x
981	RB1903_CTD010_N16	CTD010	North of Pamlico Canyon																				

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Cordes.Number	Erik Cordes				Chris Kellogg				Cheryl		
												LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1
1006	RB1903_CTD011_N17	CTD011	Pamlico Canyon	22-Apr-19	18:08:00	34 54.4109	75 11.8746	251	Water	NA	EC10170				NA	x			NA			
1007	RB1903_CTD011_N18	CTD011	Pamlico Canyon	22-Apr-19	18:08:00	34 54.4109	75 11.8746	150	Water	NA	EC10171				NA	x			NA			
1008	RB1903_CTD011_N20	CTD011	Pamlico Canyon	22-Apr-19	18:08:00	34 54.4109	75 11.8746	surface	Water	NA	EC10173				NA	x			NA			
1009	RB1903_CTD011_N21	CTD011	Pamlico Canyon	22-Apr-19	18:08:00	34 54.4109	75 11.8746	surface	Water	NA					NA				NA			
1010	RB1903_CTD011_N22	CTD011	Pamlico Canyon	22-Apr-19	18:08:00	34 54.4109	75 11.8746	surface	Water	NA					NA				NA			x
1011	RB1903_CTD011_N23	CTD011	Pamlico Canyon	22-Apr-19	18:08:00	34 54.4109	75 11.8746	surface	Water	NA					NA				NA			x
1012	RB1903_CTD011_N24	CTD011	Pamlico Canyon	22-Apr-19	18:08:00	34 54.4109	75 11.8746	surface	Water	NA					NA				NA			x
1013	RB1903_CTD012_N1	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	381	Water	NA					NA				NA			x
1014	RB1903_CTD012_N2	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	381	Water	NA					NA				NA			x
1015	RB1903_CTD012_N3	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	381	Water	NA					NA				NA			x
1016	RB1903_CTD012_N4	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	381	Water	NA					NA				NA			
1017	RB1903_CTD012_N5	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	381	Water	NA					NA				NA			
1018	RB1903_CTD012_N6	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	381	Water	NA					NA				NA			
1019	RB1903_CTD012_N7	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	381	Water	NA	EC10189				NA	x			NA			
1020	RB1903_CTD012_N8	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	370	Water	NA	EC10190				NA	x			NA			
1021	RB1903_CTD012_N9	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	360	Water	NA	EC10191				NA	x			NA			
1022	RB1903_CTD012_N10	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	320	Water	NA	EC10192				NA	x			NA			
1023	RB1903_CTD012_N11	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	280	Water	NA	EC10193				NA	x			NA			
1024	RB1903_CTD012_N12	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	240	Water	NA	EC10194				NA	x			NA			
1025	RB1903_CTD012_N13	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	200	Water	NA					NA				NA			x
1026	RB1903_CTD012_N14	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	200	Water	NA	EC10195				NA	x			NA			x
1027	RB1903_CTD012_N15	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	200	Water	NA					NA				NA			x
1028	RB1903_CTD012_N16	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	160	Water	NA	EC10196				NA	x			NA			
1029	RB1903_CTD012_N17	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	120	Water	NA	EC10197				NA	x			NA			
1030	RB1903_CTD012_N18	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	80	Water	NA	EC10198				NA	x			NA			
1031	RB1903_CTD012_N19	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	45	Water	NA	EC10199				NA	x			NA			
1032	RB1903_CTD012_N20	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	surface	Water	NA	EC10200				NA	x			NA			
1033	RB1903_CTD012_N21	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	surface	Water	NA					NA				NA			
1034	RB1903_CTD012_N22	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	surface	Water	NA					NA				NA			x
1035	RB1903_CTD012_N23	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	surface	Water	NA					NA				NA			x
1036	RB1903_CTD012_N24	CTD012	Pea Island Off-Seep	23-Apr-19	16:56:00	35 54.4977	74 47.7714	surface	Water	NA					NA				NA			x
1037	RB1903_CTD013_N1	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	289	Water	NA					NA				NA			x
1038	RB1903_CTD013_N2	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	289	Water	NA					NA				NA			x
1039	RB1903_CTD013_N3	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	289	Water	NA					NA				NA			x
1040	RB1903_CTD013_N4	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	289	Water	NA					NA				NA			
1041	RB1903_CTD013_N5	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	289	Water	NA					NA				NA			
1042	RB1903_CTD013_N6	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	289	Water	NA					NA				NA			
1043	RB1903_CTD013_N7	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	289	Water	NA					NA				NA			
1044	RB1903_CTD013_N8	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	289	Water	NA	EC10206				NA	x			NA			
1045	RB1903_CTD013_N9	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	280	Water	NA	EC10207				NA	x			NA			
1046	RB1903_CTD013_N10	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	270	Water	NA	EC10208				NA	x			NA			
1047	RB1903_CTD013_N11	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	240	Water	NA	EC10209				NA	x			NA			
1048	RB1903_CTD013_N12	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	210	Water	NA					NA				NA			x
1049	RB1903_CTD013_N13	CTD013	Pea Island Seep	23-Apr-19	19:05:00	35 40.4228	74 47.9031	210	Water	NA	EC102											

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes				Chris Kellogg				Cheryl						
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2		
1073	RB1903_J2_1133_B4_02 (rock)	J2-1133	Pea Island	April 22-23, 2019	9:08:22	35 40.446	74 47.615	328	rock	NA	EC10188	x			NA				NA		CM-004E	x			
1074	RB1903_J2_1133_B5_01	J2-1133	Pea Island	April 22-23, 2019	7:25:50	35.6749	74.7924	333.24	fuzzy rock	NA						NA				NA					
1075	RB1903_J2_1133_B5_02	J2-1133	Pea Island	April 22-23, 2019	7:25:50	35.6749	74.7924	333.24	y trap anemon	NA						NA				NA					
1076	RB1903_J2_1133_Q3_01	J2-1133	Pea Island	April 22-23, 2019	13:01:00	35.6735	74.7977	296	Lophelia	NA						NA		x	x	NA					
1077	RB1903_J2_1133_N01	J2-1133	Pea Island	April 22-23, 2019	14:51:00	35.6736	74.7972	299	Water	NA						NA				NA					
1078	RB1903_J2_1133_N02	J2-1133	Pea Island	April 22-23, 2019	14:54:00	35.6735	74.7972	298	Water	NA				NA				NA							
1079	RB1903_J2_1133_N03	J2-1133	Pea Island	April 22-23, 2019	14:57:00	35.6735	74.7972	298	Water	NA				NA		x		NA							
1080	RB1903_J2_1133_N04	J2-1133	Pea Island	April 22-23, 2019	15:01:00	35.6735	74.7972	298	Water	NA	EC10201				NA	x	x	NA							
1081	RB1903_J2_1133_SBlue_01	J2-1133	Pea Island	April 22-23, 2019	8:13:13	35 40.58	74 47.562	330	terial mat - w/	NA					NA				NA						
1082	RB1903_J2_1133_SBlue_02	J2-1133	Pea Island	April 22-23, 2019	10:20:30	35 40.483	74 47.643	320	bacterial mat	NA					NA				NA						
1083	RB1903_J2_1133_Basket_01	J2-1133	Pea Island	April 22-23, 2019					cancer crab	NA	EC10217	x			NA				NA						
1084	RB1903_J2_1133_PC01	J2-1133	Pea Island	April 22-23, 2019	8:06:56	35 40.512	74 47.561	330	tt (white bacte	NA					NA				NA						
1085	RB1903_J2_1133_PC02	J2-1133	Pea Island	April 22-23, 2019	8:06:10	35 40.512	74 47.561	330	tt (white bacte	NA					NA				NA						
1086	RB1903_J2_1133_PC03	J2-1133	Pea Island	April 22-23, 2019	8:04:45	35 40.512	74 47.561	330	tt (white bacte	NA					NA				NA						
1087	RB1903_J2_1133_PC04	J2-1133	Pea Island	April 22-23, 2019	8:05:55	35 40.512	74 47.561	330	tt (white bacte	NA					NA				NA						
1088	RB1903_J2_1133_PC05	J2-1133	Pea Island	April 22-23, 2019	8:04:11	35 40.512	74 47.561	330	tt (white bacte	NA					NA				NA						
1089	RB1903_J2_1133_PC06	J2-1133	Pea Island	April 22-23, 2019	8:02:52	35 40.512	74 47.561	330	tt (white bacte	NA					NA				NA						
1090	RB1903_J2_1133_PC07	J2-1133	Pea Island	April 22-23, 2019	8:02:07	35 40.512	74 47.561	330	tt (white bacte	NA					NA				NA						
1091	RB1903_J2_1133_PC08	J2-1133	Pea Island	April 22-23, 2019	8:00:44	35 40.512	74 47.561	330	tt (white bacte	NA					NA				NA						
1092	RB1903_J2_1133_PC09	J2-1133	Pea Island	April 22-23, 2019	10:12:44	35 40.482	74 47.642	320	tt (white bacte	NA					NA				NA						
1093	RB1903_J2_1133_PC10	J2-1133	Pea Island	April 22-23, 2019	10:13:37	35 40.482	74 47.642	320	tt (white bacte	NA					NA				NA						
1094	RB1903_J2_1133_PC11	J2-1133	Pea Island	April 22-23, 2019	10:14:24	35 40.482	74 47.642	320	tt (white bacte	NA					NA				NA						
1095	RB1903_J2_1133_PC12	J2-1133	Pea Island	April 22-23, 2019	15:42:00	35.6734	74.7972	300	liment (non se	NA					NA				NA						
1096	RB1903_J2_1133_PC13	J2-1133	Pea Island	April 22-23, 2019	15:39:00	35.6734	74.7972	300	liment (non se	NA					NA				NA						
1097	RB1903_J2_1133_PC14	J2-1133	Pea Island	April 22-23, 2019	15:37:00	35.6734	74.7972	300	liment (non se	NA					NA				NA						
1098	RB1903_J2_1133_PC15	J2-1133	Pea Island	April 22-23, 2019	15:44:00	35.6734	74.7972	300	liment (non se	NA					NA				NA						
1099	RB1903_J2_1133_PC16	J2-1133	Pea Island	April 22-23, 2019	15:48:00	35.6734	74.7972	300	liment (non se	NA					NA				NA						
1100	RB1903_J2_1133_PC17	J2-1133	Pea Island	April 22-23, 2019	15:40:00	35.6734	74.7972	300	liment (non se	NA					NA				NA						
1101	RB1903_J2_1133_PC18	J2-1133	Pea Island	April 22-23, 2019	14:14:00	35.6736	74.7972	299	n bubble near	NA					NA				NA						
1102	RB1903_J2_1133_PC19	J2-1133	Pea Island	April 22-23, 2019	14:19:00	35.6736	74.7972	299	n bubble near	NA					NA				NA						
1103	RB1903_J2_1133_PC20	J2-1133	Pea Island	April 22-23, 2019	15:49:00	35.6734	74.7972	300	liment (non se	NA					NA				NA						
1104	RB1903_J2_1133_PC21	J2-1133	Pea Island	April 22-23, 2019	14:10:00	35.6736	74.7972	299	n bubble near	NA					NA				NA						
1105	RB1903_J2_1133_PC22	J2-1133	Pea Island	April 22-23, 2019	14:15:00	35.6736	74.7972	299	n bubble near	NA					NA				NA						
1106	RB1903_J2_1133_PC23	J2-1133	Pea Island	April 22-23, 2019	15:35:00	35.6734	74.7972	300	liment (non se	NA					NA				NA						
1107	RB1903_J2_1133_PC24	J2-1133	Pea Island	April 22-23, 2019	14:12:00	35.6736	74.7972	299	n bubble near	NA					NA				NA						
1108	RB1903_J2_1133_PC25	J2-1133	Pea Island	April 22-23, 2019	14:24:00	35.6736	74.7972	299	n bubble near	NA					NA				NA						
1109	RB1903_J2_1133_PC26	J2-1133	Pea Island	April 22-23, 2019	14:17:00	35.6736	74.7972	299	n bubble near	NA					NA				NA						
1110	RB1903_J2_1133_PC27	J2-1133	Pea Island	April 22-23, 2019	14:21:00	35.6736	74.7972	299	n bubble near	NA					NA				NA						
1111	RB1903_J2_1133_PC28	J2-1133	Pea Island	April 22-23, 2019	10:20:27	35 40.482	74 47.642	320	tt (white bacte	NA					NA				NA						
1112	RB1903_J2_1133_PC29	J2-1133	Pea Island	April 22-23, 2019	10:09:25	35 40.482	74 47.642	320	tt (white bacte	NA					NA				NA						
1113	RB1903_J2_1133_PC30	J2-1133	Pea Island	April 22-23, 2019	10:08:28	35 40.482	74 47.642	320	tt (white bacte	NA					NA				NA						
1114	RB1903_J2_1133_PC31	J2-1133	Pea Island	April 22-23, 2019	10:07:24	35 40.482	74 47.642	320																	

RB1903 Master Sample Sheet

												Erik Cordes				Chris Kellogg				Cheryl			
	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
1140	RB1903_CTD014_N24	CTD014	Kitty Hawk Seep	24-Apr-19	16:49:00	35 56.0103	74 49.1444	surface	Water	NA					NA				NA				
1141	RB1903_J2_1134_B1_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	3:00:00	35.9261	74.8051	437	worm Vestime	NA	EC10230		x		NA				NA				
1142	RB1903_J2_1134_B1_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	3:00:00	35.9261	74.8051	437	worm Trophos	NA	10231, EC10232		x		NA				NA				
1143	RB1903_J2_1134_B1_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	3:00:00	35.9261	74.8051	437	ubeworm Tub	NA	EC10234			x	NA				NA				
1144	RB1903_J2_1134_B2_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.9274	74.8075	395	worm Vestime	NA	EC10227			x	NA				NA				
1145	RB1903_J2_1134_B2_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.9274	74.8075	395	worm Trophos	NA	EC10228			x	NA				NA				
1146	RB1903_J2_1134_B2_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.9274	74.8075	395	inder of Tube	NA	EC10229			x	NA				NA				
1147	RB1903_J2_1134_B2_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.9274	74.8075	395	ubeworm Tub	NA	EC10233			x	NA				NA				
1148	RB1903_J2_1134_B2_02	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:30:22	35.9274	74.8075	395	carbonate rock	NA				x	NA				NA				
1149	RB1903_J2_1134_B2_03	J2-1134	Kitty Hawk Seep	April 23-24, 2019	5:48:26	35.9273	75.8076	395.97	Bathy shell	NA					NA				NA				
1150	RB1903_J2_1134_B4_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	10:59:13	35 36.051	74 49.048	235	rock	NA					NA				NA				
1151	RB1903_J2_1134_B4_02	J2-1134	Kitty Hawk Seep	April 23-24, 2019	11:08:15	35 36.051	74 49.048	235	rock	NA					NA				NA				
1152	RB1903_J2_1134_B4_04	J2-1134	Kitty Hawk Seep	April 23-24, 2019	11:08:15	35 36.051	74 49.048	235	Anemone	NA					NA				NA				
1153	RB1903_J2_1134_B5_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	13:27:00			210	clam shells x2	NA					NA				NA				
1154	RB1903_J2_1134_B5_02	J2-1134	Kitty Hawk Seep	April 23-24, 2019	14:03:00	35.9351	74.8179	219	plastic spoon	NA					NA				NA				
1155	RB1903_J2_1134_RB_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	2:16:00	35.926	74.8054	436	rock	NA					NA				NA				
1156	RB1903_J2_1134_R1_02	J2-1134	Kitty Hawk Seep	April 23-24, 2019					anemone	NA					NA				NA				
1157	RB1903_J2_1134_RB_02	J2-1134	Kitty Hawk Seep	April 23-24, 2019	6:04:49	35.9274	74.8079	398.84	rock	NA					NA				NA				
1158	RB1903_J2_1134_R2_05	J2-1134	Kitty Hawk Seep	April 23-24, 2019					anemone	NA					NA				NA				
1159	RB1903_J2_1134_RB_03	J2-1134	Kitty Hawk Seep	April 23-24, 2019	3:05:00	35.9261	74.8051	437	rock	NA					NA				NA				
1160	RB1903_J2_1134_SRed_01	J2-1134	Kitty Hawk Seep	April 23-24, 2019	1:34:00	35.9219	74.8314	447	squat lobster	NA	EC10218		x		NA				NA		CM_004	x	
1161	RB1903_J2_1134_SRed_02	J2-1134	Kitty Hawk Seep	April 23-24, 2019	1:39:00	35.9219	74.8314	447	squat lobster	NA	EC10219			x	NA				NA		CM_004	x	
1162	RB1903_J2_1134_SRed_03	J2-1134	Kitty Hawk Seep	April 23-24, 2019	1:39:00	35.9219	74.8314	447	squat lobster	NA	EC10220			x	NA				NA		CM_004	x	
1163	RB1903_J2_1134_SRed_04	J2-1134	Kitty Hawk Seep	April 23-24, 2019	1:41:00	35.9219	74.8314	447	squat lobster	NA	EC10221			x	NA				NA		CM_004	x	
1164	RB1903_J2_1134_SRed_05	J2-1134	Kitty Hawk Seep	April 23-24, 2019	1:42:00	35.9219	74.8314	447	quill worm	NA	EC10222			x	NA				NA		CM_004	x	
1165	RB1903_J2_1134_SRed_06	J2-1134	Kitty Hawk Seep	April 23-24, 2019	1:42:00	35.9219	74.8314	447	quill worm	NA	EC10223			x	NA				NA		CM_004	x	
1166	RB1903_J2_1134_SRed_07	J2-1134	Kitty Hawk Seep	April 23-24, 2019	1:42:00	35.9219	74.8314	447	quill worm	NA	EC10225			x	NA				NA		CM_004	x	
1167	RB1903_J2_1134_SRed_08	J2-1134	Kitty Hawk Seep	April 23-24, 2019	1:42:00	35.9219	74.8314	447	quill worm	NA	EC10226			x	NA				NA		CM_004	x	
1168	RB1903_J2_1134_SRed_09	J2-1134	Kitty Hawk Seep	April 23-24, 2019	1:42:00	35.9219	74.8314	447	shrimp (mult)	NA	EC10224			x	NA				NA		CM_004	x	
1169	RB1903_J2_1134_PC1	J2-1134	Kitty Hawk Seep	April 23-24, 2019	8:08:00	35 55.673	75 48.722	336	nent (near but	NA					NA				NA				
1170	RB1903_J2_1134_PC2	J2-1134	Kitty Hawk Seep	April 23-24, 2019	8:09:00	35 55.673	75 48.722	336	nent (near but	NA					NA				NA				
1171	RB1903_J2_1134_PC3	J2-1134	Kitty Hawk Seep	April 23-24, 2019	8:10:00	35 55.673	75 48.722	336	nent (near but	NA					NA				NA				
1172	RB1903_J2_1134_PC4	J2-1134	Kitty Hawk Seep	April 23-24, 2019	8:06:00	35 55.673	75 48.722	336	nent (near but	NA					NA				NA				
1173	RB1903_J2_1134_PC5	J2-1134	Kitty Hawk Seep	April 23-24, 2019	8:07:00	35 55.673	75 48.722	336	nent (near but	NA					NA				NA				
1174	RB1903_J2_1134_PC6	J2-1134	Kitty Hawk Seep	April 23-24, 2019	8:07:00	35 55.673	75 48.722	336	nent (near but	NA					NA				NA				
1175	RB1903_J2_1134_PC7	J2-1134	Kitty Hawk Seep	April 23-24, 2019	8:05:00	35 55.673	75 48.722	336	nent (near but	NA					NA				NA				
1176	RB1903_J2_1134_PC8	J2-1134	Kitty Hawk Seep	April 23-24, 2019	8:04:00	35 55.673	75 48.722	336	nent (near but	NA					NA				NA				
1177	RB1903_J2_1134_PC9	J2-1134	Kitty Hawk Seep	April 23-24, 2019	11:50:00	35 56.088	74 49.063	227	nent (mat pat	NA					NA				NA				
1178	RB1903_J2_1134_PC10	J2-1134	Kitty Hawk Seep	April 23-24, 2019	11:53:00	35 56.088	74 49.063	227	nent (mat pat	NA					NA				NA				
1179	RB1903_J2_1134_PC11	J2-1134	Kitty Hawk Seep	April 23-24, 2019	11:53:55	35 56.088	74 49.063	227	nent (mat pat	NA					NA				NA				
1180	RB1903_J2_1134_PC12	J2-1134	Kitty Hawk Seep	April 23-24, 2019	14:37:00	35.9353	74.8173	218	liment (non se	NA													

