



**CRUISE REPORT**

**NOAA Ship *Nancy Foster* Expedition NF-19-09  
October 21 to 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 NF1909 expedition onboard the NOAA Ship *Nancy Foster* is the fifth cruise of the project. The primary goals of this cruise are as follows:

1. Recovery of benthic lander deployment
2. Mid-water trawling of the deep-scattering layer
3. Water sampling for water chemistry and microbial diversity
4. Sediment, water, and faunal samples for eDNA work
5. Multibeam mapping at selected sites in study region

## Cruise Summary

Cruise NF-19-09 on the NOAA Ship *Nancy Foster* was the fifth and final cruise of the DEEPSEARCH program and occurred from 22-30 October 2019. Overall, the cruise was very successful and we accomplished most of our major scientific objectives. The major objectives included: 1) retrieval of the NIOZ benthic lander from Richardson Hills, 2) mid-water trawling of the deep-scattering layer to collect mesopelagic fauna, 3) water column sampling for particulate organic matter, carbonate chemistry, nutrients, and eDNA, and 4) multibeam mapping of select study sites (Richardson Hills, Pamlico Canyon, and Pea Island). Most of these objectives were met on this cruise, with the exception of multibeam mapping (due a combination of inclement weather and equipment failure). Despite losing two days of over-the-side operations (one to a medical emergency, one to weather), we were able to recover the lander, conduct 16 CTD casts (**Appendix A**) with water sampling through the water column, conduct 8 mid-water trawls (**Appendix B**), and perform multibeam mapping near the Richardson Hills site. During the course of our 9 days at sea, we focused on three primary sites: Richardson Hills (coral), Blake Ridge (seep), and Pamlico Canyon (canyon). At each site, we performed 2-4 mid-water trawls (at noon and midnight) coupled with CTD casts to sample for eDNA at the deep-scattering layer and nutrients/carbonate chemistry through the water column. Additionally, we fixed the NIOZ monocoore to the CTD rosette at Pamlico Canyon to collect two sediment samples within the canyon axis. The results of this cruise will help us to better understand the composition of mesopelagic fauna that inhabit the water column within the study region, as well as the oceanographic properties associated with deep-water benthic habitats.

Plan of the Day (POD) are presented in **Appendix C** and the Master Log Summary is presented in **Appendix D**.