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore Number	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth..m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl			
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
1207	RB1903_J2_1135_B5_01	J2-1135	Cape Lookout DEEP	25-Apr-19	20:34:00	33.9166	75.834	976	Bamboo coral	NA	EC10248		x		NA				NA		CM-004€	x	
1208	RB1903_J2_1135_B5_02	J2-1135	Cape Lookout DEEP	25-Apr-19	20:34:00	33.9166	75.834	976	rock	NA					NA				NA				
1209	RB1903_J2_1135_Q3_01	J2-1135	Cape Lookout DEEP	25-Apr-19	21:48:00	33.9189	75.8335	944	Acanthogorgia	NA	EC10249		x		NA				NA		CM-004€	x	
1210	RB1903_J2_1135_Q3_02	J2-1135	Cape Lookout DEEP	25-Apr-19	21:48:00	33.9189	75.8335	944	Hermit Crab	NA					NA				NA				
1211	RB1903_J2_1135_Q3_03	J2-1135	Cape Lookout DEEP	25-Apr-19	21:48:00	33.9189	75.8335	944	Aplacophoran	NA					NA				NA				
1212	RB1903_J2_1135_Q3_04	J2-1135	Cape Lookout DEEP	25-Apr-19	21:48:00	33.9189	75.8335	944	Aplacophoran	NA					NA				NA				
1213	RB1903_J2_1135_Q3_05	J2-1135	Cape Lookout DEEP	25-Apr-19	21:48:00	33.9189	75.8335	944	Scale worm	NA					NA				NA				
1214	RB1903_J2_1135_Q3_06	J2-1135	Cape Lookout DEEP	25-Apr-19	21:48:00	33.9189	75.8335	944	Scale worm	NA					NA				NA				
1215	RB1903_J2_1135_Q12_01	J2-1135	Cape Lookout DEEP	25-Apr-19	21:04:00	22.9175	75.834	959	Acanthogorgia	NA	EC10250		x		NA				NA		CM-004€	x	
1216	RB1903_J2_1135_Sblue_01	J2-1135	Cape Lookout DEEP	25-Apr-19	9:53:07	33.8929	75.8621	1025	Bacterial Mat	NA					NA				NA				
1217	RB1903_J2_1135_N01	J2-1135	Cape Lookout DEEP	25-Apr-19	22:00:00	33.9189	75.8334	947	Water	NA					NA				NA				
1218	RB1903_J2_1135_N02	J2-1135	Cape Lookout DEEP	25-Apr-19	22:00:00	33.9189	75.8334	947	Water	NA					NA				NA				
1219	RB1903_J2_1135_N03	J2-1135	Cape Lookout DEEP	25-Apr-19	22:00:00	33.9189	75.8334	947	Water	NA					NA				NA				
1220	RB1903_J2_1135_N04	J2-1135	Cape Lookout DEEP	25-Apr-19	22:00:00	33.9189	75.8334	947	Water	NA	EC10262				NA	x	x		NA				
1221	RB1903_J2_1135_PC12	J2-1135	Cape Lookout DEEP	25-Apr-19	19:45:29	33.892	75.862	1027	Sediment	NA					NA				NA				
1222	RB1903_J2_1135_PC20	J2-1135	Cape Lookout DEEP	25-Apr-19	19:45:49	33.892	75.862	1027	Sediment	NA					NA				NA				
1223	RB1903_J2_1135_PC21	J2-1135	Cape Lookout DEEP	25-Apr-19	19:45:49	33.892	75.862	1027	Sediment	NA					NA				NA				
1224	RB1903_J2_1135_PC22	J2-1135	Cape Lookout DEEP	25-Apr-19	19:43:30	33.892	75.862	1027	Sediment	NA					NA				NA				
1225	RB1903_CTD015_N01	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	1177	Water	NA					NA				NA				
1226	RB1903_CTD015_N02	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	1177	Water	NA					NA				NA				
1227	RB1903_CTD015_N03	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	1177	Water	NA					NA				NA				
1228	RB1903_CTD015_N04	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	1177	Water	NA					NA				NA				
1229	RB1903_CTD015_N05	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	1177	Water	NA					NA				NA				
1230	RB1903_CTD015_N06	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	1177	Water	NA					NA				NA				
1231	RB1903_CTD015_N07	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	1177	Water	NA	EC10251				NA	x			NA				
1232	RB1903_CTD015_N08	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	1000	Water	NA	EC10252				NA	x			NA				
1233	RB1903_CTD015_N09	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	801	Water	NA	EC10253				NA	x			NA				
1234	RB1903_CTD015_N10	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	701	Water	NA	EC10254				NA	x			NA				
1235	RB1903_CTD015_N11	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	601	Water	NA	EC10255				NA	x			NA				
1236	RB1903_CTD015_N12	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	501	Water	NA	EC10256				NA	x			NA				
1237	RB1903_CTD015_N13	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	399	Water	NA	EC10257				NA	x			NA				
1238	RB1903_CTD015_N14	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	300	Water	NA	EC10258				NA	x			NA				
1239	RB1903_CTD015_N15	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	180	Water	NA	EC10259				NA	x			NA				
1240	RB1903_CTD015_N16	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	180	Water	NA					NA				NA				
1241	RB1903_CTD015_N17	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	180	Water	NA					NA				NA				
1242	RB1903_CTD015_N18	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	180	Water	NA					NA				NA				
1243	RB1903_CTD015_N19	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	86	Water	NA	EC10260				NA	x			NA				
1244	RB1903_CTD015_N20	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	surface	Water	NA	EC10261				NA	x			NA				
1245	RB1903_CTD015_N21	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	surface	Water	NA					NA				NA				
1246	RB1903_CTD015_N22	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	surface	Water	NA					NA				NA				
1247	RB1903_CTD015_N23	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	surface	Water	NA					NA				NA				
1248	RB1903_CTD015_N24	CTD015	Cape Lookout DEEP	25-Apr-19	23:15:00	33 56.6465	75 48.4260	surface	Water	NA					NA				NA				
1249	RB1903_CTD016_N01	CTD016	Blake Ridge	27-Apr-19	14:11:00	32 29.681	76 11.466	2181	Water	NA					NA				NA				
1250	RB1903_CTD016_N02	CTD016	Blake Ridge	27-Apr-19	14:11:00	32 29.681	76 11.466	2181	Water	NA					NA				NA				
1251	RB1903_CTD016_N03	CTD016	Blake Ridge	27-Apr-19	14:11:00	32 29.681	76 11.466	2181	Water	NA	EC10263				NA	x			NA				
1252	RB1903_CTD016_N04	CTD016	Blake Ridge	27-Apr-19	14:11:00	32 29.681	76 11.466	2157	Water	NA	EC10264				NA	x			NA				
1253	RB1903_CTD016_N05	CTD016	Blake Ridge	27-Apr-19	14:11:00	32 29.681	76 11.466	2130	Water	NA	EC10265				NA	x			NA				
1254	RB1903_CTD016_N06	CTD016	Blake Ridge	27-Apr-19	14:11:00	32 29.681	76 11.466	2085	Water	NA	EC10266				NA	x			NA				
1255	RB1903_CTD016_N07	CTD016	Blake Ridge	27-Apr-19	14:11:00	32 29.681	76 11.466	1903	Water	NA	EC10267				NA	x			NA				
1256	RB1903_CTD016_N08	CTD016	Blake Ridge	27-Apr-19	14:11:00	32 29.681	76 11.466	1699	Water	NA	EC10268				NA	x			NA				

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Cordes.Number	Erik Cordes				Chris Kellogg				Cheryl		
												LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1
1274	RB1903_CTD017_N02	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2609	Water	NA	EC10373				NA			NA				x
1275	RB1903_CTD017_N03	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2609	Water	NA					NA			NA				x
1276	RB1903_CTD017_N04	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2609	Water	NA					NA			NA				
1277	RB1903_CTD017_N05	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2609	Water	NA					NA	x		NA				
1278	RB1903_CTD017_N06	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2609	Water	NA					NA			NA				
1279	RB1903_CTD017_N07	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2609	Water	NA					NA			NA				
1280	RB1903_CTD017_N08	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2598	Water	NA		EC10374			NA	x		NA				
1281	RB1903_CTD017_N09	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2586	Water	NA		EC10375			NA	x		NA				
1282	RB1903_CTD017_N10	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2510	Water	NA		EC10376			NA	x		NA				
1283	RB1903_CTD017_N11	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	2000	Water	NA		EC10377			NA	x		NA				
1284	RB1903_CTD017_N12	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	1500	Water	NA	EC10378			NA	x		NA					
1285	RB1903_CTD017_N13	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	1200	Water	NA	EC10379			NA	x		NA					
1286	RB1903_CTD017_N14	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	750	Water	NA	EC10380			NA	x		NA					
1287	RB1903_CTD017_N15	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	500	Water	NA	EC10381			NA	x		NA					
1288	RB1903_CTD017_N16	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	200	Water	NA	EC10382			NA	x		NA				x	
1289	RB1903_CTD017_N17	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	200	Water	NA	EC10383			NA	x		NA					
1290	RB1903_CTD017_N18	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	200	Water	NA	EC10384			NA	x		NA					
1291	RB1903_CTD017_N19	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	135	Water	NA	EC10385			NA	x		NA					
1292	RB1903_CTD017_N20	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	surface	Water	NA				NA			NA					
1293	RB1903_CTD017_N21	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	surface	Water	NA	EC10386			NA	x		NA					
1294	RB1903_CTD017_N22	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	surface	Water	NA				NA			NA				x	
1295	RB1903_CTD017_N23	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	surface	Water	NA				NA			NA				x	
1296	RB1903_CTD017_N24	CTD017	Cape Fear	28-Apr-19	12:00:00	32 58.8174	75 55.7206	surface	Water	NA				NA			NA				x	
1297	RB1903_J2_1136_B1_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10291		x	NA			NA			CM-0047		x
1298	RB1903_J2_1136_B1_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10292		x	NA			NA			CM-0047		x
1299	RB1903_J2_1136_B1_03	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10295		x	NA			NA			CM-0047		x
1300	RB1903_J2_1136_B1_04	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10297		x	NA			NA			CM-0047		x
1301	RB1903_J2_1136_B1_05	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10299		x	NA			NA			CM-0047		x
1302	RB1903_J2_1136_B1_06	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10300		x	NA			NA			CM-004E		x
1303	RB1903_J2_1136_B1_07	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10301		x	NA			NA			CM-004E		x
1304	RB1903_J2_1136_B1_08	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10302		x	NA			NA			CM-004E		x
1305	RB1903_J2_1136_B1_09	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10303		x	NA			NA			CM-004E		x
1306	RB1903_J2_1136_B1_10	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10304		x	NA			NA					
1307	RB1903_J2_1136_B1_11	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10305		x	NA			NA					
1308	RB1903_J2_1136_B1_12	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10306		x	NA			NA					
1309	RB1903_J2_1136_B1_13	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10307		x	NA			NA			CM-004E		x
1310	RB1903_J2_1136_B1_14	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10308		x	NA			NA					
1311	RB1903_J2_1136_B1_15	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10309		x	NA			NA					
1312	RB1903_J2_1136_B1_16	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10310		x	NA			NA					
1313	RB1903_J2_1136_B1_17	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10311		x	NA			NA					
1314	RB1903_J2_1136_B1_18	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA				NA			NA					
1315	RB1903_J2_1136_B1_19	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	B. heckeræ	NA	EC10313		x	NA			NA					
1316	RB1903_J2_1136_B1_20	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	Sepunculid	NA				NA			NA					
1317	RB1903_J2_1136_B1_21	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:01:00	32.4939	76.1909	2166	Anemone	NA				NA			NA					
1318	RB1903_J2_1136_B2_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:57:00	32.4939	76.1913	2166	B. heckeræ	NA	EC10312		x	NA			NA			CM-004E		x
1319	RB1903_J2_1136_B2_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:57:00	32.4939	76.1913	2166	B. heckeræ	NA	EC10314		x	NA			NA			CM-004E		x
1320	RB1903_J2_1136_B2_03	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:57:00	32.4939	76.1913	2166	B. heckeræ	NA	EC10315		x	NA			NA			CM-004E		x
1321	RB1903_J2_1136_B2_04	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:57:00	32.4939	76.1913	2166	B. heckeræ	NA	EC10316		x	NA			NA			CM-004E		x
1322	RB1903_J2_1136_B2_05	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:57:00	32.4939	76.1913	2166	B. heckeræ	NA	EC10317		x	NA			NA			CM-004E		x
1323	RB1903_J2_1136_B2_06	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:57:00	32.4																

RB1903 Master Sample Sheet

												Erik Cordes				Chris Kellogg				Cheryl			
	Sample Number	Dive.CTD.Multicore.N umber	Site	Date.Collecte	time	Latitude_OLD	Longitude_OLD	Depth..m.	Tentative.ID	Confirmed.ID	Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
1341	RB1903_J2_1136_B4_10	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10345		x		NA				NA				
1342	RB1903_J2_1136_B4_11	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10346		x		NA				NA		CM-005C	x	
1343	RB1903_J2_1136_B4_12	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10347		x		NA				NA				
1344	RB1903_J2_1136_B4_13	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10348		x		NA				NA				
1345	RB1903_J2_1136_B4_14	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10349		x		NA				NA		CM-005C	x	
1346	RB1903_J2_1136_B4_15	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10350		x		NA				NA		CM-005C	x	
1347	RB1903_J2_1136_B4_16	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10351		x		NA				NA		CM-005C	x	
1348	RB1903_J2_1136_B4_17	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10352		x		NA				NA		CM-005C	x	
1349	RB1903_J2_1136_B4_18	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10353		x		NA				NA		CM-005C	x	
1350	RB1903_J2_1136_B4_19	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA					NA				NA				
1351	RB1903_J2_1136_B4_20	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA					NA				NA				
1352	RB1903_J2_1136_B4_21	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA					NA				NA				
1353	RB1903_J2_1136_B4_22	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA					NA				NA				
1354	RB1903_J2_1136_B4_23	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA					NA				NA				
1355	RB1903_J2_1136_B4_24	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA					NA				NA				
1356	RB1903_J2_1136_B4_25	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10354		x		NA				NA		CM-005C	x	
1357	RB1903_J2_1136_B4_26	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10355		x		NA				NA		CM-005C	x	
1358	RB1903_J2_1136_B4_27	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10356		x		NA				NA				
1359	RB1903_J2_1136_B4_28	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10357		x		NA				NA				
1360	RB1903_J2_1136_B4_29	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10358		x		NA				NA				
1361	RB1903_J2_1136_B4_30	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10359		x		NA				NA				
1362	RB1903_J2_1136_B4_31	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10360		x		NA				NA				
1363	RB1903_J2_1136_B4_32	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10361		x		NA				NA				
1364	RB1903_J2_1136_B4_33	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10362		x		NA				NA				
1365	RB1903_J2_1136_B4_34	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckerae	NA	EC10363		x		NA				NA				
1366																							

RB1903 Master Sample Sheet

											Erik Cordes				Chris Kellogg				Cheryl				
	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1	LN2.2
1408	RB1903_J2_1136_B4_77	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckeræ	NA					NA				NA				
1409	RB1903_J2_1136_B4_78	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckeræ	NA					NA				NA				
1410	RB1903_J2_1136_B4_79	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckeræ	NA					NA				NA				
1411	RB1903_J2_1136_B4_80	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckeræ	NA					NA				NA				
1412	RB1903_J2_1136_B4_81	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	B. heckeræ	NA					NA				NA				
1413	RB1903_J2_1136_B4_82	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA	EC10368		x		NA				NA				
1414	RB1903_J2_1136_B4_83	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA	EC10369			x	NA				NA				
1415	RB1903_J2_1136_B4_84	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA	EC10370			x	NA				NA				
1416	RB1903_J2_1136_B4_85	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA					NA				NA				
1417	RB1903_J2_1136_B4_86	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA	EC10371			x	NA				NA				
1418	RB1903_J2_1136_B4_87	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA	EC10372			x	NA				NA				
1419	RB1903_J2_1136_B4_88	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA					NA				NA				
1420	RB1903_J2_1136_B4_89	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA					NA				NA				
1421	RB1903_J2_1136_B4_90	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA					NA				NA				
1422	RB1903_J2_1136_B4_91	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA					NA				NA				
1423	RB1903_J2_1136_B4_92	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA					NA				NA				
1424	RB1903_J2_1136_B4_93	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA					NA				NA				
1425	RB1903_J2_1136_B4_94	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Holothurian	NA					NA				NA				
1426	RB1903_J2_1136_B4_95	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:44:00	32.4937	76.1909	2166	Anemone	NA					NA				NA				
1427	RB1903_J2_1136_B5_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	1:06:00	32.4939	76.1913	2166	B. heckeræ	NA	EC10326				NA				NA		CM-004€	x	
1428	RB1903_J2_1136_B5_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	1:06:00	32.4939	76.1913	2166	Holothurian	NA	EC10332				NA				NA		CM-004€	x	
1429	RB1903_J2_1136_B5_03	J2-1136	Blake Ridge Seep	April 27-28, 2019	1:06:00	32.4939	76.1913	2166	Holothurian	NA					NA				NA				
1430	RB1903_J2_1136_B5_04	J2-1136	Blake Ridge Seep	April 27-28, 2019	1:06:00	32.4939	76.1913	2166	Gastropod	NA					NA				NA				
1431	RB1903_J2_1136_B5_05	J2-1136	Blake Ridge Seep	April 27-28, 2019	1:06:00	32.4939	76.1913	2166	Sepunculid	NA					NA				NA				
1432	RB1903_J2_1136_B5_06	J2-1136	Blake Ridge Seep	April 27-28, 2019	1:06:00	32.4939	76.1913	2166	Mussel shell	NA					NA				NA				
1433	RB1903_J2_1136_Q3_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	3:44:00	32.49386	76.1917	2166	Antipatharian	NA	EC10246		x		NA				NA		CM-004€	x	
1434	RB1903_J2_1136_Q4_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	4:48:02	32.4942	76.1902	2168.5	Isididae	NA	EC10287			x	NA				NA		CM-004€	x	
1435	RB1903_J2_1136_Q9_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:36:00	32.4937	76.1912	2166	Clam	NA					NA				NA				
1436	RB1903_J2_1136_Q10_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:34:00	32.4937	76.1912	2166	Urchin	NA	EC10284		x		NA				NA		CM-004€	x	
1437	RB1903_J2_1136_Q10_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:34:00	32.4937	76.1912	2166	Urchin	NA	EC10285		x		NA				NA		CM-0047	x	
1438	RB1903_J2_1136_Q10_03	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:34:00	32.4937	76.1912	2166	Urchin	NA	EC10286		x		NA				NA		CM-00471		
1439	RB1903_J2_1136_SBlue_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	4:37:13	32.494	76.1907	2168	Squat Lobster	NA	EC10288		x		NA				NA		CM-0047	x	
1440	RB1903_J2_1136_SBlue_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	4:37:13	32.494	76.1907	2168	Mussel	NA	EC10290		x		NA				NA		CM-0047	x	
1441	RB1903_J2_1136_SWhite_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	4:16:11	32.494	76.1911	2167.35	Squat Lobster	NA	EC10289		x		NA				NA		CM-0047	x	
1442	RB1903_J2_1136_N01	J2-1136	Blake Ridge Seep	April 27-28, 2019	4:02:33	32.4937	76.1909	2163.6	Water	NA					NA				NA				
1443	RB1903_J2_1136_N02	J2-1136	Blake Ridge Seep	April 27-28, 2019	4:02:33	32.4937	76.1909	2163.6	Water	NA	EC10385				NA	x			NA				
1444	RB1903_J2_1136_N03	J2-1136	Blake Ridge Seep	April 27-28, 2019	4:02:33	32.4937	76.1909	2163.6	Water	NA					NA		x		NA				
1445	RB1903_J2_1136_N04	J2-1136	Blake Ridge Seep	April 27-28, 2019	4:02:33	32.4937	76.1909	2163.6	Water	NA					NA		x		NA				
1446	RB1903_J2_1136_M1_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:44:00	32.4939	76.1909	2166	keræe (8 indivi	NA	EC10386		x		NA				NA				
1447	RB1903_J2_1136_M1_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:44:00	32.4939	76.1909	2166	roid (5 individ	NA	EC10387		x		NA				NA				
1448	RB1903_J2_1136_M1_03	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:44:00	32.4939	76.1909	2166	caris (9 indivi	NA	EC10388		x		NA				NA				
1449	RB1903_J2_1136_M1_04	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:44:00	32.4939	76.1909	2166	Anemone	NA	EC10389		x		NA				NA				
1450	RB1903_J2_1136_M1_05	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:44:00	32.4939	76.1909	2166	Gastropod	NA	EC10390		x		NA				NA				
1451	RB1903_J2_1136_M1_06	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:44:00	32.4939	76.1909	2166	Alvinocaris	NA	EC10391		x		NA				NA				
1452	RB1903_J2_1136_M2_01	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:22:00	32.4939	76.1909	2166	ussel (60 indiv	NA	EC10392		x		NA				NA				
1453	RB1903_J2_1136_M2_02	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:22:00	32.4939	76.1909	2166	Dead mussel	NA	EC10393		x		NA				NA				
1454	RB1903_J2_1136_M2_03	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:22:00	32.4939	76.1909	2166	lid (132 indivi	NA	EC10394		x		NA				NA				
1455	RB1903_J2_																						

RB1903 Master Sample Sheet

	Sample Number	Dive CTD, Multicore Number	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth..m.	Tentative ID	Confirmed ID	Erik Cordes				Chris Kellogg				Cheryl			
											Cordes Number	LN2	ETOH	Voucher Dried	Live	X500 ml bottle	LN2.1	RNA Later	DNA RNA Shield	Bacterial Culture Plates from Tissue	CM..	ETOH.1
1475	RB1903_J2_1136_M3_12	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:35:00	32.4937	76.1909	2166	olid (26 indivi	NA	EC10415		x		NA				NA			
1476	RB1903_J2_1136_M3_13	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:35:00	32.4937	76.1909	2166	roid (74 indivi	NA	EC10416		x		NA				NA			
1477	RB1903_J2_1136_PC01	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:21:00	32.4939	76.1909	2166	diment (musse	NA					NA				NA			
1478	RB1903_J2_1136_PC02	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:21:00	32.4939	76.1909	2166	diment (musse	NA					NA				NA			
1479	RB1903_J2_1136_PC03	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:20:00	32.4939	76.1909	2166	diment (musse	NA					NA				NA			
1480	RB1903_J2_1136_PC04	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:19:00	32.4939	76.1909	2166	diment (musse	NA					NA				NA			
1481	RB1903_J2_1136_PC05	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:23:00	32.4939	76.1909	2166	diment (musse	NA					NA				NA			
1482	RB1903_J2_1136_PC06	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:22:00	32.4939	76.1909	2166	diment (musse	NA					NA				NA			
1483	RB1903_J2_1136_PC07	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:18:00	32.4939	76.1909	2166	diment (musse	NA					NA				NA			
1484	RB1903_J2_1136_PC08	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:24:00	32.4939	76.1909	2166	diment (musse	NA					NA				NA			
1485	RB1903_J2_1136_PC12	J2-1136	Blake Ridge Seep	April 27-28, 2019	6:03:13	32.4949	76.1898	2168.28	nent (bacterial	NA					NA				NA			
1486	RB1903_J2_1136_PC13	J2-1136	Blake Ridge Seep	April 27-28, 2019	6:02:09	32.4949	76.1898	2168.28	nent (bacterial	NA					NA				NA			
1487	RB1903_J2_1136_PC14	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:00:00	32.4937	76.1911	2166	nent (bacterial	NA					NA				NA			
1488	RB1903_J2_1136_PC15	J2-1136	Blake Ridge Seep	April 27-28, 2019	5:59:10	32.4949	76.1898	2168.28	nent (bacterial	NA					NA				NA			
1489	RB1903_J2_1136_PC16	J2-1136	Blake Ridge Seep	April 27-28, 2019	5:54:51	32.4949	76.1898	2168.28	nent (bacterial	NA					NA				NA			
1490	RB1903_J2_1136_PC17	J2-1136	Blake Ridge Seep	April 27-28, 2019	6:00:48	32.4949	76.1898	2168.28	nent (bacterial	NA					NA				NA			
1491	RB1903_J2_1136_PC18	J2-1136	Blake Ridge Seep	April 27-28, 2019	5:57:41	32.4949	76.1898	2168.28	nent (bacterial	NA					NA				NA			
1492	RB1903_J2_1136_PC19	J2-1136	Blake Ridge Seep	April 27-28, 2019	5:56:07	32.4949	76.1898	2168.28	nent (bacterial	NA					NA				NA			
1493	RB1903_J2_1136_PC20	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:01:00	32.4937	76.1911	2166	nent (bacterial	NA					NA				NA			
1494	RB1903_J2_1136_PC21	J2-1136	Blake Ridge Seep	April 27-28, 2019	5:53:19	32.4949	76.1898	2168.28	nent (bacterial	NA					NA				NA			
1495	RB1903_J2_1136_PC25	J2-1136	Blake Ridge Seep	April 27-28, 2019	23:58:00	32.4937	76.1911	2166	nent (bacterial	NA					NA				NA			
1496	RB1903_J2_1136_PC27	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:04:00	32.4937	76.1911	2166	nent (bacterial	NA					NA				NA			
1497	RB1903_J2_1136_PC28	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:07:00	32.4937	76.1911	2166	nent (bacterial	NA					NA				NA			
1498	RB1903_J2_1136_PC29	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:05:00	32.4937	76.1911	2166	nent (bacterial	NA					NA				NA			
1499	RB1903_J2_1136_PC30	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:09:00	32.4937	76.1911	2166	nent (bacterial	NA					NA				NA			
1500	RB1903_J2_1136_PC31	J2-1136	Blake Ridge Seep	April 27-28, 2019	0:03:00	32.4937	76.1911	2166	nent (bacterial	NA					NA				NA			
1501	RB1903_J2_1136_R1	J2-1136	Blake Ridge Seep	April 27-28, 2019	2:29:00	32.4938	76.1907	2165	rock	NA					NA				NA			
1502	RB1903_J2_1136_R2	J2-1136	Blake Ridge Seep	April 27-28, 2019	22:59:00	32.4939	76.1909	2166	mussel	NA					NA				NA			
1503	RB1903_J2_1137_Q3_01	J2-1137	Cape Fear Seep	28-Apr-19	18:45:51	32 58.776	75 55.705	2589	Anthomastus	NA					NA				NA			
1504	RB1903_J2_1137_Q4_01	J2-1137	Cape Fear Seep	28-Apr-19	22:31:39	32 58.45464	75 55.705	2607.9	Chrysogorgia	NA	EC10418		x		NA				NA		CM-005C	x
1505	RB1903_J2_1137_Q4_02	J2-1137	Cape Fear Seep	28-Apr-19	22:31:39	32 58.45464	75 55.705	2607.9	Amphipod	NA					NA				NA			
1506	RB1903_J2_1137_Q5_01	J2-1137	Cape Fear Seep	28-Apr-19	0:09:00	32.9732	75.9154	2591.6	Paragorgia	NA	EC10420		x		NA				NA		CM-0051	x
1507	RB1903_J2_1137_Q5_02	J2-1137	Cape Fear Seep	28-Apr-19	0:09:00	32.9732	75.9154	2591.6	Anemone	NA					NA				NA			
1508	RB1903_J2_1137_Q8_01	J2-1137	Cape Fear Seep	28-Apr-19	21:11:00	32.9784	75.9236	2599	Bamboo coral	NA	EC10421		x		NA				NA		CM-0051	x
1509	RB1903_J2_1137_Q9_01	J2-1137	Cape Fear Seep	28-Apr-19	0:23:00	32.9733	75.9156	2593.5	Chrysogorgia	NA	EC10422		x		NA				NA		CM-005C	x
1510	RB1903_J2_1137_Q9_02	J2-1137	Cape Fear Seep	28-Apr-19	0:23:00	32.9733	75.9156	2593.5	Amphipod	NA					NA				NA			
1511	RB1903_J2_1137_SBlue	J2-1137	Cape Fear Seep	28-Apr-19	20:35:00	32.9794	75.9265	2592	ilament worm	NA					NA				NA			
1512	RB1903_J2_1137_SBlack	J2-1137	Cape Fear Seep	28-Apr-19	19:25:37	32 58.782	75 55.696	2590	Bacterial Mat	NA					NA				NA			
1513	RB1903_J2_1137_N01	J2-1137	Cape Fear Seep	28-Apr-19	2:09:00	32.97398	75.9142	2571	Water	NA					NA				NA			
1514	RB1903_J2_1137_N02	J2-1137	Cape Fear Seep	28-Apr-19	2:09:00	32.97398	75.9142	2571	Water	NA					NA				NA			
1515	RB1903_J2_1137_N03	J2-1137	Cape Fear Seep	28-Apr-19	2:09:00	32.97398	75.9142	2571	Water	NA	EC10417				NA	x			NA			
1516	RB1903_J2_1137_N04	J2-1137	Cape Fear Seep	28-Apr-19	2:09:00	32.97398	75.9142	2571	Water	NA					NA		x		NA			
1517	RB1903_J2_1137_R01	J2-1137	Cape Fear Seep	28-Apr-19	0:48:00	32.9735	75.9152	2587	rock	NA					NA				NA			
1518	RB1903_J2_1137_R02	J2-1137	Cape Fear Seep	28-Apr-19	0:42:00	32.9735	75.9152	2587	rock	NA					NA				NA			
1519	RB1903_J2_1137_R03	J2-1137	Cape Fear Seep	28-Apr-19	18:57:48	32 58.778	75 55.717	2587.4	rock	NA					NA				NA			
1520	RB1903_J2_1137_B1_01	J2-1137	Cape Fear Seep	28-Apr-19	22:30:18	32 58.45366	75 55.07976	2607.5	rock	NA					NA				NA			
1521	RB1903_J2_1137_B1_02	J2-1137	Cape Fear Seep	28-Apr-19	22:31:14	32 58.45366	75 55.07976	2607.5	rock	NA					NA				NA			
1522	RB1903_J2_1137_B2	J2-1137	Cape Fear Seep	28-Apr-19	22:50:00	32.9738	75.9178	2604	rock	NA					NA				NA			
1523	RB1903_J2_1137_PC01	J2-1137	Cape Fear Seep	28-Apr-19	20:24:00	32.9795	75.9268	2592	nent (bacterial	NA					NA				NA			
1524	RB1903_J2_1137_PC02	J2-1137	Cape Fear Seep	28-Apr-19	20:23:00	32.9795	75.9268	2592	nent (bacterial	NA					NA				NA			
1525	RB1903_J2_1137_PC03	J2-1137	Cape Fear Seep	28-Apr-19	20:22:00	32.9795	75.9268	2592	nent (bacterial	NA					NA				NA			
1526	RB1903_J2_1137_PC04	J2-1137	Cape Fear Seep	28-Apr-19	20:21:00	32.9795	75.9268	2592	nent (bacterial	NA					NA				NA			
1527	RB1903_J2_1137_PC05	J2-1137	Cape Fear Seep	28-Apr-19	20:25:00	32.9795	75.9268	2592														

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date Collected	time	Latitude_OLD	Longitude_OLD	Depth.m.	Tentative.ID	Confirmed.ID	Erik Cordes					Chris Kellogg				Cheryl		
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNA.Later	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..	ETOH.1
1542	RB1903_J2_1137_PC28	J2-1137	Cape Fear Seep	28-Apr-19	19:18:42	32 58.781	75 55.697	2590	nent (bacterial	NA	EC10424				NA			NA				
1543	RB1903_J2_1137_PC29	J2-1137	Cape Fear Seep	28-Apr-19	19:17:28	32 58.781	75 55.697	2590	nent (bacterial	NA					NA			NA				
1544	RB1903_J2_1137_PC31	J2-1137	Cape Fear Seep	28-Apr-19	19:22:11	32 58.781	75 55.697	2590	nent (bacterial	NA					NA			NA				
1545	RB1903_CTD018_N01	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA					NA			NA				x
1546	RB1903_CTD018_N02	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA					NA			NA				x
1547	RB1903_CTD018_N03	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA					NA			NA				x
1548	RB1903_CTD018_N04	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA					NA			NA				
1549	RB1903_CTD018_N05	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA					NA			NA				
1550	RB1903_CTD018_N06	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA					NA			NA				
1551	RB1903_CTD018_N07	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA					NA			NA				
1552	RB1903_CTD018_N08	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA				NA			NA					
1553	RB1903_CTD018_N09	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA				NA	x		NA					
1554	RB1903_CTD018_N10	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA				NA			NA					
1555	RB1903_CTD018_N11	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA				NA			NA					
1556	RB1903_CTD018_N12	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA				NA			NA					
1557	RB1903_CTD018_N13	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA				NA			NA					
1558	RB1903_CTD018_N14	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA				NA			NA					
1559	RB1903_CTD018_N15	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	742	Water	NA				NA			NA					
1560	RB1903_CTD018_N16	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	surface	Water	NA				NA			NA					
1561	RB1903_CTD018_N17	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	surface	Water	NA	EC10423			NA	x		NA					
1562	RB1903_CTD018_N19	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	surface	Water	NA					NA			NA				
1563	RB1903_CTD018_N20	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	surface	Water	NA					NA			NA				
1564	RB1903_CTD018_N21	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	surface	Water	NA					NA			NA				
1565	RB1903_CTD018_N22	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	surface	Water	NA				NA			NA				x	
1566	RB1903_CTD018_N23	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	surface	Water	NA				NA			NA				x	
1567	RB1903_CTD018_N24	CTD018	Richardson West	29-Apr-19	15:26:00	31 54.3920	77 41.6884	surface	Water	NA				NA			NA				x	
1568	RB1903_J2_1138_B2_01	J2-1138	Richardson West	29-Apr-19	22:00:45	31 53.7	77 41.916	662.6	White Plexauri	NA	EC10444		x		NA			NA		CM-0052	x	
1569	RB1903_J2_1138_B3_01	J2-1138	Richardson West	29-Apr-19	21:44:10	31 53.697	77 41.921	664	Black coral	NA				NA			NA		CM-0053	x		
1570	RB1903_J2_1138_B4_01	J2-1138	Richardson West	29-Apr-19	21:09:49	31 53.678	77 41.958	677	Lophelia	NA	EC10445		x		NA			NA		CM-0053	x	
1571	RB1903_J2_1138_B4_02	J2-1138	Richardson West	29-Apr-19	21:09:49	31 53.678	77 41.958	677	Hydroids	NA				NA			NA					
1572	RB1903_J2_1138_B4_03	J2-1138	Richardson West	29-Apr-19	21:09:49	31 53.678	77 41.958	677	Yellow Sponge	NA	EC10473		x		NA			NA		CM-0053	x	
1573	RB1903_J2_1138_B4_04	J2-1138	Richardson West	29-Apr-19	21:09:49	31 53.678	77 41.958	677	White Sponge	NA				NA			NA					
1574	RB1903_J2_1138_B4_05	J2-1138	Richardson West	29-Apr-19	21:09:49	31 53.678	77 41.958	677	Eunicid	NA				NA			NA		CM-0053	x		
1575	RB1903_J2_1138_B5_01	J2-1138	Richardson West	29-Apr-19	21:28:00	31.8949	77.6987	665	W Enallopsan	NA	EC10470		x		NA			NA		CM-0053	x	
1576	RB1903_J2_1138_B5_02	J2-1138	Richardson West	29-Apr-19	21:28:00	31.8949	77.6987	665	Pseudodrifra	NA				NA			NA					
1577	RB1903_J2_1138_B5_03	J2-1138	Richardson West	29-Apr-19	21:28:00	31.8949	77.6987	665	Hydroids	NA				NA			NA		CM-0053	x		
1578	RB1903_J2_1138_B5_04	J2-1138	Richardson West	29-Apr-19	21:28:00	31.8949	77.6987	665	Bathypasamia	NA	EC10471		x		NA			NA		CM-0053	x	
1579	RB1903_J2_1138_B5_05	J2-1138	Richardson West	29-Apr-19	21:28:00	31.8949	77.6987	665	Squat Lobster	NA	EC10472		x		NA			NA		CM-0053	x	
1580	RB1903_J2_1138_B5_06	J2-1138	Richardson West	29-Apr-19	21:28:00	31.8949	77.6987	665	Hydroid	NA				NA			NA		CM-0053	x		
1581	RB1903_J2_1138_Q1_01	J2-1138	Richardson West	29-Apr-19	20:39:11	31 53.651	77 41.973	693.5	W Enallopsan	NA	EC10425		x		NA			NA		CM-0051	x	
1582	RB1903_J2_1138_Q2_01	J2-1138	Richardson West	29-Apr-19	21:52:59	31 53.800	77 41.917	662	White Plexauri	NA	EC10432		x		NA			NA		CM-0052	x	
1583	RB1903_J2_1138_Q3_01	J2-1138	Richardson West	29-Apr-19	19:06:22	31.8837	77.7231	722.63	Plumarella	NA	EC10426		x		NA			NA		CM-0051	x	
1584	RB1903_J2_1138_Q3_02	J2-1138	Richardson West	29-Apr-19	19:07:46	31.8837	77.7231	722.63	White Plexauri	NA	EC10427		x		NA			NA				
1585	RB1903_J2_1138_Q3_03	J2-1138	Richardson West	29-Apr-19	19:11:55	31.8837	77.7231	722.63	Stalked Crinoid	NA				NA			NA					
1586	RB1903_J2_1138_Q3_04	J2-1138	Richardson West	29-Apr-19	19:07:46	31.8837	77.7231	722.63	Brittle Star	NA				NA			NA					
1587	RB1903_J2_1138_Q4_01	J2-1138	Richardson West	29-Apr-19	19:26:54	31.884	77.7234	721.34	W Enallopsan	NA	EC10431		x		NA		x	x	NA		CM-0052	x
1588	RB1903_J2_1138_Q5_01	J2-1138	Richardson West	29-Apr-19	21:37:00	31.8938	77.6988	664	Lophelia	NA				NA			NA		CM-0051	x		
1589	RB1903_J2_1138_Q6_01	J2-1138	Richardson West	29-Apr-19	22:36:31	31 53.725	77 41.887	660.5	White Plexauri	NA	EC10430		x		NA			NA		CM-0051	x	
1590	RB1903_J2_1138_Q6_02	J2-1138	Richardson West	29-Apr-19	22:36:31	31 53.725	77 41.887	660.5	Shrimp	NA				NA			NA		CM-0051	x		
1591	RB1903_J2_1138_Q7_01	J2-1138	Richardson West	29-Apr-19	20:14:00	31 53.627	77 41.975	705.4	Plumarella	NA	EC10428		x		NA			NA		CM-0051	x	
1592	RB1903_J2_1138_Q7_02	J2-1138	Richardson West	29-Apr-19	20:13:00	31 53.627	77 41.975	705.4	White Plexauri	NA	EC10429		x		NA			NA		CM-0051	x	
1593	RB1903_J2_1138_Q7_03	J2-1138	Richardson West	29-Apr-19	20:18:42	31 53.627	77 41.975	705.4	Stalked Crinoid	NA				NA			NA					
1594	RB1903_J2_1138_Q8_01	J2-1138	Richardson West	29-Apr-19	19:57:58	31.8849	77.7234	705.7	Enallopsammia	NA				NA		x	x	NA		CM-0051	x	
1595	RB1903_J2_1138_Q9_01	J2-1138	Richardson West	29-Apr-19	1:45:00	31.9034	77.6964	772	Chrysogorgia	NA	EC10433		x	</								