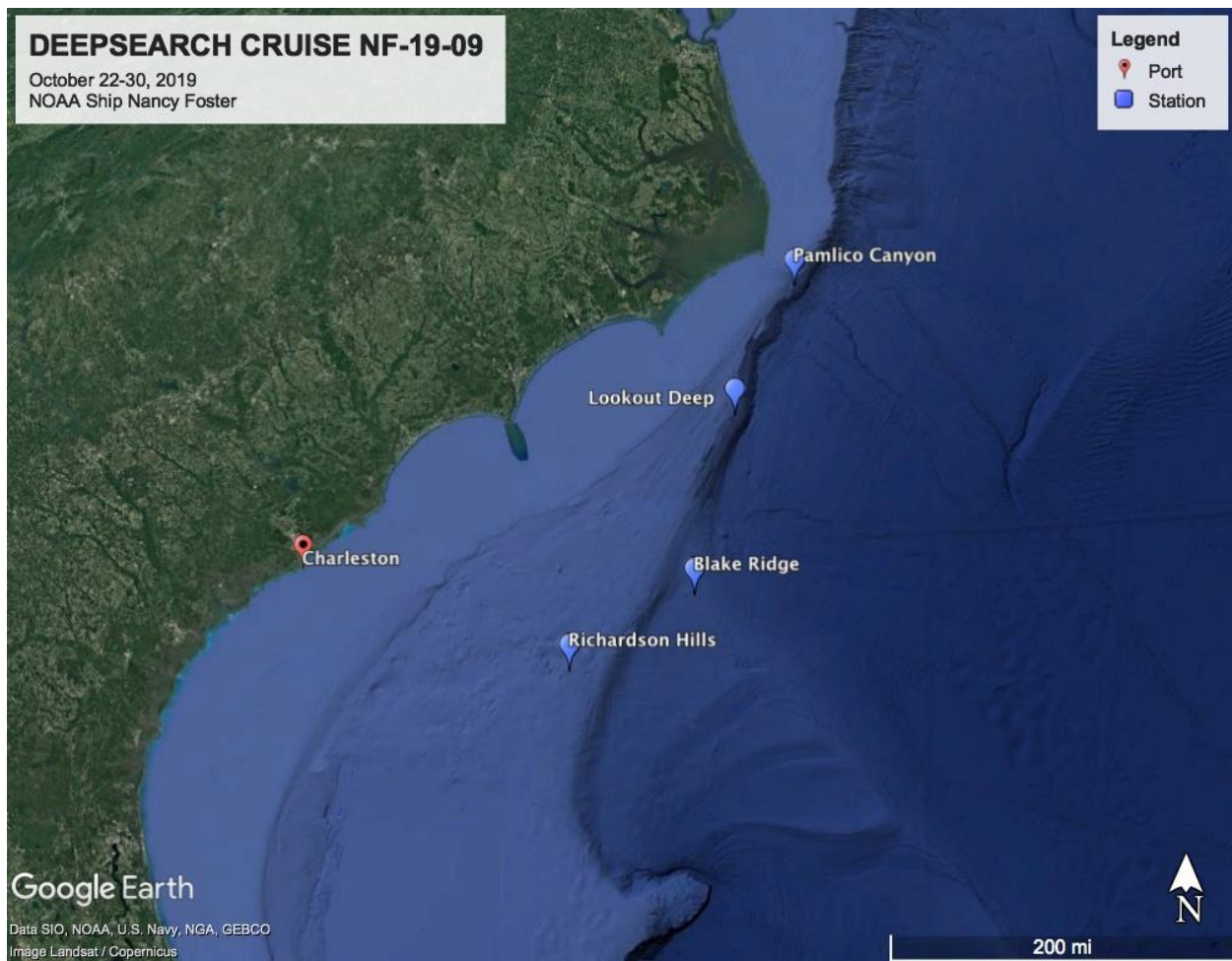
### Cruise Summary Table

Date	Location	Latitude	Longitude	Depth	Tucker Trawl	CTD cast
21-Oct	Charleston, SC					
22-Oct	Charleston, SC					
23-Oct	Richardson Hills	32	-77.43	790	TT-01, 02	CTD-01
24-Oct	Blake Ridge	32.494	-76.199	2180	TT-03	CTD-02, 03, 04, 05
25-Oct	Blake Ridge	32.494	-76.199	2180	TT-04	CTD-06
26-Oct	Lookout Deep/Pamlico Canyon	33.923	-75.812	1200	TT-05, 06	CTD-07
27-Oct	Pamlico Canyon/transit	34.956	-75.224	600		CTD-10
28-Oct	Richardson Hills	32	-77.43	790	TT-07, 08	CTD-11,12, 13, 14
29-Oct	Richardson Hills	32	-77.43	790		CTD-15, 16
30-Oct	Charleston, SC					

## Scientific Personnel Participating

1. Jay Lunden, Chief Scientist/Research Assistant Professor, Temple University
2. Cheryl Morrison, Research Geneticist, U.S. Geological Survey
3. Jonathan Quigley, Engineering Technician, U.S. Geological Survey
4. Furu Mienis, Research Scientist, NIOZ – Royal Netherlands Institute for Sea Research
5. Mark Mueller, Benthic Ecologist, Bureau of Ocean Energy Management
6. Rachel Bassett, Ecological Science Analyst, NOAA
7. Hannah Choi, PhD Candidate, University of Georgia
8. Tracey Sutton, Professor, Nova Southeastern University
9. Alex Davis, PhD Student, Duke University
10. Ivan Hurzeler, Filmmaker
11. Caitlin Adams, Operations Coordinator, NOAA Office of Ocean Exploration and Research
12. Veronica Salamone, Research Technician, U.S. Geological Survey

## Study Sites



# Expedition Activities

## October 20

The science party arrived in Charleston and began loading gear onto *Nancy Foster*. Items that had been shipped via UPS and FedEx were previously loaded onto the ship by the ship's crew. At 19:00 we received a call from OPS officer that the departure would be delayed due to a medical emergency with a crew member. We were not provided any other information at this time.