RB1903 Master Sample Sheet

	Sample Number	Dive.CTD.Multicore.N umber	Site	Date.Collecte	time	Latitude_OLD	Longitude_OLD	Depth..m.	Tentative.ID	Confirmed.ID	Erik Cordes				Chris Kellogg				Cheryl		
											Cordes.Number	LN2	ETOH	Voucher.Dried	Live	X500.ml.bottle	LN2.1	RNALater	DNA.RNA.Shield	Bacterial.Culture Plates.from.Tissue	CM..
1609	RB1903_J2_1138_RB_09	J2-1138	Richardson West	29-Apr-19	2:40:00	31.9078	77.6959	770.8	Stoloniferan	NA				NA					CM-0052	x	
1610	RB1903_J2_1138_RB_10	J2-1138	Richardson West	29-Apr-19	2:40:00	31.9078	77.6959	770.8	ellow Plexauri	NA	EC10442	x	NA	NA	NA				CM-0052	x	
1611	RB1903_J2_1138_RB_11	J2-1138	Richardson West	29-Apr-19	2:40:00	31.9078	77.6959	770.8	ellow Plexauri	NA			NA	NA	NA						
1612	RB1903_J2_1138_RB_12	J2-1138	Richardson West	29-Apr-19	2:40:00	31.9078	77.6959	770.8	Stylasterid	NA	EC10443	x	NA	NA	NA						
1613	RB1903_J2_1138_RB_13	J2-1138	Richardson West	29-Apr-19	2:40:00	31.9078	77.6959	770.8	Anemone	NA			NA	NA	NA						
1614	RB1903_J2_1138_RB_14	J2-1138	Richardson West	29-Apr-19	2:40:00	31.9078	77.6959	770.8	Barnacle	NA			NA	NA	NA				CM-0052	x	
1615	RB1903_J2_1138_RB_15	J2-1138	Richardson West	29-Apr-19	2:40:00	31.9078	77.6959	770.8	Barnacle	NA			NA	NA	NA						
1616	RB1903_J2_1138_RB_16	J2-1138	Richardson West	29-Apr-19	2:40:00	31.9078	77.6959	770.8	Hydroid	NA			NA	NA	NA						
1617	RB1903_J2_1138_M1_01	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Lophelia and f	NA	EC10446	x	NA	NA	NA						
1618	RB1903_J2_1138_M1_02	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Lophelia and	NA	EC10447	x	NA	NA	NA						
1619	RB1903_J2_1138_M1_03	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Annelid (114)	NA	EC10448	x	NA	NA	NA						
1620	RB1903_J2_1138_M1_04	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	ellow Sponge (NA	EC10449	x	NA	NA	NA						
1621	RB1903_J2_1138_M1_05	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Hexac (9)	NA	EC10450	x	NA	NA	NA						
1622	RB1903_J2_1138_M1_06	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Urchin	NA	EC10451	x	NA	NA	NA						
1623	RB1903_J2_1138_M1_07	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Anemone	NA	EC10452	x	NA	NA	NA						
1624	RB1903_J2_1138_M1_08	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Gastropod	NA	EC10453	x	NA	NA	NA						
1625	RB1903_J2_1138_M1_09	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Gastropod	NA	EC10454	x	NA	NA	NA						
1626	RB1903_J2_1138_M1_10	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Polychaete	NA	EC10455	x	NA	NA	NA						
1627	RB1903_J2_1138_M1_11	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Shrimp	NA	EC10456	x	NA	NA	NA						
1628	RB1903_J2_1138_M1_12	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	bidentata (2	NA	EC10457	x	NA	NA	NA						
1629	RB1903_J2_1138_M1_13	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Amphipod	NA	EC10458	x	NA	NA	NA						
1630	RB1903_J2_1138_M1_14	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Scaphopod	NA	EC10459	x	NA	NA	NA						
1631	RB1903_J2_1138_M1_15	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Ophiuroid	NA	EC10460	x	NA	NA	NA						
1632	RB1903_J2_1138_M1_16	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Tunicate	NA	EC10461	x	NA	NA	NA						
1633	RB1903_J2_1138_M1_17	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Unknown test	NA	EC10462	x	NA	NA	NA						
1634	RB1903_J2_1138_M1_18	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Annelid	NA	EC10463	x	NA	NA	NA						
1635	RB1903_J2_1138_M1_19	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Annelid	NA	EC10464	x	NA	NA	NA						
1636	RB1903_J2_1138_M1_20	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Cladorhizid	NA	EC10465	x	NA	NA	NA						
1637	RB1903_J2_1138_M1_21	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Stylasterid	NA	EC10466	x	NA	NA	NA						
1638	RB1903_J2_1138_M1_22	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Hydroid (13)	NA	EC10467	x	NA	NA	NA						
1639	RB1903_J2_1138_M1_23	J2-1138	Richardson West	29-Apr-19	22:32:01	31.53.724	77.41.888	660.6	Hydroid (42)	NA	EC10468	x	NA	NA	NA						
1640	RB1903_J2_1138_N01	J2-1138	Richardson West	29-Apr-19	0:22:00	31.8984	77.6973	677	Water	NA			NA	NA	NA						
1641	RB1903_J2_1138_N02	J2-1138	Richardson West	29-Apr-19	0:22:00	31.8984	77.6973	677	Water	NA			NA	NA	NA						
1642	RB1903_J2_1138_N03	J2-1138	Richardson West	29-Apr-19	0:22:00	31.8984	77.6973	677	Water	NA			NA	NA	NA						
1643	RB1903_J2_1138_N04	J2-1138	Richardson West	29-Apr-19	0:22:00	31.8984	77.6973	677	Water	NA	EC10469		NA	x	NA						

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini			Nancy Prouty				Mandy Joye		Jason Chaytor			Mienis		Close									
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rock.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA															X		NA	NA					1	NA	NA	NA	NA	NA	NA	NA	NA
NA												X			X		NA	NA					2	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					3	NA	NA	NA	NA	NA	NA	NA	NA
NA							X										NA	NA		X			4	NA	NA	NA	NA	NA	NA	NA	NA
NA							X										NA	NA		X			5	NA	NA	NA	NA	NA	NA	NA	NA
NA												X					NA	NA					6	NA	NA	NA	NA	NA	NA	NA	NA
NA																X	NA	NA					7	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					8	NA	NA	NA	NA	NA	NA	NA	NA
NA												X					NA	NA					9	NA	NA	NA	NA	NA	NA	NA	NA
NA																X	NA	NA					10	NA	NA	NA	NA	NA	NA	NA	NA
NA												X					NA	NA					11	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					12	NA	NA	NA	NA	NA	NA	NA	NA
NA																X	NA	NA					13	NA	NA	NA	NA	NA	NA	NA	NA
NA												X					NA	NA					14	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					15	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					16	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					17	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					18	NA	NA	NA	NA	NA	NA	NA	NA
NA																X	NA	NA					19	NA	NA	NA	NA	NA	NA	NA	NA
NA												X					NA	NA					20	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					21	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					22	NA	NA	NA	NA	NA	NA	NA	NA
NA							X										NA	NA		X			23	NA	NA	NA	NA	NA	NA	NA	NA
NA							X									X	NA	NA		X			24	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					25	NA	NA	NA	NA	NA	NA	NA	NA
NA							x										NA	NA					26	NA	NA	NA	NA	NA	NA	NA	NA
NA							x										NA	NA		x			27	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					28	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					29	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					30	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					31	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					32	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					33	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					34	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					35	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					36	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					37	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					38	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					39	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					40	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					41	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					42	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					43	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					44	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					45	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					46	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					47	NA	NA	NA	NA	NA	NA	NA	NA
NA							x										NA	NA		x			48	NA	NA	NA	NA	NA	NA	NA	NA
NA	x	x					X										NA	NA					49	4/11/2019	31.88667485	-77.36803253	-762.238	63.15	-6.77	4.36	2
NA																	NA	NA					50	4/11/2019	31.88667485	-77.36803253	-762.238	63.15	-6.77	4.36	2
NA																	NA	NA					51	4/11/2019	31.88667485	-77.36803253	-762.238	63.15	-6.77	4.36	2
NA																	NA	NA					52	4/11/2019	31.88667485	-77.36803253	-762.238	63.15	-6.77	4.36	2
NA																	NA	NA					53	4/11/2019	31.88667485	-77.36803253	-762.238	63.15	-6.77	4.36	2
NA																	NA	NA					54	4/11/2019	31.88667485	-77.36803253	-762.238	63.15	-6.77	4.36	2
NA																	NA	NA					55	4/11/2019	31.88667485	-77.36803253	-762.238	63.15	-6.77	4.36	2
NA																	NA	NA					56	NA	NA	NA	NA	NA	NA	NA	NA
NA		x					X										NA	NA					57	4/11/2019	31.88670161	-77.36803857	-761.578	71.557	-8.82	4.112	1.5
NA									X								NA	NA					58	4/11/2019	31.88670016	-77.36803578	-761.595	71.389	-8.34	4.807	1.5
NA																	NA	NA					59	4/11/2019	31.88670016	-77.36803578	-761.595	71.389	-8.34	4.807	1.5
NA	x	x															NA	NA					60	4/11/2019	31.88670016	-77.36803578	-761.595	71.389	-8.34	4.807	1.5
NA							X										NA	NA					61	NA	NA	NA	NA				

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini			Nancy Prouty				Mandy Joye	Jason Chaytor			Mienis	Close											
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70..ETOH	Mud Sample	Water Sample	In.foll...20 C.	shells.rocks.skeleton	Mud Sample.1	Water Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water Sample.2	Skeleton Sample	Water Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA							X										NA	NA					68	NA	NA	NA	NA	NA	NA	NA	NA
NA							X										NA	NA					69	4/11/2019	31.88650221	-77.36843762	-763.052	44.2	-13.5	4.74	0.7
NA					X		X										NA	NA					70	4/11/2019	31.88650206	-77.36840768	-763.68	358.29	-8.03	4.78	0.5
NA					X		X										NA	NA					71	NA	NA	NA	NA	NA	NA	NA	NA
NA					X		X										NA	NA					72	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					73	NA	NA	NA	NA	NA	NA	NA	NA
NA							X										NA	NA					74	NA	NA	NA	NA	NA	NA	NA	NA
NA		x					X		X	X							NA	NA					75	NA	NA	NA	NA	NA	NA	NA	NA
NA		x															NA	NA					76	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					77	NA	NA	NA	NA	NA	NA	NA	NA
NA							X										NA	NA					78	NA	NA	NA	NA	NA	NA	NA	NA
NA							X										NA	NA					79	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					80	NA	NA	NA	NA	NA	NA	NA	NA
NA	x	x					X										NA	NA					81	4/11/2019	31.88327773	-77.3722983	-756.169	318.336	-5.178	3.927	2.3
NA																	NA	NA					82	4/11/2019	31.88327773	-77.3722983	-756.169	318.336	-5.178	3.927	2.3
NA					X												NA	NA					83	NA	NA	NA	NA	NA	NA	NA	NA
NA							X		X	X							NA	NA					84	4/11/2019	31.88635878	-77.36881587	-752.212	335.277	-8.19	4.816	1
NA		x					X										NA	NA					85	4/11/2019	31.88635878	-77.36881587	-752.212	335.277	-8.19	4.816	1
NA							X										NA	NA					86	4/11/2019	31.88635878	-77.36881587	-752.212	335.277	-8.19	4.816	1
NA		x					X		X	X							NA	NA					87	4/11/2019	31.8878431	-77.36577967	-754.509	83.385	-2.765	0.05	1.6
NA		x					X										NA	NA					88	4/11/2019	31.88785335	-77.36576471	-754.653	153.266	-5.344	-1.406	0.9
NA	x	x					X		X								NA	NA					89	4/11/2019	31.88783442	-77.36579327	-754.506	83.15	-2.85	0.055	1.6
NA		x					X										NA	NA					90	4/11/2019	31.88785335	-77.36576471	-754.653	153.266	-5.344	-1.406	0.9
NA							X										NA	NA					91	4/11/2019	31.88785335	-77.36576471	-754.653	153.266	-5.344	-1.406	0.9
NA					X		X										NA	NA					92	4/11/2019	31.88785335	-77.36576471	-754.653	153.266	-5.344	-1.406	0.9
NA					X												NA	NA					93	NA	NA	NA	NA	NA	NA	NA	NA
NA					X												NA	NA					94	NA	NA	NA	NA	NA	NA	NA	NA
NA	x	x					X										NA	NA					95	4/11/2019	31.88803051	-77.36575793	-756.116	246.38	-6.601	-0.6	1.5
NA		x					X										NA	NA					96	4/11/2019	31.88802335	-77.36576163	-756.168	244.935	-6.01	-0.791	1.4
NA							X										NA	NA					97	4/11/2019	31.88802335	-77.36576163	-756.168	244.935	-6.01	-0.791	1.4
NA		x					X		X	X							NA	NA					98	4/11/2019	31.88012735	-77.37380937	-792.079	301.547	2.745	3.6	1.2
NA		x					X		X	X							NA	NA					99	4/11/2019	31.88014134	-77.37382584	-792.008	277.38	0.95	-0.26	1.1
NA																	NA	NA					100	4/11/2019	31.88014134	-77.37382584	-792.008	277.38	0.95	-0.26	1.1
NA		x					X			X							NA	NA					101	4/11/2019	31.88317387	-77.37226159	-759.197	323.585	-9.48	3.329	2.2
NA		x					X		X								NA	NA					102	4/11/2019	31.88178959	-77.37337018	-772.909	73.861	-9.533	0.06	4.8
NA		x							X								NA	NA					103	4/11/2019	31.88179018	-77.37336795	-772.875	74.856	-9.861	-0.113	4.9
NA							X		X	X							NA	NA					104	4/11/2019	31.88318356	-77.37225725	-759.226	325.165	-8.64	1.806	1.9
NA							X										NA	NA			X		105	NA	NA	NA	NA	NA	NA	NA	NA
NA									X								NA	NA					106	4/11/2019	31.88317387	-77.37226159	-759.197	323.585	-9.48	3.329	2.2
NA							X										NA	NA					107	NA	NA	NA	NA	NA	NA	NA	NA
NA					X		X										NA	NA					108	NA	NA	NA	NA	NA	NA	NA	NA
NA							X										NA	NA					109	NA	NA	NA	NA	NA	NA	NA	NA
NA							X										NA	NA					110	NA	NA	NA	NA	NA	NA	NA	NA
NA						X											NA	NA					111	NA	NA	NA	NA	NA	NA	NA	NA
NA							X		X	X							NA	NA					112	4/11/2019	31.88487593	-77.37041901	-756.442	70.35	-5.271	1.979	4
NA		x					X		X	X							NA	NA					113	4/11/2019	31.88488523	-77.37041197	-756.526	70.769	-5.5	2.303	3.9
NA																	NA	NA					114	4/11/2019	31.88488523	-77.37041197	-756.526	70.769	-5.5	2.303	3.9
NA							X										NA	NA					115	4/11/2019	31.88488523	-77.37041197	-756.526	70.769	-5.5	2.303	3.9
NA							X										NA	NA					116	4/11/2019	31.88488523	-77.37041197	-756.526	70.769	-5.5	2.303	3.9
NA					X												NA	NA					117	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					118	4/11/2019	31.88915059	-77.36567954	-731.825	243.9	-2.96	-0.186	1.1
NA																	NA	NA					119	4/11/2019	31.88915059	-77.36567954	-731.825	243.9	-2.96	-0.186	1.1
NA																	NA	NA					120	4/11/2019	31.88915059	-77.36567954	-731.825	243.9	-2.96	-0.186	1.1
NA																	NA	NA					121	4/11/2019	31.88915059	-77.36567954	-731.825	243.9	-2.96	-0.186	1.1
NA																	NA	NA					122	4/11/2019	31.88318889	-77.37231264	-757.258	320.48	-6.365	3.76	2.4
NA																	NA	NA					123	4/11/2019	31.88318889	-77.37231264	-757.258	320.48	-6.365	3.76	2.4
NA																	NA	NA					124	4/11/2019	31.88318889	-77.37231264	-757.258	320.48	-6.365	3.76	2.4
NA									X	X							NA	NA					125	4/11/2019	31.88318889	-77.37231264	-757.258	320.48	-6.365	3.76	2.4
NA																	NA	NA					126	4/11/2019	31.88318889	-77.37231264	-757.258	320.48	-6.365	3.76	2.4
NA																	NA	NA					127	4/11/2019	31.88318889	-77.37231264	-757.258	320.48	-6.365	3.76	2.4
NA																	NA	NA					128	4/11/2019	31.88318889	-77.37231264	-757.258	320.48	-6.365	3.76	2.4
NA																	NA	NA					129	4/11/2019							

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor		Mienis		Close										
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude	
NA																		NA	NA				135	4/11/2019	31.88490373	-77.37041011	-754.855	42.228	-8.811	1.38	6.2	
NA						x												NA	NA				136	4/11/2019	31.88490373	-77.37041011	-754.855	42.228	-8.811	1.38	6.2	
NA																		NA	NA				137	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				138	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				139	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				140	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				141	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				142	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				143	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				144	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				145	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				146	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				147	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA						x												NA	NA				148	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA																		NA	NA				149	4/11/2019	31.88913364	-77.36576162	-731.66	176.64	-9.584	2.231	0.7	
NA							X													X			150	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X						x																151	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						152	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						153	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						154	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						155	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						156	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						157	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						158	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						159	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						160	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						161	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						162	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						163	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						164	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						165	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						166	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						167	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						168	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						169	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						170	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						171	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						172	NA	NA	NA	NA	NA	NA	NA	NA	
NA	X																						173	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							174	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							175	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							176	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							177	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							178	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							179	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							180	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							181	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							182	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							183	NA	NA	NA	NA	NA	NA	NA	NA	
NA																							184									

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor			Mienis		Close										
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude		
NA	x																	NA	NA				202	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				203	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				204	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				205	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				206	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				207	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				208	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				209	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				210	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				211	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				212	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				213	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				214	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				215	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				216	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				217	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				218	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				219	NA	NA	NA	NA	NA	NA	NA	NA		
NA	x																	NA	NA				220	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA			x	221	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA			x	222	NA	NA	NA	NA	NA	NA	NA	NA		
NA							x											NA	NA				223	NA	NA	NA	NA	NA	NA	NA	NA		
NA							x					x						NA	NA				224	NA	NA	NA	NA	NA	NA	NA	NA		
NA																x		NA	NA				225	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				226	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				227	NA	NA	NA	NA	NA	NA	NA	NA		
NA																x		NA	NA				228	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				229	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				230	NA	NA	NA	NA	NA	NA	NA	NA		
NA																	x	NA	NA				231	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				232	NA	NA	NA	NA	NA	NA	NA	NA		
NA											x							NA	NA				233	NA	NA	NA	NA	NA	NA	NA	NA		
NA																x		NA	NA				234	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				235	NA	NA	NA	NA	NA	NA	NA	NA		
NA											x							NA	NA				236	NA	NA	NA	NA	NA	NA	NA	NA		
NA																x		NA	NA				237	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				238	NA	NA	NA	NA	NA	NA	NA	NA		
NA											x							NA	NA				239	NA	NA	NA	NA	NA	NA	NA	NA		
NA																x		NA	NA				240	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				241	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				242	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				243	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				244	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				245	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				246	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA	x			247	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA	x			248	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA	x			249	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA			x	250	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA			x	251	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA			x	252	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA			x	253	NA	NA	NA	NA	NA	NA	NA	NA		
NA																x		NA	NA				254	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				255	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				256	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				257	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				258	NA	NA	NA	NA	NA	NA	NA	NA		
NA																																	

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor		Mienis		Close										
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude	
NA																		NA	NA			x	269	NA	NA	NA	NA	NA	NA	NA	NA	
NA																x		NA	NA				270	NA	NA	NA	NA	NA	NA	NA	NA	
NA																		NA	NA				271	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				272	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				273	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				274	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				275	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				276	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				277	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				278	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				279	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				280	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				281	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				282	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA					x													NA	NA				283	4/14/2019	31.9841619	-77.41138457	-704.546	93.111	4.376	5.401	1.8	
NA																		NA	NA				284	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA																		NA	NA				285	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA																		NA	NA				286	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA																		NA	NA				287	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA																		NA	NA				288	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA																		NA	NA				289	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA																		NA	NA				290	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA																		NA	NA				291	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA																		NA	NA				292	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA					x													NA	NA				293	4/14/2019	31.9839654	-77.41130629	-704.335	62.749	0.48	-3.437	1.5	
NA																		NA	NA				294	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				295	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA									X									NA	NA				296	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				297	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				298	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				299	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				300	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				301	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				302	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				303	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				304	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				305	4/14/2019	31.98418751	-77.41154165	-708.644	17.479	0.241	0.647	2.8	
NA																		NA	NA				306	4/14/2019	31							

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini			Nancy Prouty				Mandy Joye	Jason Chaytor			Mienis	Close											
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70..ETOH	Mud Sample	Water Sample	In.foll...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA							x											NA	NA				336	4/14/2019	31.98417756	-77.41124088	-697.874	358.468	-5.01	1.072	4.1
NA						x	x											NA	NA				337	4/14/2019	31.98417756	-77.41124088	-697.874	358.468	-5.01	1.072	4.1
NA							x											NA	NA				338	4/14/2019	31.98417756	-77.41124088	-697.874	358.468	-5.01	1.072	4.1
NA							x											NA	NA				339	4/14/2019	31.98417756	-77.41124088	-697.874	358.468	-5.01	1.072	4.1
NA							x											NA	NA				340	4/14/2019	31.98417756	-77.41124088	-697.874	358.468	-5.01	1.072	4.1
NA						x												NA	NA				341	4/14/2019	31.98417756	-77.41124088	-697.874	358.468	-5.01	1.072	4.1
NA						x												NA	NA				342	4/14/2019	31.98417756	-77.41124088	-697.874	358.468	-5.01	1.072	4.1
NA	x						x		X	X								NA	NA				343	4/14/2019	31.98426369	-77.41138018	-699.948	31.206	1.775	-1.635	3.8
NA							x		X	X								NA	NA				344	4/14/2019	31.98426369	-77.41138018	-699.948	31.206	1.775	-1.635	3.8
NA							x		X	X								NA	NA				345	4/14/2019	31.98426369	-77.41138018	-699.948	31.206	1.775	-1.635	3.8
NA						x	x											NA	NA				346	4/14/2019	31.98426369	-77.41138018	-699.948	31.206	1.775	-1.635	3.8
NA						x	x											NA	NA				347	4/14/2019	31.98426369	-77.41138018	-699.948	31.206	1.775	-1.635	3.8
NA						x	x											NA	NA				348	4/14/2019	31.98426369	-77.41138018	-699.948	31.206	1.775	-1.635	3.8
NA						x												NA	NA				349	4/14/2019	31.98426369	-77.41138018	-699.948	31.206	1.775	-1.635	3.8
NA	x						x		X	X								NA	NA				350	4/14/2019	31.98407839	-77.41111882	-696.273	74.33	-5.522	0.558	3.8
NA							x											NA	NA				351	4/14/2019	31.98408065	-77.41112647	-696.302	74.18	-5.15	0.748	3.8
NA	x						x											NA	NA				352	4/14/2019	31.98488967	-77.41076979	-690.163	170.23	-3.64	0.022	1.4
NA							x											NA	NA				353	4/14/2019	31.98488967	-77.41076979	-690.163	170.23	-3.64	0.022	1.4
NA																		NA	NA				354	4/14/2019	31.98488967	-77.41076979	-690.163	170.23	-3.64	0.022	1.4
NA																		NA	NA				355	4/14/2019	31.98488967	-77.41076979	-690.163	170.23	-3.64	0.022	1.4
NA							x		X									NA	NA				356	4/14/2019	31.98457854	-77.410749	-690.575	270.321	-2.91	4.112	2
NA	x						x		X	X								NA	NA				357	4/14/2019	31.98457854	-77.410749	-690.575	270.321	-2.91	4.112	2
NA							x											NA	NA				358	4/14/2019	31.98457218	-77.41074864	-690.606	270.668	-3.1	4.11	2
NA							x		X	X								NA	NA				359	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA							x		X									NA	NA				360	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA							x		X	X								NA	NA				361	4/14/2019	31.98457218	-77.41074864	-690.606	270.668	-3.1	4.11	2
NA																		NA	NA				362	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA	x						x		X	X								NA	NA				363	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA																		NA	NA				364	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA	x						x		X	X								NA	NA				365	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA							x		X									NA	NA				366	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA	x						x		X	X								NA	NA				367	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA						x,x	x											NA	NA				368	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA						x												NA	NA				369	4/14/2019	31.98458051	-77.41074471	-690.568	271.131	-3.492	3.988	2
NA							x		X	X								NA	NA				370	4/14/2019	31.98425778	-77.41138896	-699.951	30.9	1.596	-1.661	3.8
NA	x						x		X	X								NA	NA				371	4/14/2019	31.98415849	-77.41137432	-704.734	82.551	-0.677	3.98	2.6
NA	x						x		X									NA	NA				372	4/14/2019	31.98416032	-77.41137647	-704.75	82.71	-1.14	2.952	2.5
NA						x	x		X	X								NA	NA				373	4/14/2019	31.98415796	-77.41138545	-704.754	91.2	1.67	6.374	2.1
NA						x	x		X	X								NA	NA				374	4/14/2019	31.98415796	-77.41138545	-704.754	91.2	1.67	6.374	2.1
NA						x	x		X									NA	NA				375	4/14/2019	31.98414981	-77.41136629	-704.776	82.4	-0.998	3.52	2.5
NA						x	x											NA	NA				376	4/14/2019	31.98414981	-77.41136629	-704.776	82.4	-0.998	3.52	2.5
NA						x												NA	NA				377	4/14/2019	31.98414981	-77.41136629	-704.776	82.4	-0.998	3.52	2.5
NA	x						x		X	X								NA	NA				378	4/14/2019	31.9842519	-77.41138418	-699.936	31.11	1.715	-2.24	3.8
NA	x						x		X	X								NA	NA				379	4/14/2019	31.98425145	-77.41136831	-699.964	30.69	1.98	-1.62	3.8
NA							x,x											NA	NA				380	4/14/2019	31.98425145	-77.41136831	-699.964	30.69	1.98	-1.62	3.8
NA							x,x											NA	NA				381	4/14/2019	31.98425145	-77.41136831	-699.964	30.69	1.98	-1.62	3.8
NA							x											NA	NA				382	4/14/2019	31.98425145	-77.41136831	-699.964	30.69	1.98	-1.62	3.8
NA							x											NA	NA				383	4/14/2019	31.98425145	-77.41136831	-699.964	30.69	1.98	-1.62	3.8
NA							x											NA	NA				384	4/14/2019	31.98425145	-77.41136831	-699.964	30.69	1.98	-1.62	3.8
NA							x											NA	NA				385	4/14/2019	31.98425145	-77.41136831	-699.964	30.69	1.98	-1.62	3.8
NA							x											NA	NA				386	4/14/2019	31.98425145	-77.41136831	-699.964	30.69	1.98	-1.62	3.8
NA																		NA	NA				387	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				388	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				389	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				390	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				391	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				392	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				393	NA	NA	NA	NA				

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini			Nancy Prouty				Mandy Joye	Jason Chaytor			Mienis	Close											
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10.1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA												x					NA	NA					403	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					404	NA	NA	NA	NA	NA	NA	NA	NA
NA												x				x	NA	NA					405	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					406	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					407	NA	NA	NA	NA	NA	NA	NA	NA
NA					x												NA	NA					408	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					409	NA	NA	NA	NA	NA	NA	NA	NA
NA					x												NA	NA					410	NA	NA	NA	NA	NA	NA	NA	NA
NA																x	NA	NA					411	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					412	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					413	NA	NA	NA	NA	NA	NA	NA	NA
NA												x				x	NA	NA					414	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					415	NA	NA	NA	NA	NA	NA	NA	NA
NA					x												NA	NA					416	NA	NA	NA	NA	NA	NA	NA	NA
NA																x	NA	NA					417	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					418	NA	NA	NA	NA	NA	NA	NA	NA
NA					x											x	NA	NA					419	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					420	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					421	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					422	NA	NA	NA	NA	NA	NA	NA	NA
NA					x												NA	NA					423	NA	NA	NA	NA	NA	NA	NA	NA
NA					x												NA	NA					424	NA	NA	NA	NA	NA	NA	NA	NA
NA																x	NA	NA					425	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					426	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA																	NA	NA					427	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA																	NA	NA					428	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA																	NA	NA					429	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA																	NA	NA					430	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA																	NA	NA					431	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA																	NA	NA					432	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA																	NA	NA					433	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA																	NA	NA					434	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA																	NA	NA					435	4/17/2019	31.75278519	-79.1960049	-540.55	22.563	1.78	4.885	1.4
NA	x				x (sieve)												NA	NA					436	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					437	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					438	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					439	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					440	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					441	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					442	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					443	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					444	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					445	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					446	4/17/2019	31.75385567	-79.19471401	-523.562	15.188	-2.607	4.93	2.9
NA																	NA	NA					447	4/17/2019	31.75924831	-79.19118358	-519.246	333.941	-1.445	-0.626	1.2
NA																	NA	NA					448	4/17/2019	31.75924831	-79.19118358	-519.246	333.941	-1.445	-0.626	1.2
NA																	NA	NA					449	4/17/2019	31.75924831	-79.19118358	-519.246	333.941	-1.445	-0.626	1.2
NA																	NA	NA					450	4/17/2019	31.75924831	-79.19118358	-519.246	333.941	-1.445	-0.626	1.2
NA																	NA	NA					451	4/17/2019	31.75924831	-79.19118358	-519.246	333.941	-1.445	-0.626	1.2
NA																	NA	NA					452	4/17/2019	31.75924831	-79.19118358	-519.246	333.941	-1.445	-0.626	1.2
NA																	NA	NA					453	4/17/2019	31.75924831	-79.19118358	-519.246	333.941	-1.445	-0.626	1.2
NA																	NA	NA					454	4/17/2019	31.75924831	-79.19118358	-519.246	333.941	-1.445	-0.626	1.2
NA	x				x, whirlpak			RB-19-051	xx								NA	NA					455	4/17/2019	31.75385292	-79.19472064	-523.354	4.87	-2.334	3.71	3
NA					x												NA	NA					456	4/17/2019	31.75385292	-79.19472064	-523.354	4.87	-2.334	3.71	3
NA					x, whirlpak												NA	NA					457	4/17/2019	31.75385292	-79.19472064	-523.354	4.87	-2.334	3.71	3
NA					x												NA	NA					458	4/17/2019	31.75385292	-79.19472064	-523.354	4.87	-2.334	3.71	3
NA					x												NA	NA					459	4/17/2019	31.75385292	-79.19472064	-523.354	4.87	-2.334	3.71	3
NA	x				x (sieve)			RB-19-052	xx								NA	NA					460	4/17/2019	31.75278727	-79.19599878	-540.575	21.39	1.479	4.777	1.4
NA					x, whirlpak												NA	NA					461	4/17/2019	31.75280837	-79.19600751	-540.199	21.546	-2.289	-0.317	1.4
NA	x				x			RB-19-053	x								NA	NA					462	4/17/2019	31.75278727	-79.19599878	-540.575	21.39	1.479	4.777	1.4
NA					x, whirlpak												NA	NA					463	4/17/2019	31.75278727	-79.19599878	-540.575	21.39	1.479	4.777	1.4
NA					x												NA	NA					464	4/17/2019	31.752						

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini			Nancy Prouty			Mandy Joye	Jason Chaytor			Mienis	Close												
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70..ETOH	Mud Sample	Water Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA							x											NA	NA				470	4/17/2019	31.75420368	-79.19442935	-515.262	31.06	-4.01	3.43	1.9
NA							x, whirlpak											NA	NA				471	4/17/2019	31.75420368	-79.19442935	-515.262	31.06	-4.01	3.43	1.9
NA							x											NA	NA				472	4/17/2019	31.75420368	-79.19442935	-515.262	31.06	-4.01	3.43	1.9
NA							x											NA	NA				473	4/17/2019	31.75420368	-79.19442935	-515.262	31.06	-4.01	3.43	1.9
NA							x											NA	NA				474	4/17/2019	31.75420368	-79.19442935	-515.262	31.06	-4.01	3.43	1.9
NA							x, whirlpak											NA	NA				475	4/17/2019	31.75420368	-79.19442935	-515.262	31.06	-4.01	3.43	1.9
NA							x											NA	NA				476	4/17/2019	31.75420368	-79.19442935	-515.262	31.06	-4.01	3.43	1.9
NA							x											NA	NA				477	4/17/2019	31.75420368	-79.19442935	-515.262	31.06	-4.01	3.43	1.9
NA							x											NA	NA				478	4/17/2019	31.75448353	-79.19417021	-510.385	32.165	0.34	10.924	1.1
NA	x						x											NA	NA				479	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA							x											NA	NA				480	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA							x, whirlpak	RB-19-054	x									NA	NA				481	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA							x, whirlpak											NA	NA				482	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA							x											NA	NA				483	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA							x											NA	NA				484	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA							x											NA	NA				485	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA							x											NA	NA				486	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA							x											NA	NA				487	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA							x, whirlpak											NA	NA				488	4/17/2019	31.75448454	-79.19416966	-510.344	31.74	-0.21	9.775	1.1
NA	x						x, whirlpak											NA	NA				489	4/17/2019	31.75876745	-79.19134724	-519.535	235.502	-0.668	-2.22	1
NA							x, whirlpak											NA	NA				490	4/17/2019	31.75876944	-79.19134965	-519.504	235.492	-0.962	-2.22	1
NA	x						x	RB-19-055	x									NA	NA				491	4/17/2019	31.75876929	-79.19134901	-519.602	235.899	0.058	-2.06	0.9
NA							x											NA	NA				492	4/17/2019	31.75876745	-79.19134724	-519.535	235.502	-0.668	-2.22	1
NA							x											NA	NA				493	4/17/2019	31.75876745	-79.19134724	-519.535	235.502	-0.668	-2.22	1
NA							x											NA	NA				494	4/17/2019	31.75876745	-79.19134724	-519.535	235.502	-0.668	-2.22	1
NA							x											NA	NA				495	4/17/2019	31.75876745	-79.19134724	-519.535	235.502	-0.668	-2.22	1
NA	x						x	RB-19-056	xx									NA	NA				496	4/17/2019	31.75959708	-79.19102828	-515.87	337.74	-3.386	1.295	1.7
NA							x	RB-19-057	xx									NA	NA				497	4/17/2019	31.75959708	-79.19102828	-515.87	337.74	-3.386	1.295	1.7
NA	x																	NA	NA				498	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA	x																	NA	NA				499	4/17/2019	31.76051082	-79.19060413	-508.635	328.09	-5.221	2.9	1.2
NA							x											NA	NA				500	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				501	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				502	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				503	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				504	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA																		NA	NA				505	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				506	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x	RB-19-058	x									NA	NA				507	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				508	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				509	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				510	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				511	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x, whirlpak											NA	NA				512	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				513	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				514	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x, whirlpak											NA	NA				515	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				516	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				517	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x, whirlpak											NA	NA				518	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x, whirlpak											NA	NA				519	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA							x											NA	NA				520	4/17/2019	31.75959756	-79.19102869	-515.847	337.71	-2.958	1.325	1.7
NA	x						x, whirlpak											NA	NA				521	4/17/2019	31.75481854	-79.19397848	-508.731	7.35	-3.78	2.34	0.8
NA							x											NA	NA				522	4/17/2019	31.75481854	-79.19397848	-508.731	7.35	-3.78	2.34	0.8
NA							x											NA	NA				523	4/17/2019	31.75481854	-79.19397848	-508.731	7.35	-3.78	2.34	0.8
NA							x											NA	NA				524	4/17/2019	31.75481854	-79.19397848	-508.731	7.35	-3.78	2.34	0.8
NA							x											NA	NA				525	4/17/2019	31.75481854	-79.19397848	-508.731	7.35	-3.78	2.34	0.8
NA																															