## October 21

In the morning, the Commanding Officer (CO) informed the science party that departure would be delayed until the following morning due to a medical emergency with a crew member, requiring a replacement crew member to join us in Charleston. While waiting for departure, at 08:00 the Operations Officer (OPS) provided a "welcome aboard" meeting for the science party that included safety, ship etiquette, and sexual harassment trainings. At 10:00 a pre-project meeting was held with the Executive Officer (XO) and OPS officer with project leads to discuss project objectives. At 12:00 the science party, deck crew (including bosun), and officers (including CO and XO) met on the back deck of the ship for a safety talk to go over CTD operations, trawling, and lander recovery. The bosun gave an overview of deck ops and safety procedures while underway. All scientists were instructed to don hard hats and safety vests while the crane and A-frame are in use. The rest of the day was spent setting up the laboratories and making a supply run to Wal-Mart. Dinner was not served on the ship this evening.

## October 22

The ship departed the pier at 10:00, with a slight delay due to engine testing. We exited the harbor at approximately 12:00 and the ship tested its autopilot by running lines towards the jetties outside the harbor (last update at 1400). The autopilot system needed to be reset and tested due to a shutoff (lasting >24 hrs) from the recent hurricane. Testing of the autopilot system was completed at 15:00 and we began transiting to Richardson Hills at 15:00. We held a science meeting at 17:30 and discussed plans for the next day.

## October 23

We began the day at Richardson Hills with a CTD cast at 05:00 that needed to be aborted due to a failure with the winch – power was cycling in and out rendering the winch unusable for the project. Later in the morning we moved to the lander position and acoustically released the lander at 08:30; it was spotted on the surface at 08:50 and secured on deck at 09:10. From 09:30 until 10:15, the ship's crew conducted both fire and abandon ship drills. The science party participated fully and also received a briefing on life raft protocols. While waiting on the deck crew and engineering department to troubleshoot winch issues with the CTD, we decided to focus on trawling operations.

- 12:00 – **Tucker trawl 01 – TT-01 @ Richardson Hills**
- 22:30 – **Tucker trawl 02 – TT-02 @ Richardson Hills**

## October 24

Upon recovery of TT-02, we began transiting to Blake Ridge at 03:00. At 07:45 there was a regularly scheduled safety meeting with the CO, XO, OPS officer, Chief Sci, Chief Bosun, Chief Engineer, and Electronics Technician (ET) to discuss various issues with the trawl and CTD operations. During the night trawl, there was an issue with the winch wire being overly greasy and failing to register turns on the block, resulting in an inaccurate reading of winch wire payout. The crew agreed to keep an eye on this and said there was nothing they could do about it in the meantime, but felt that it would get better through more use. The other discussion that came up during the safety meeting included using the blue winch (which was thread through the block on the A-frame and used for the trawl) to deploy the CTD. The CO and chief bosun assessed the risks associated with deploying the CTD off the stern of the ship, and determined that this posed a risk to the ship if it was to lose propulsion and the CTD package could bump into the stern/propellers. Thus, the decision was made to run a second block through the J-frame with the blue

winch and deploy the CTD over the port side of the ship with the J-frame. This plan required approximately ~6-8 hours of work to re-terminate the conducting cable from the CTD to the blue winch. At 14:45 the connection was finished and we deployed the CTD for another cast. At this point, the CTD/winch assembly was deemed reliable and we continued with operations as planned. The rest of the day was spent with a combination of CTD and trawling operations.

- 12:30 **CTD-02 (aborted due to ground fault in conducting wire connection to CTD package)**
- 14:45 **CTD-03 @ Blake Ridge**
- 17:45 **CTD-04 @ Blake Ridge**
- 22:00 **CTD-05 @ Blake Ridge**
- 23:35 **TT-03 @ Blake Ridge**

This trawl produced a highly diverse and abundant catch, including deep-scattering layer organism at the upper limit of their vertical migration range. At this site, a scattering layer was readily observable in the EK60 data from 540-630 m. A second scattering layer was observed at 0-150 m (migrating layer) – the net was deployed from 0 to 150 m and this sample produced a range of migrating micronekton.