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor		Mienis		Close									
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95..ETOH	X70..ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA	x						x, whirlpak	RB-19-050	xx									NA	NA				537	4/17/2019	31.75522351	-79.19376649	-507.034	17.963	-6.34	6.02	0.8
NA	x						x	RB-19-049	xx									NA	NA				538	4/17/2019	31.75522438	-79.19377731	-507.016	25.21	-6.08	3.561	0.8
NA							x											NA	NA				539	4/17/2019	31.75522438	-79.19377731	-507.016	25.21	-6.08	3.561	0.8
NA																		NA	NA				540	4/17/2019	31.75522438	-79.19377731	-507.016	25.21	-6.08	3.561	0.8
NA							x											NA	NA				541	4/17/2019	31.75522438	-79.19377731	-507.016	25.21	-6.08	3.561	0.8
NA							x											NA	NA				542	4/17/2019	31.75522438	-79.19377731	-507.016	25.21	-6.08	3.561	0.8
NA						x (sieve)												NA	NA				543	4/17/2019	31.75452144	-79.19415654	-510.053	323.944	-3.9	1.755	3
NA	x						x, whirlpak	RB-19-048	xx									NA	NA				544	4/17/2019	31.75453096	-79.19415315	-510.016	325.491	-4.747	1.219	3.1
NA							x											NA	NA				545	4/17/2019	31.75453194	-79.19415248	-510.005	325.93	-4.645	1.329	3.1
NA							x											NA	NA				546	4/17/2019	31.75453194	-79.19415248	-510.005	325.93	-4.645	1.329	3.1
NA							x											NA	NA				547	4/17/2019	31.75453194	-79.19415248	-510.005	325.93	-4.645	1.329	3.1
NA							x											NA	NA				548	4/17/2019	31.75453194	-79.19415248	-510.005	325.93	-4.645	1.329	3.1
NA							x											NA	NA				549	4/17/2019	31.75453194	-79.19415248	-510.005	325.93	-4.645	1.329	3.1
NA							x											NA	NA				550	4/17/2019	31.75453194	-79.19415248	-510.005	325.93	-4.645	1.329	3.1
NA							x											NA	NA				551	4/17/2019	31.75453194	-79.19415248	-510.005	325.93	-4.645	1.329	3.1
NA	x																	NA	NA				552	4/17/2019	31.75453194	-79.19415248	-510.005	325.93	-4.645	1.329	3.1
NA						x (sieve)	x											NA	NA				553	4/17/2019	31.75481635	-79.19398341	-508.756	7.4	-3.736	2.285	0.8
NA							x											NA	NA				554	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1
NA							x											NA	NA				555	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1
NA																		NA	NA				556	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1
NA	x							RB-19-059	x									NA	NA				557	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1
NA	x							RB-19-060	x									NA	NA				558	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1
NA	x							RB-19-061	x									NA	NA				559	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1
NA																		NA	NA				560	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1
NA																		NA	NA				561	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1
NA																		NA	NA				562	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1
NA																		NA	NA				563	4/17/2019	31.75871353	-79.19135158	-519.642	238.552	-2.612	-2.99	1.1</

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos			Andrea Quattrini			Nancy Prouty			Mandy Joye	Jason Chaytor			Mienis	Close													
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70..ETOH	Mud Sample	Water Sample	In.foli...20.C.	shells. rocks.skeleton	Mud Sample.1	Water Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water Sample.2	Skeleton Sample	Water Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA															x		NA	NA					604	NA	NA	NA	NA	NA	NA	NA	NA
NA												x			x		NA	NA					605	NA	NA	NA	NA	NA	NA	NA	NA
NA												x			x		NA	NA					606	NA	NA	NA	NA	NA	NA	NA	NA
NA												x			x		NA	NA					607	NA	NA	NA	NA	NA	NA	NA	NA
NA												x			x		NA	NA					608	NA	NA	NA	NA	NA	NA	NA	NA
NA												x			x		NA	NA					609	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					610	NA	NA	NA	NA	NA	NA	NA	NA
NA																x	NA	NA					611	NA	NA	NA	NA	NA	NA	NA	NA
NA							x										NA	NA					612	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					613	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					614	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					615	NA	NA	NA	NA	NA	NA	NA	NA
NA	x				x (sieve)	whirlpak											NA	NA					616	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				230		x, whirlpak		RB-19-065	xx								NA	NA					617	4/18/2019	31.28802249	-77.23610381	-1318.33	332.569	-7.241	-0.303	6.5
NA				235		x, whirlpak		RB-19-066	xx								NA	NA					618	4/18/2019	31.28772498	-77.2367253	-1331.491	12.256	-5.84	-0.997	3.3
NA	x			232		x		RB-19-067	xx								NA	NA					619	4/18/2019	31.28802234	-77.23610392	-1318.392	332.73	-7.045	-2.8	6.3
NA				237		x		RB-19-068	x								NA	NA					620	4/18/2019	31.28772498	-77.2367253	-1331.491	12.256	-5.84	-0.997	3.3
NA	x			236		x		RB-19-069	xx								NA	NA					621	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA								RB-19-070	xx								NA	NA					622	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				238		x											NA	NA					623	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				239		x											NA	NA					624	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				245		x											NA	NA					625	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				241		x											NA	NA					626	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				246		x											NA	NA					627	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				244		x											NA	NA					628	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				247		x											NA	NA					629	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				249		x											NA	NA					630	4/18/2019	31.29021436	-77.23390854	-1333.47	181.42	-8.25	0.102	1.7
NA				240		x		RB-19-071	xx								NA	NA					631	4/18/2019	31.29022549	-77.23389071	-1333.798	219.522	-5.658	-0.298	2.4
NA	x			242		x		RB-19-072	xx								NA	NA					632	4/18/2019	31.29022485	-77.23389331	-1333.857	218.932	-5.36	-0.89	2.4
NA	x							RB-19-075	xx								NA	NA					633	4/18/2019	31.29022485	-77.23389331	-1333.857	218.932	-5.36	-0.89	2.4
NA	x			243		x		RB-19-073	xx								NA	NA					634	4/18/2019	31.29009732	-77.23400424	-1327.085	225.71	-0.945	0.961	2.3
NA	x					whirlpak											NA	NA					635	4/18/2019	31.29009796	-77.23400957	-1327.041	225.92	-1.12	2.45	2.2
NA				248		x											NA	NA					636	4/18/2019	31.29022549	-77.23389071	-1333.798	219.522	-5.658	-0.298	2.4
NA				250		x											NA	NA					637	4/18/2019	31.29009732	-77.23400424	-1327.085	225.71	-0.945	0.961	2.3
NA				251		x											NA	NA					638	4/18/2019	31.29009732	-77.23400424	-1327.085	225.71	-0.945	0.961	2.3
NA				252		x											NA	NA					639	4/18/2019	31.29009732	-77.23400424	-1327.085	225.71	-0.945	0.961	2.3
NA	x			258		x, whirlpak											NA	NA					640	4/18/2019	31.28604914	-77.23728451	-1362.521	132.58	-6.34	-0.58	0.8
NA				259		x, whirlpak		RB-19-076	xx								NA	NA					641	4/18/2019	31.28604316	-77.23729174	-1362.514	132.75	-6.35	-0.38	0.8
NA	x			260		x		RB-19-077	xx								NA	NA					642	4/18/2019	31.28700509	-77.23748452	-1350.237	265.006	-5.049	-3.322	1.1
NA					x	whirlpak											NA	NA					643	4/18/2019	31.28604914	-77.23728451	-1362.521	132.58	-6.34	-0.58	0.8
NA						whirlpak											NA	NA					644	4/18/2019	31.29009815	-77.23400545	-1327.06	226.83	-0.591	1.822	2.3
NA				261		x											NA	NA					645	4/18/2019	31.28700509	-77.23748452	-1350.237	265.006	-5.049	-3.322	1.1
NA				262		x											NA	NA					646	4/18/2019	31.28700509	-77.23748452	-1350.237	265.006	-5.049	-3.322	1.1
NA				263		x											NA	NA					647	4/18/2019	31.28700509	-77.23748452	-1350.237	265.006	-5.049	-3.322	1.1
NA				265		x											NA	NA					648	4/18/2019	31.29009815	-77.23400545	-1327.06	226.83	-0.591	1.822	2.3
NA	x				x (sieve)	whirlpak											NA	NA					649	4/18/2019	31.29006069	-77.23361899	-1341.62	226.46	-5.792	-1.238	2.6
NA	x			225		x		RB-19-062	xx								NA	NA					650	4/18/2019	31.2900574	-77.23359886	-1342.525	227.32	-6.969	-2	2.7
NA	x			226		x		RB-19-063	xx								NA	NA					651	4/18/2019	31.29012922	-77.23375069	-1337.852	204.467	-8.33	-2.526	2.2
NA				224		x, centrifuge tube		RB-19-064	xx								NA	NA					652	4/18/2019	31.29012922	-77.23375069	-1337.852	204.467	-8.33	-2.526	2.2
NA																	NA	NA					653	4/18/2019	31.29006069	-77.23361899	-1341.62	226.46	-5.792	-1.238	2.6
NA				228		x											NA	NA					654	4/18/2019	31.28604316	-77.23729174	-1362.514	132.75	-6.35	-0.38	0.8
NA				229		x											NA	NA					655	4/18/2019	31.28604316	-77.23729174	-1362.514	132.75	-6.35	-0.38	0.8
NA				231		x											NA	NA					656	4/18/2019	31.28604316	-77.23729174	-1362.514	132.75	-6.35	-0.38	0.8
NA				233		x											NA	NA					657	4/18/2019	31.28604316	-77.23729174	-1362.514	132.75	-6.35	-0.38	0.8
NA				234		x											NA	NA					658	4/18/2019	31.28604316	-77.23729174	-1362.514	132.75	-6.35	-0.38	0.8
NA	x				x (sieve)	whirlpak											NA	NA					659	4/18/2019	31.29006677	-77.233615	-1341.99	214.211	-6.793	0.369	2.6
NA	x			253		x		RB-19-074	xx								NA	NA					660	4/18/2019	31.29010812	-77.23374787	-1337.465	182.438	-6.109	-3.267	1.6
NA	x			254		x																									

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor		Mienis		Close																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor		Mienis		Close									
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA				312			x							x			NA	NA					738	4/18/2019	31.28759396	-77.23678432	-1337.117	21.22	-4.559	2.14	2.3
NA				313			x										NA	NA					739	4/18/2019	31.28759396	-77.23678432	-1337.117	21.22	-4.559	2.14	2.3
NA				314			x										NA	NA					740	4/18/2019	31.28759396	-77.23678432	-1337.117	21.22	-4.559	2.14	2.3
NA				315			x										NA	NA					741	4/18/2019	31.28759396	-77.23678432	-1337.117	21.22	-4.559	2.14	2.3
NA				317			x										NA	NA					742	4/18/2019	31.28759396	-77.23678432	-1337.117	21.22	-4.559	2.14	2.3
NA				318			x										NA	NA					743	4/18/2019	31.28759396	-77.23678432	-1337.117	21.22	-4.559	2.14	2.3
NA				320			x										NA	NA					744	4/18/2019	31.28759396	-77.23678432	-1337.117	21.22	-4.559	2.14	2.3
NA				321			x										NA	NA					745	4/18/2019	31.28759396	-77.23678432	-1337.117	21.22	-4.559	2.14	2.3
NA																	NA	NA					746	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				310			x										NA	NA					747	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				311			x										NA	NA					748	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				322			x										NA	NA					749	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				323			x										NA	NA					750	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				324			x										NA	NA					751	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				325			x										NA	NA					752	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				326			x										NA	NA					753	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				327			x										NA	NA					754	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				328			x										NA	NA					755	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				329			x										NA	NA					756	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				330			x										NA	NA					757	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA				332			x										NA	NA					758	4/18/2019	31.29017509	-77.23427894	-1319.902	231.66	6.769	5.921	1.6
NA																	NA	NA					759	4/18/2019	31.29019772	-77.2349491	-1319.234	263.586	-7.105	1.194	1.4
NA				331			x										NA	NA					760	NA	NA	NA	NA	NA	NA	NA	NA
NA	x						whirlpak										NA	NA					761	NA	NA	NA	NA	NA	NA	NA	NA
NA	x						whirlpak										NA	NA					762	NA	NA	NA	NA	NA	NA	NA	NA
NA				264			x										NA	NA					763	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																NA	NA					764	NA	NA	NA	NA	NA	NA	NA	NA
NA												x					NA	NA					765	NA	NA	NA	NA	NA	NA	NA	NA
NA																	NA	NA					766	4/18/2019	31.28987123	-77.23403593	-1318.14	261.764	-4.753	0.17	4.5
NA																	NA	NA					767	4/18/2019	31.28987207	-77.23402957	-1318.1	261.83	-5.033	0.07	4.5
NA																	NA	NA					768	4/18/2019	31.28987217	-77.23402072	-1318.076	262.279	-4.54	3.026	4.5
NA																	NA	NA					769	4/18/2019	31.28986692	-77.23401663	-1318.114	262.193	-4.369	3.053	4.4
NA					x												NA	NA					770	4/18/2019	31.28797319	-77.23472505	-1317.918	358.194	-4.776	2.03	4
NA															x		NA	NA					771	4/18/2019	31.28797514	-77.23472513	-1317.92	357.65	-4.64	1.81	4
NA																	NA	NA					772	4/18/2019	31.28797978	-77.23473055	-1317.95	357.67	-4.73	2	4
NA					x												NA	NA					773	4/18/2019	31.28797603	-77.23473114	-1317.974	357.38	-4.661	1.82	4
NA															x		NA	NA					774	4/18/2019	31.29020203	-77.23390795	-1333.622	181.26	-0.29	-5.02	1.1
NA																	NA	NA					775	4/18/2019	31.29020157	-77.23390933	-1333.59	181.22	-0.307	-4.631	1.1
NA					x												NA	NA					776	4/18/2019	31.29020174	-77.23391071	-1333.627	181.4	-0.14	-4.99	1.1
NA					x												NA	NA					777	4/18/2019	31.29020227	-77.23391062	-1333.597	181.058	-0.242	-5.05	1.1
NA														x			NA	NA					778	4/22/2019	34.93119311	-75.15139097	-1584.022	31.129	-4.244	5.4	3.1
NA																	NA	NA					779	4/22/2019	34.93119311	-75.15139097	-1584.022	31.129	-4.244	5.4	3.1
NA																	NA	NA					780	4/22/2019	34.93119311	-75.15139097	-1584.022	31.129	-4.244	5.4	3.1
NA																	NA	NA					781	4/22/2019	34.93119311	-75.15139097	-1584.022	31.129	-4.244	5.4	3.1
NA																	NA	NA					782	4/22/2019	34.93119311	-75.15139097	-1584.022	31.129	-4.244	5.4	3.1
NA	x																NA	NA					783	4/22/2019	34.93120457	-75.14975038	-1609.552	340.21	-7.74	3.71	6.1
NA				412			x										NA	NA					784	4/22/2019	34.93120457	-75.14975038	-1609.552	340.21	-7.74	3.71	6.1
NA				413			x										NA	NA					785	4/22/							

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor		Mienis		Close									
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA		x		448			x											NA	NA				805	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA		x		440			x											NA	NA				806	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA				437			x											NA	NA				807	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA				438			x											NA	NA				808	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA																		NA	NA				809	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA				421			x											NA	NA				810	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA				422			x											NA	NA				811	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA							whirlpak											NA	NA				812	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA				436			x											NA	NA				813	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA				447			x											NA	NA				814	4/22/2019	34.93101828	-75.15100982	-1582.96	21.64	-10.956	3.311	19.9
NA	x			369			x	RB-19-095	xx									NA	NA				815	4/22/2019	34.93368501	-75.15317749	-1476.332	64.07	-12.77	0.343	12.8
NA				346			x											NA	NA				816	4/22/2019	34.93368501	-75.15317749	-1476.332	64.07	-12.77	0.343	12.8
NA				347			x											NA	NA				817	NA	NA	NA	NA	NA	NA	NA	NA
NA	x			342, 351			xx											NA	NA				818	4/22/2019	34.93104051	-75.15076435	-1567.424	21.42	-8.55	3.47	22.1
NA				341			x											NA	NA				819	4/22/2019	34.93104051	-75.15076435	-1567.424	21.42	-8.55	3.47	22.1
NA				343			x											NA	NA				820	4/22/2019	34.93104051	-75.15076435	-1567.424	21.42	-8.55	3.47	22.1
NA				344			x											NA	NA				821	4/22/2019	34.93104051	-75.15076435	-1567.424	21.42	-8.55	3.47	22.1
NA				356			x											NA	NA				822	4/22/2019	34.93103989	-75.15076519	-1567.387	21.8	-8.64	3.708	26.3
NA	x			373, 434			xx	RB-19-096	xx									NA	NA				823	NA	NA	NA	NA	NA	NA	NA	NA
NA				372			x											NA	NA				824	NA	NA	NA	NA	NA	NA	NA	NA
NA	x			378			x	RB-19-097	xx									NA	NA				825	4/22/2019	34.9346431	-75.15372473	-1402.974	60.808	-13.91	0.71	15
NA				379			x											NA	NA				826	4/22/2019	34.9346431	-75.15372473	-1402.974	60.808	-13.91	0.71	15
NA								RB-19-093	x									NA	NA				827	4/22/2019	34.9310485	-75.15070635	-1563.674	324.948	-2.12	-2.38	4.1
NA				358			x	RB-19-094	x									NA	NA				828	4/22/2019	34.9310485	-75.15070635	-1563.674	324.948	-2.12	-2.38	4.1
NA	x	x		364			x											NA	NA				829	4/22/2019	34.93613293	-75.15631454	-1427.418	38.86	-11.076	2.43	22.5
NA		x		359			x											NA	NA				830	4/22/2019	34.93613293	-75.15631454	-1427.418	38.86	-11.076	2.43	22.5
NA		x		360			x											NA	NA</												

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini			Nancy Prouty			Mandy Joye	Jason Chaytor			Mienis	Close												
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10.1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70..ETOH	Mud Sample	Water Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA				349			x										NA	NA					872	4/21/2019	34.93087009	-75.1496028	-1646.322	2.37	-9.799	3.315	21.4
NA				354			x										NA	NA					873	4/21/2019	34.93087009	-75.1496028	-1646.322	2.37	-9.799	3.315	21.4
NA				352			x										NA	NA					874	4/21/2019	34.93087009	-75.1496028	-1646.322	2.37	-9.799	3.315	21.4
NA				350			x										NA	NA					875	4/21/2019	34.93087009	-75.1496028	-1646.322	2.37	-9.799	3.315	21.4
NA				353			x										NA	NA					876	4/21/2019	34.93087009	-75.1496028	-1646.322	2.37	-9.799	3.315	21.4
NA																	NA	NA					877	4/21/2019	34.93087009	-75.1496028	-1646.322	2.37	-9.799	3.315	21.4
NA				355			x										NA	NA					878	4/21/2019	34.93087009	-75.1496028	-1646.322	2.37	-9.799	3.315	21.4
NA		x		386			x										NA	NA					879	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			387			x										NA	NA					880	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			385			x										NA	NA					881	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			429			x										NA	NA					882	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			390			x										NA	NA					883	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			395			x										NA	NA					884	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			396			x										NA	NA					885	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			402			x										NA	NA					886	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			403			x										NA	NA					887	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			392			x										NA	NA					888	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			391			x										NA	NA					889	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			405			x										NA	NA					890	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			406			x										NA	NA					891	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			397			x										NA	NA					892	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			408			x										NA	NA					893	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			409			x										NA	NA					894	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			410			x										NA	NA					895	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			404			x										NA	NA					896	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			399			x										NA	NA					897	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x			400			x										NA	NA					898	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x				whirlpak												NA	NA					899	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA	x																NA	NA					900	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				441			x										NA	NA					901	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				449			x										NA	NA					902	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA								RB-19-106	x								NA	NA					903	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				398			x										NA	NA					904	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				401			x										NA	NA					905	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA																	NA	NA					906	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				388			x										NA	NA					907	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				439			x										NA	NA					908	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA																	NA	NA					909	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA								RB-19-103	x								NA	NA					910	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA								RB-19-104	x								NA	NA					911	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA								RB-19-105	x								NA	NA					912	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				407			x										NA	NA					913	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				389			x										NA	NA					914	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				411			x										NA	NA					915	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				414			x										NA	NA					916	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				415			x										NA	NA					917	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				416			x										NA	NA					918	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				417			x										NA	NA					919	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				418			x										NA	NA					920	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				419			x										NA	NA					921	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				420			x										NA	NA					922	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				423			x										NA	NA					923	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				424			x										NA	NA					924	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				425			x										NA	NA					925	4/22/2019	34.93118336	-75.14998464	-1592.18	354.815	-10.544	1.004	2.4
NA				426			x										NA	NA					926	4/22/2019							

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini			Nancy Prouty			Mandy Joye	Jason Chaytor			Mienis	Close													
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud Sample	Water Sample	In.foll...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude	
NA															x		NA	NA					939	4/22/2019	34.93550069	-75.15429058	-1350.318	25	-3.662	1.79	4.4	
NA															x		NA	NA					940	4/21/2019	34.92949086	-75.1480839	-1663.545	43.57	-2.34	0.65	4.4	
NA																	x	NA	NA					941	4/21/2019	34.92949203	-75.14808699	-1663.538	43.85	-2.897	0.841	4.4
NA																		NA	NA					942	4/22/2019	34.9354981	-75.15429299	-1350.331	24.96	-3.848	1.89	4.4
NA															x		NA	NA					943	4/21/2019	34.92949807	-75.14809036	-1663.548	44.124	-2.366	0.974	4.4	
NA							x										NA	NA					944	4/21/2019	34.92949115	-75.14808253	-1663.486	43.52	-2.426	0.68	4.4	
NA							x										NA	NA					945	4/21/2019	34.92949113	-75.14808574	-1663.547	43.69	-2.61	0.75	4.4	
NA							x										NA	NA					946	4/21/2019	34.92949548	-75.1480896	-1663.547	44.033	-2.05	0.954	4.3	
NA							x										NA	NA					947	4/21/2019	34.92949355	-75.14808819	-1663.54	43.964	-2.704	0.994	4.4	
NA															x		NA	NA					948	4/21/2019	34.928242	-75.1478615	-1762.927	60.06	-4.572	3.979	3.6	
NA							x										NA	NA					949	4/21/2019	34.92824273	-75.14786046	-1762.923	60.209	-4.542	4.172	3.5	
NA							x										NA	NA					950	4/21/2019	34.92823974	-75.14786343	-1762.954	60.082	-3.978	4.35	3.5	
NA																	x	NA	NA				951	4/21/2019	34.92820861	-75.14786543	-1762.927	60.26	-5.021	3.99	3.6	
NA							x										NA	NA					952	4/21/2019	34.92824103	-75.14786248	-1762.944	60.151	-4.389	4.22	3.5	
NA							x										NA	NA					953	4/21/2019	34.92820793	-75.14786333	-1762.917	60.3	-5.122	3.762	3.6	
NA															x		NA	NA					954	4/21/2019	34.92820853	-75.14786436	-1762.944	60.25	-4.3	4.032	3.5	
NA												x					NA	NA					955	4/22/2019	34.93368577	-75.15317783	-1476.947	64.043	-11.75	-0.131	13.3	
NA																	NA	NA					956	4/22/2019	34.93368585	-75.15317783	-1476.959	63.454	-11.53	-1.07	13.1	
NA																	NA	NA					957	4/22/2019	34.93368557	-75.15317783	-1476.95	63.686	-11.95	-1.205	13.7	
NA																	NA	NA					958	4/22/2019	34.93368559	-75.15317783	-1476.992	63.129	-11.25	-1.826	13.7	
NA																	NA	NA					959	4/21/2019	34.92826958	-75.14788976	-1759.794	74.817	-4.561	4.492	3.6	
NA																	NA	NA					960	4/21/2019	34.92828622	-75.14789804	-1759.789	74.65	-5.36	4.522	3.8	
NA																	NA	NA					961	4/22/2019	34.93124803	-75.15141374	-1577.699	48	-9.35	2.823	3.7	
NA								RB-19-108	x								NA	NA					962	4/22/2019	34.93675113	-75.15762954	-1477.794	53.65	-3.5	0.59	10.5	
NA														x			NA	NA					963	4/22/2019	34.93675113	-75.15762954	-1477.794	53.65	-3.5	0.59	10.5	
NA																	NA	NA					964	4/22/2019	34.93983933	-75.16121729	-1339.342	32.545	-4.104	1.52	3.1	
NA																	NA	NA					965	4/22/2019	34.9401756	-75.16130128	-1279.338	359.931	-6.486	4.378	17.9	
NA																	NA	NA					966	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					967	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					968	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					969	NA	NA	NA	NA	NA	NA	NA	NA	
NA															x		NA	NA					970	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					971	NA	NA	NA	NA	NA	NA	NA	NA	
NA							x										NA	NA					972	NA	NA	NA	NA	NA	NA	NA	NA	
NA							x										NA	NA					973	NA	NA	NA	NA	NA	NA	NA	NA	
NA															x		NA	NA					974	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					975	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					976	NA	NA	NA	NA	NA	NA	NA	NA	
NA															x		NA	NA					977	NA	NA	NA	NA	NA	NA	NA	NA	
NA															x		NA	NA					978	NA	NA	NA	NA	NA	NA	NA	NA	
NA															x		NA	NA					979	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					980	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					981	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					982	NA	NA	NA	NA	NA	NA	NA	NA	
NA															x		NA	NA					983	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					984	NA	NA	NA	NA	NA	NA	NA	NA	
NA							x										NA	NA					985	NA	NA	NA	NA	NA	NA	NA	NA	
NA															x		NA	NA					986	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					987	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					988	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					989	NA	NA	NA	NA	NA	NA	NA	NA	
NA												x					NA	NA					990	NA	NA	NA	NA	NA	NA	NA	NA	
NA												x					NA	NA					991	NA	NA	NA	NA	NA	NA	NA	NA	
NA												x					NA	NA					992	NA	NA	NA	NA	NA	NA	NA	NA	
NA												x					NA	NA					993	NA	NA	NA	NA	NA	NA	NA	NA	
NA							x										NA	NA					994	NA	NA	NA	NA	NA	NA	NA	NA	
NA							x					x					NA	NA					995	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					996	NA	NA	NA	NA	NA	NA	NA	NA	
NA															x		NA	NA					997	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					998	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					999	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					1000	NA	NA	NA	NA	NA	NA	NA	NA	
NA															x		NA	NA					1001	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					1002	NA	NA	NA	NA	NA	NA	NA	NA	
NA																	NA	NA					1003	NA	NA	NA	NA	NA	NA	NA	NA	
NA																																

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor			Mienis		Close										
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95..ETOH	X70..ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude		
NA																x		NA	NA				1006	NA	NA	NA	NA	NA	NA	NA	NA		
NA																x		NA	NA				1007	NA	NA	NA	NA	NA	NA	NA	NA		
NA																x		NA	NA				1008	NA	NA	NA	NA	NA	NA	NA	NA		
NA							x											NA	NA				1009	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1010	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				1011	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				1012	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1013	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1014	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1015	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1016	NA	NA	NA	NA	NA	NA	NA	NA		
NA							x											NA	NA				1017	NA	NA	NA	NA	NA	NA	NA	NA		
NA							x											NA	NA				1018	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1019	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1020	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1021	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1022	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1023	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1024	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1025	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1026	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1027	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1028	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1029	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1030	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1031	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1032	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1033	NA	NA	NA	NA	NA	NA	NA	NA		
NA							x											NA	NA				1034	NA	NA	NA	NA	NA	NA	NA	NA		
NA							x											NA	NA				1035	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1036	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				1037	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				1038	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				1039	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				1040	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1041	NA	NA	NA	NA	NA	NA	NA	NA		
NA							x											NA	NA				1042	NA	NA	NA	NA	NA	NA	NA	NA		
NA							x											NA	NA				1043	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1044	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1045	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1046	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1047	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1048	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1049	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1050	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1051	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1052	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1053	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1054	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1055	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1056	NA	NA	NA	NA	NA	NA	NA	NA		
NA																		NA	NA				1057	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				1058	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				1059	NA	NA	NA	NA	NA	NA	NA	NA		
NA												x						NA	NA				1060	NA	NA	NA	NA	NA	NA	NA	NA		
NA														x				NA	NA				1061	4/23/2019	35.67532751	-74.79429558	-322.542	218.019	-4.147	1.261	1.4		
NA														x				NA	NA				1062	4/23/2019	35.67543581	-74.79687861	-306.34	172.25	-5.68	0.4	1.3		
NA																		NA	NA				1063	4/23/2019	35.67409658	-74.79357167	-328.194	261.635	-6.97	0.386	1.7		
NA																		NA	NA				1064	4/23/2019	35.67409658	-74.79357167	-328.194	261.635	-6.97	0.386	1.7		
NA																		NA	NA				1065	4/23/2019	35.67409658	-74.79357167	-328.194	261.635	-6.97	0.386	1.7		
NA																		NA	NA				1066	4/23/2019	35.67409658	-74.79357167	-328.194	261.635	-6.97	0.386	1.7		
NA	</																																

RB1903 Master Sample Sheet

[illegible]

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor		Mienis		Close									
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95..ETOH	X70..ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA								RB-19-110	x									NA	NA				1207	4/25/2019	33.91663762	-75.8340563	-976.906	334.917	-4.668	7.763	2.2
NA														x				NA	NA				1208	4/25/2019	33.91663762	-75.8340563	-976.906	334.917	-4.668	7.763	2.2
NA	x							RB-19-111	x									NA	NA				1209	4/25/2019	33.91891361	-75.83344058	-944.771	0.646	-0.804	7.44	1.6
NA																		NA	NA				1210	4/25/2019	33.91891361	-75.83344058	-944.771	0.646	-0.804	7.44	1.6
NA																		NA	NA				1211	4/25/2019	33.91891361	-75.83344058	-944.771	0.646	-0.804	7.44	1.6
NA																		NA	NA				1212	4/25/2019	33.91891361	-75.83344058	-944.771	0.646	-0.804	7.44	1.6
NA																		NA	NA				1213	4/25/2019	33.91891361	-75.83344058	-944.771	0.646	-0.804	7.44	1.6
NA																		NA	NA				1214	4/25/2019	33.91891361	-75.83344058	-944.771	0.646	-0.804	7.44	1.6
NA	x							RB-19-112	x									NA	NA				1215	4/25/2019	33.91751441	-75.83403471	-959.614	299.43	-7.167	0.854	3.3
NA											x							NA	NA				1216	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1217	4/25/2019	33.91892749	-75.8333108	-947.833	4.234	-6.135	4.175	1.8
NA																		NA	NA				1218	4/25/2019	33.91892749	-75.8333108	-947.833	4.234	-6.135	4.175	1.8
NA																		NA	NA				1219	4/25/2019	33.91892749	-75.8333108	-947.833	4.234	-6.135	4.175	1.8
NA																		NA	NA				1220	4/25/2019	33.91892749	-75.8333108	-947.833	4.234	-6.135	4.175	1.8
NA																		NA	NA				1221	4/25/2019	33.91579585	-75.8318424	-1027.369	317.62	-2.262	2.8	1.4
NA																		NA	NA				1222	4/25/2019	33.91579533	-75.8318421	-1027.357	317.63	-2.728	2.772	1.5
NA															x			NA	NA				1223	4/25/2019	33.91579533	-75.8318421	-1027.357	317.63	-2.728	2.772	1.5
NA															x			NA	NA				1224	4/25/2019	33.91579732	-75.83184286	-1027.388	317.51	-2.452	2.88	1.5
NA												x						NA	NA				1225	NA	NA	NA	NA	NA	NA	NA	NA
NA													x					NA	NA				1226	NA	NA	NA	NA	NA	NA	NA	NA
NA													x					NA	NA				1227	NA	NA	NA	NA	NA	NA	NA	NA
NA													x					NA	NA				1228	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1229	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1230	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1231	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1232	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1233	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1234	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1235	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1236	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1237	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1238	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1239	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1240	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1241	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1242	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1243	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1244	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1245	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1246	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1247	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1248	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1249	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1250	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1251	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1252	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1253	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1254	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1255	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1256	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1257	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1258	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1259	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1260	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1261	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1262	NA	NA	NA	NA	NA	NA	NA	NA
NA																															

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini		Nancy Prouty				Mandy Joye	Jason Chaytor			Mienis	Close												
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10.1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud Sample	Water Sample	In.foll...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA																		NA	NA				1274	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1275	NA	NA	NA	NA	NA	NA	NA	NA
NA																x		NA	NA				1276	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1277	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1278	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1279	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1280	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1281	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1282	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1283	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1284	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1285	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1286	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1287	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1288	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1289	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1290	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1291	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1292	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1293	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1294	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1295	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1296	NA	NA	NA	NA	NA	NA	NA	NA
NA								RB-19-115	x									NA	NA				1297	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-116	x									NA	NA				1298	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-117	x									NA	NA				1299	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-118	x									NA	NA				1300	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-119	x									NA	NA				1301	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-120	x									NA	NA				1302	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-121	x									NA	NA				1303	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-122	x									NA	NA				1304	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-123	x									NA	NA				1305	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA								RB-19-124	x									NA	NA				1306	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-125	x									NA	NA				1307	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-126	x									NA	NA				1308	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-127	x									NA	NA				1309	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-128	x									NA	NA				1310	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-129	x									NA	NA				1311	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA								RB-19-130	x									NA	NA				1312	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-131	x									NA	NA				1313	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA																		NA	NA				1314	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-132	x									NA	NA				1315	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA																		NA	NA				1316	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA																		NA	NA				1317	4/27/2019	32.49396319	-76.19096217	-2166.691	358.82	-5.97	1.02	0.8
NA		x						RB-19-133	x									NA	NA				1318	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-134	x									NA	NA				1319	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-135	x									NA	NA				1320	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-136	x									NA	NA				1321	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-137	x									NA	NA				1322	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-138	x									NA	NA				1323	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-139	x									NA	NA				1324	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-140	x									NA	NA				1325	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-141	x									NA	NA				1326	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-142	x									NA	NA				1327	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-143	x									NA	NA				1328	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA								RB-19-144	x									NA	NA				1329	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA								RB-19-145	x									NA	NA				1330	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA																		NA	NA				1331	4/28/2019	32.49390756	-76.19131057	-2166.813	13.71	-13.8	3.28	0.6
NA		x						RB-19-150	x									NA	NA				1332	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA		x						RB-19-151	x									NA	NA				1333	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini		Nancy Prouty				Mandy Joye	Jason Chaytor			Mienis	Close												
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70..ETOH	Mud Sample	Water Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA	x							RB-19-156	x								NA	NA					1341	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-157	x								NA	NA					1342	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-158	x								NA	NA					1343	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-159	x								NA	NA					1344	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-160	x								NA	NA					1345	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-161	x								NA	NA					1346	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-162	x								NA	NA					1347	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-163	x								NA	NA					1348	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-164	x								NA	NA					1349	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1350	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1351	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1352	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1353	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1354	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1355	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-165	x								NA	NA					1356	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-166	x								NA	NA					1357	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-167	x								NA	NA					1358	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-168	x								NA	NA					1359	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-169	x								NA	NA					1360	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-170	x								NA	NA					1361	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-171	x								NA	NA					1362	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-172	x								NA	NA					1363	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-173	x								NA	NA					1364	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-174	x								NA	NA					1365	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x							RB-19-175	x								NA	NA					1366	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-176	x								NA	NA					1367	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-177	x								NA	NA					1368	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-178	x								NA	NA					1369	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1370	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1371	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1372	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1373	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1374	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1375	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1376	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1377	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1378	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1379	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1380	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1381	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1382	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1383	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1384	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1385	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1386	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1387	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1388	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA	x																NA	NA					1389	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1390	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1391	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1392	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1393	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1394	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																	NA	NA					1395	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																															

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini		Nancy Prouty				Mandy Joye	Jason Chaytor			Mienis	Close												
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70..ETOH	Mud Sample	Water.Sample	In.foll...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA																		NA	NA				1408	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																		NA	NA				1409	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																		NA	NA				1410	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																		NA	NA				1411	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																		NA	NA				1412	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-179	x									NA	NA				1413	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-180	x									NA	NA				1414	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-181	x									NA	NA				1415	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-182	x									NA	NA				1416	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-183	x									NA	NA				1417	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-184	x									NA	NA				1418	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-185	x									NA	NA				1419	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-186	x									NA	NA				1420	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-187	x									NA	NA				1421	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-188	x									NA	NA				1422	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-189	x									NA	NA				1423	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-190	x									NA	NA				1424	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-191	x									NA	NA				1425	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA																		NA	NA				1426	4/28/2019	32.49364462	-76.19095629	-2166.497	36.701	-2.67	0.88	0.6
NA								RB-19-146	x									NA	NA				1427	4/28/2019	32.49393949	-76.19132766	-2167.059	336.82	-10.5	5.24	0.6
NA	x							RB-19-147	x									NA	NA				1428	4/28/2019	32.49393949	-76.19132766	-2167.059	336.82	-10.5	5.24	0.6
NA								RB-19-148	x									NA	NA				1429	4/28/2019	32.49393949	-76.19132766	-2167.059	336.82	-10.5	5.24	0.6
NA																		NA	NA				1430	4/28/2019	32.49393949	-76.19132766	-2167.059	336.82	-10.5	5.24	0.6
NA								RB-19-149	x									NA	NA				1431	4/28/2019	32.49393949	-76.19132766	-2167.059	336.82	-10.5	5.24	0.6
NA																		NA	NA				1432	4/28/2019	32.49393949	-76.19132766	-2167.059	336.82	-10.5	5.24	0.6
NA																		NA	NA				1433	4/28/2019	32.49386424	-76.19175148	-2166.77	169.93	-1.56	0.55	0.6
NA								RB-19-113	x									NA	NA				1434	4/28/2019	32.49418492	-76.19020522	-2168.934	78.14	-5.154	-0.25	0.8
NA																		NA	NA				1435	4/28/2019	32.49364687	-76.1911758	-2166.14	63.45	0.46	1.361	0.7
NA	x																	NA	NA				1436	4/28/2019	32.49366782	-76.19119384	-2166.119	63.43	0.37	1.389	0.7
NA	x																	NA	NA				1437	4/28/2019	32.49366782	-76.19119384	-2166.119	63.43	0.37	1.389	0.7
NA																		NA	NA				1438	4/28/2019	32.49366782	-76.19119384	-2166.119	63.43	0.37	1.389	0.7
NA	x																	NA	NA				1439	4/28/2019	32.49402172	-76.19069945	-2168.517	99.7	-5.191	-0.1	0.9
NA								RB-19-114	x									NA	NA				1440	4/28/2019	32.49402172	-76.19069945	-2168.517	99.7	-5.191	-0.1	0.9
NA																		NA	NA				1441	4/28/2019	32.49395778	-76.19114424	-2167.773	66.19	-5.661	5.21	1.9
NA																		NA	NA				1442	4/28/2019	32.49360714	-76.19090632	-2164.043	76.74	-8.47	-0.951	3.5
NA																		NA	NA				1443	4/28/2019	32.49360714	-76.19090632	-2164.043	76.74	-8.47	-0.951	3.5
NA																		NA	NA				1444	4/28/2019	32.49360714	-76.19090632	-2164.043	76.74	-8.47	-0.951	3.5
NA																		NA	NA				1445	4/28/2019	32.49360714	-76.19090632	-2164.043	76.74	-8.47	-0.951	3.5
NA																		NA	NA				1446	4/27/2019	32.49394126	-76.19093716	-2166.698	358.62	-5.86	0.727	0.8
NA																		NA	NA				1447	4/27/2019	32.49394126	-76.19093716	-2166.698	358.62	-5.86	0.727	0.8
NA																		NA	NA				1448	4/27/2019	32.49394126	-76.19093716	-2166.698	358.62	-5.86	0.727	0.8
NA																		NA	NA				1449	4/27/2019	32.49394126	-76.19093716	-2166.698	358.62	-5.86	0.727	0.8
NA																		NA	NA				1450	4/27/2019	32.49394126	-76.19093716	-2166.698	358.62	-5.86	0.727	0.8
NA																		NA	NA				1451	4/27/2019	32.49394126	-76.19093716	-2166.698	358.62	-5.86	0.727	0.8
NA																		NA	NA				1452	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1453	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1454	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1455	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1456	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1457	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1458	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1459	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1460	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1461	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1462	4/27/2019	32.49393719	-76.19092117	-2166.761	7.99	-5.15	4.25	0.6
NA																		NA	NA				1463	4/2							

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini			Nancy Prouty			Mandy Joye	Jason Chaytor			Mienis	Close												
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70..ETOH	Mud Sample	Water Sample	In.foll...20 C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA																		NA	NA				1475	4/28/2019	32.49365537	-76.19096981	-2166.441	36.7	-2.58	0.89	0.6
NA																		NA	NA				1476	4/28/2019	32.49365537	-76.19096981	-2166.441	36.7	-2.58	0.89	0.6
NA							x											NA	NA				1477	4/27/2019	32.49393983	-76.1909275	-2166.57	0.339	-6.442	3.59	0.7
NA							x											NA	NA				1478	4/27/2019	32.49393983	-76.1909275	-2166.57	0.339	-6.442	3.59	0.7
NA																		NA	NA				1479	4/27/2019	32.49392036	-76.19092236	-2166.588	0.333	-6.32	3.996	0.7
NA							x											NA	NA				1480	4/27/2019	32.49390642	-76.19091255	-2166.586	0.332	-6.25	4.23	0.7
NA							x											NA	NA				1481	4/27/2019	32.49391028	-76.19093022	-2166.601	0.37	-6.48	3.74	0.7
NA							x											NA	NA				1482	4/27/2019	32.4939244	-76.19092342	-2166.557	0.35	-6.42	4.01	0.7
NA							x											NA	NA				1483	4/27/2019	32.49391669	-76.19091039	-2166.602	0.34	-6.22	4.37	0.7
NA							x											NA	NA				1484	4/27/2019	32.49392108	-76.19093397	-2166.538	0.36	-6.48	3.79	0.7
NA							x											NA	NA				1485	4/28/2019	32.49493018	-76.18985468	-2168.691	10.642	-1.67	2.13	1.2
NA							x											NA	NA				1486	4/28/2019	32.49492996	-76.18986021	-2168.717	10.604	-1.55	2.16	1.2
NA															x			NA	NA				1487	4/28/2019	32.49366265	-76.19116675	-2166.135	63.341	-0.049	1.391	0.7
NA															x			NA	NA				1488	4/28/2019	32.49491374	-76.18984952	-2168.729	10.603	-1.431	2.15	1.2
NA							x											NA	NA				1489	4/28/2019	32.49492557	-76.18985866	-2168.709	10.558	-1.429	2.15	1.2
NA															x			NA	NA				1490	4/28/2019	32.4949264	-76.18985236	-2168.724	10.62	-1.533	2.16	1.2
NA							x											NA	NA				1491	4/28/2019	32.49491687	-76.18985291	-2168.731	10.58	-1.38	2.16	1.2
NA							x											NA	NA				1492	4/28/2019	32.49492193	-76.18985253	-2168.695	10.569	-1.43	2.169	1.2
NA															x			NA	NA				1493	4/28/2019	32.49366027	-76.19117111	-2166.122	63.389	-0.171	1.43	0.7
NA															x			NA	NA				1494	4/28/2019	32.49491985	-76.18985503	-2168.724	10.54	-1.44	2.14	1.2
NA							x											NA	NA				1495	4/27/2019	32.49366344	-76.19119099	-2166.16	63.44	-0.17	1.45	0.7
NA							x											NA	NA				1496	4/28/2019	32.49366186	-76.19118183	-2166.135	63.41	-0.13	1.43	0.7
NA																		NA	NA				1497	4/28/2019	32.49366765	-76.19118824	-2166.137	63.41	-0.12	1.48	0.7
NA							x								x			NA	NA				1498	4/28/2019	32.49366183	-76.19118375	-2166.129	63.42	-0.223	1.501	0.7
NA							x											NA	NA				1499	4/28/2019	32.49367029	-76.19118476	-2166.143	63.397	-0.063	1.47	0.7
NA							x											NA	NA				1500	4/28/2019	32.4936583	-76.19118452	-2166.112	63.377	-0.13	1.44	0.7
NA													x					NA	NA				1501	4/28/2019	32.49365025	-76.19095962	-2166.44	36.73	-2.46	0.82	0.6
NA																		NA	NA				1502	4/27/2019	32.49396374	-76.19093337	-2166.7	358.83	-5.69	1.15	0.7
NA								RB-19-192	x									NA	NA				1503	4/28/2019	32.97959626	-75.92844852	-2589.669	12.08	-2.54	4.09	0.9
NA								RB-19-193	x									NA	NA				1504	4/28/2019	32.97423129	-75.91799423	-2608.112	127.871	-4.086	-0.3	1.4
NA																		NA	NA				1505	4/28/2019	32.97423129	-75.91799423	-2608.112	127.871	-4.086	-0.3	1.4
NA																		NA	NA				1506	4/29/2019	32.97320195	-75.9154219	-2592.2	16.816	4.817	-4.26	1.1
NA																		NA	NA				1507	4/29/2019	32.97320195	-75.9154219	-2592.2	16.816	4.817	-4.26	1.1
NA																		NA	NA				1508	4/28/2019	32.97833978	-75.92369746	-2600.519	34.649	-6.37	4.66	1
NA																		NA	NA				1509	4/29/2019	32.97328838	-75.91554172	-2594.065	336.01	-3.589	-7.357	1.2
NA																		NA	NA				1510	4/29/2019	32.97328838	-75.91554172	-2594.065	336.01	-3.589	-7.357	1.2
NA																		NA	NA				1511	4/28/2019	32.97945482	-75.92658919	-2593.157	57.289	-7.6	4.313	1.2
NA																		NA	NA				1512	4/28/2019	32.97967189	-75.92827192	-2590.769	6.64	-3.26	4.11	0.9
NA																		NA	NA				1513	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1514	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1515	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1516	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1517	4/29/2019	32.97347753	-75.91515687	-2587.381	343.12	-1.48	-3	0.8
NA																		NA	NA				1518	4/29/2019	32.9734695	-75.91517019	-2587.576	348.55	0.29	-2.721	0.8
NA																		NA	NA				1519	4/28/2019	32.97964373	-75.92866575	-2588.026	346.11	1.468	0.81	0.8
NA																		NA	NA				1520	4/28/2019	32.97423089	-75.91799468	-2608.11	128.105	-4.844	0.015	1.5
NA																		NA	NA				1521	4/28/2019	32.97423116	-75.9179943	-2608.07	128.17	-5.455	0.519	1.5
NA																		NA	NA				1522	4/28/2019	32.97387259	-75.91788478	-2605.148	139.995	-10.825	1.435	3
NA							x								x			NA	NA				1523	4/28/2019	32.97959021	-75.92685999	-2592.994	271.479	-5.181	-1.467	1.1
NA																		NA	NA				1524	4/28/2019	32.97959495	-75.92686218	-2592.98	271.42	-5.31	-1.518	1.1
NA							x											NA	NA				1525	4/28/2019	32.9795987	-75.92686414	-2593.012	271.447	-5.113	-1.537	1.1
NA																		NA	NA				1526	4/28/2019	32.9796014	-75.92686596	-2592.977	271.439	-5.16	-0.769	1.1
NA															x			NA	NA				1527	4/28/2019	32.97958475	-75.92685756	-2592.994	271.621	-5.17	-1.687	1.1
NA																		NA	NA				1528	4/28/2019	32.97960306	-75.92686774	-2592.997	271.69	-5.041	-0.266	1.1
NA															x			NA	NA				1529	4/28/2019	32.9796014	-75.92686596	-2592.977	271.439	-5.16	-0.769	1.1
NA							x											NA	NA				1530	4/28/2019	32.97960375	-75.9268693	-2592.963	271.78	-4.86	0.559	1.1
NA							x											NA	NA				1531	NA	NA	NA	NA	NA	NA	NA	NA
NA															x			NA	NA				1532	4/28/2019	32.979679						

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini		Nancy Prouty				Mandy Joye	Jason Chaytor			Mienis	Close												
Live for Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10.1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud Sample	Water Sample	In.foll...20 C.	shells.rocks.skeleton	Mud Sample.1	Water Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water Sample.2	Skeleton Sample	Water Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA							x											NA	NA				1542	4/28/2019	32.97967934	-75.92827973	-2590.745	6.71	-3.158	4.05	0.9
NA							x											NA	NA				1543	4/28/2019	32.97967963	-75.92827997	-2590.758	6.709	-3.14	4.04	0.9
NA							x											NA	NA				1544	4/28/2019	32.97967778	-75.92827845	-2590.738	6.69	-3.22	4.08	0.9
NA												x						NA	NA				1545	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1546	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1547	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1548	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1549	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1550	NA	NA	NA	NA	NA	NA	NA	NA
NA							x									x		NA	NA				1551	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1552	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1553	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																	NA	NA				1554	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																	NA	NA				1555	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																	NA	NA				1556	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																	NA	NA				1557	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																	NA	NA				1558	NA	NA	NA	NA	NA	NA	NA	NA
NA	x																	NA	NA				1559	NA	NA	NA	NA	NA	NA	NA	NA
NA	x															x		NA	NA				1560	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1561	NA	NA	NA	NA	NA	NA	NA	NA
NA							x											NA	NA				1562	NA	NA	NA	NA	NA	NA	NA	NA
NA																		NA	NA				1563	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1564	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1565	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1566	NA	NA	NA	NA	NA	NA	NA	NA
NA												x						NA	NA				1567	NA	NA	NA	NA	NA	NA	NA	NA
NA		x						RB-19-221	x									NA	NA				1568	4/29/2019	31.89500332	-77.69862565	-662.754	346.939	-2.815	2.805	3.7
NA																		NA	NA				1569	4/29/2019	31.89495376	-77.69870232	-664.277	3.747	-1.08	4.911	2.9
NA																		NA	NA				1570	4/29/2019	31.89463068	-77.69931758	-677.254	358.7	-6.767	2.49	3.6
NA																		NA	NA				1571	4/29/2019	31.89463068	-77.69931758	-677.254	358.7	-6.767	2.49	3.6
NA																		NA	NA				1572	4/29/2019	31.89463068	-77.69931758	-677.254	358.7	-6.767	2.49	3.6
NA																		NA	NA				1573	4/29/2019	31.89463068	-77.69931758	-677.254	358.7	-6.767	2.49	3.6
NA	x																	NA	NA				1574	4/29/2019	31.89463068	-77.69931758	-677.254	358.7	-6.767	2.49	3.6
NA	x							RB-19-222	x									NA	NA				1575	4/29/2019	31.89492541	-77.69871584	-665.257	11.952	-6.547	2.326	3.3
NA																		NA	NA				1576	4/29/2019	31.89492541	-77.69871584	-665.257	11.952	-6.547	2.326	3.3
NA																		NA	NA				1577	4/29/2019	31.89492541	-77.69871584	-665.257	11.952	-6.547	2.326	3.3
NA																		NA	NA				1578	4/29/2019	31.89492541	-77.69871584	-665.257	11.952	-6.547	2.326	3.3
NA																		NA	NA				1579	4/29/2019	31.89492541	-77.69871584	-665.257	11.952	-6.547	2.326	3.3
NA																		NA	NA				1580	4/29/2019	31.89492541	-77.69871584	-665.257	11.952	-6.547	2.326	3.3
NA	x	x						RB-19-206	x									NA	NA				1581	4/29/2019	31.89417545	-77.69955058	-693.643	353.65	-5.01	3.01	2.3
NA	x																	NA	NA				1582	4/29/2019	31.89500147	-77.69862454	-662.759	348.32	-3.9	4.38	3.8
NA		x						RB-19-201	x									NA	NA				1583	4/29/2019	31.89256199	-77.69933013	-722.79	266.99	-4.011	1.417	0.8
NA								RB-19-202	x									NA	NA				1584	4/29/2019	31.89256239	-77.6993304	-722.779	266.76	-4.218	0.92	0.8
NA		x																NA	NA				1585	4/29/2019	31.89255543	-77.69932878	-722.892	273.433	-2.99	0.838	0.9
NA																		NA	NA				1586	4/29/2019	31.89256239	-77.6993304	-722.779	266.76	-4.218	0.92	0.8
NA	x	x																NA	NA				1587	4/29/2019	31.89288573	-77.69957059	-721.471	4.83	-7.838	1.17	1.7
NA																		NA	NA				1588	4/29/2019	31.89493896	-77.69872734	-664.251	3.527	-6.971	4.81	3.7
NA								RB-19-205	x									NA	NA				1589	4/29/2019	31.89540608	-77.69813269	-660.526	23.21	-3.099	-0.97	2.4
NA																		NA	NA				1590	4/29/2019	31.89540608	-77.69813269	-660.526	23.21	-3.099	-0.97	2.4
NA		x						RB-19-203	x									NA	NA				1591	4/29/2019	31.89378806	-77.69958634	-705.509	206.285	-9.026	-2.376	0.8
NA								RB-19-204	x									NA	NA				1592	4/29/2019	31.89378937	-77.69958649	-705.505	205.651	-9.213	-2.672	0.8
NA		x																NA	NA				1593	4/29/2019	31.89378624	-77.69956932	-705.607	208.083	-10.17	-2.03	0.9
NA																		NA	NA				1594	4/29/2019	31.89377362	-77.69953271	-705.811	7.081	-7.377	3.26	2.8
NA								RB-19-207	x									NA	NA				1595	4/30/2019	31.90344284	-77.69633139	-772.312	218.657	-8.88	2.339	3
NA								RB-19-208	x									NA	NA				1596	4/30/2019	31.90228487	-77.69666945	-757.913	217.401	-7.16	-0.409	3.3
NA																		NA	NA				1597	4/29/2019	31.89417556	-77.69954686	-693.573	357.319	-5.006	4.311	2.3
NA																		NA	NA				1598	4/30/2019	31.90114595	-77.69738646	-734.821	196.606	-6.383	1.736	3.4
NA																		NA	NA				1599	4/30/2019	31.90117091	-77.6973335	-736.288	198.206	-9.273	3.107	2.5
NA																		NA	NA				1600	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA	x							RB-19-209	x									NA	NA				1601	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA	x							RB-19-210	x									NA	NA				1602	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456		

RB1903 Master Sample Sheet

Sandra Brooke				Amanda Demopoulos				Andrea Quattrini				Nancy Prouty				Mandy Joye		Jason Chaytor		Mienis		Close									
Live.for.Growth Experiment	Live.1	Formalin.10.	LN2.3	RB1903.2019..	Formalin.10..1	ETOH.2	Frozen.at.20	RB1903.19..	X95.ETOH	X70.ETOH	Mud.Sample	Water.Sample	In.foli...20.C.	shells.rocks.skeleton	Mud.Sample.1	Water.Sample.1	Sediment.Chem	Fridge	Dried.Geology	Water.Sample.2	Skeleton.Sample	Water.Sample.3	id	date	lat_RENAV	long_RENAV	depth	heading	pitch	roll	altitude
NA								RB-19-217	x									NA	NA				1609	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA	x							RB-19-218	x									NA	NA				1610	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA								RB-19-219	x									NA	NA				1611	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA																		NA	NA				1612	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA								RB-19-220	x									NA	NA				1613	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA																		NA	NA				1614	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA																		NA	NA				1615	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA																		NA	NA				1616	4/30/2019	31.90786669	-77.69564202	-770.921	65.404	-11.456	-0.091	4.2
NA																		NA	NA				1617	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1618	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1619	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1620	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1621	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1622	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1623	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1624	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1625	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1626	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1627	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1628	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1629	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1630	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1631	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1632	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1633	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1634	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1635	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1636	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1637	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1638	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1639	4/29/2019	31.89540213	-77.6981263	-660.698	347.08	-1.105	0.73	3.4
NA																		NA	NA				1640	4/30/2019	31.89815543	-77.69714341	-674.245	325.211	-8.929	4.048	3.3
NA																		NA	NA				1641	4/30/2019	31.89815543	-77.69714341	-674.245	325.211	-8.929	4.048	3.3
NA												x						NA	NA				1642	4/30/2019	31.89815543	-77.69714341	-674.245	325.211	-8.929	4.048	3.3
NA												x						NA	NA				1643	4/30/2019	31.89815543	-77.69714341	-674.245	325.211	-8.929	4.048	3.3

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 13th 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 29.657N, -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 1st 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, 2nd 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, 2nd 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

	Ideal collection	
Corals	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

	Ideal collection	
Other critters	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, 2nd 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 nskins **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	opportunistic	quivers/biobox
cup corals		
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, 2nd mussel pot, 8 push cores, rocks
8. Head towards WPT 3
 - a. Collect animals, 3rd 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
Mussels/Clams		
Tube worms		
Quill worms		
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, 2nd 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

	Ideal collection	
Corals	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

	Ideal collection	
Other critters	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, 2nd 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, 2nd 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
	target mix of sizes	biobox/quivers/slurp (small)
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), 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, 2nd mussel pot, 8 push cores, rocks
8. Head towards WPT 3
 - a. Collect animals, 3rd 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
Mussels/Clams	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, 2nd mussel pot, 8 push cores, rocks
8. Head towards WPT 3
- a. Collect animals, 3rd 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, 2nd 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:

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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:

WHOI/NDSF

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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!

Contact Numbers:

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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. Lamellabrachia), 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.

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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.

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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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Appendix B - Plans of the Day (PODs)

Appendix C - Dive Plans

Appendix D - Jason Dive Summaries