### **October 25**

The day began with a recovery of the midnight TT-03 trawl and subsequent deployment of CTD-06 for corresponding eDNA samples of the deep-scattering layer. Following recovery of the CTD, we held station at Blake Ridge to conduct an afternoon trawl at the same location. Following recovery of TT-04, we began a long transit to Lookout Deep to conduct a CTD cast for carbonate chemistry and particulate organic matter samples.

- 02:00 recovery of **TT-03 @ Blake Ridge**
- 03:00 **CTD-06 @ Blake Ridge**
- 11:30 **TT-04 @ Blake Ridge**

### **October 26**

We arrived at Lookout Deep at approximately 01:00 and conducted a CTD cast over a site that had previously been believed to be a seep site but was confirmed to be a coral site during RB-19-03. The CTD made it close to the bottom (1090 m) but not to full bottom depth (1180 m) due to strong deep currents pulling the CTD package aft of the ship and the wire out on the winch had a ~150 m differential between wire out and depth of CTD. The recovery of the CTD took a little over 2 hours due to the winch wire bunching up on the drum of the winch, but the slow recovery worked to wrap the winch wire around the drum. Following recovery of the CTD, we began transiting to our next station, Pamlico Canyon.

- 01:00 **CTD-07 @ Lookout Deep**

Upon arrival at Pamlico around 10:00, we deployed the small boat to conduct outreach filming. Following this operation, we moved to trawling and CTD operations at Pamlico including a CTD transect through the canyon axis with the NIOZ monocoar attached. While the afternoon trawl TT-05 was deployed, the CO informed us that strong weather was approaching and we would need to head south to avoid high seas (>9-12 feet seas). Thus, we decided to head back to Richardson Hills to work more (and collect CTD casts) instead of moving north to Pea Island as originally planned. There was also concern with the CTD deployments at Pamlico due to the strong surface current (>3 knots), so we conducted several drift tests and positioning with the ship before lowering the CTD into the canyon axis.

- 12:00 **TT-05 @ Pamlico Canyon**
- 17:00 **CTD-08 @ Pamlico Canyon w/ monocoar attached**
- 19:00 **CTD-09 @ Pamlico Canyon w/ monocoar attached**
- 21:30 **TT-06 @ Pamlico Canyon**

## **October 27**

After completing TT-06, we conducted one final CTD cast (CTD-010) at Pamlico Canyon with the monocoire. However, we were outside of the canyon axis and did not collect a sediment sample with the monocoire. Following recovery of the CTD, we began our long transit back to Richardson Hills. Based on current ship speed, current sea state (7' seas and building), and 40 kt wind, we are expecting to arrive at Richardson Hills at 14:00 on Monday 10/28. Thus, most of the day was spent in transit during rough weather. Most scientists spent the day updating data sheets and resting.

- **01:00 CTD-10 @ Pamlico Canyon w/ monocoire attached**

## **October 28**

We arrived on station at Richardson Hills at approximately 09:00 and conducted CTD-11 (no monocoire attached). The current was blowing at 4 kts to the East so the ship needed to maintain its heading to stay with the current in order to maintain the CTD vertically oriented.

Following CTD-11, we conducted TT-07 over Richardson Hills, followed by a CTD transect. The starting point of the transect coincided with the end point of the trawl. We were unsure of exactly where exactly the transect would occur based on the strong currents at the site.

### **09:00 CTD-11 at Richardson Hills**

On the downcast of CTD-11 we are seeing multiple "inversions" in the temperature data – an inversion is a depth range where temperature does not change – we see it at ~150 m, ~260 m, ~320 m – this is indicative of turbulence at these depths that may be due to us being on the edge of an eddy. We will need to look at sea surface height satellite data to check if we are on the edge of an eddy. We could not reach bottom due to strong current, and stopped at approximately 180 m above bottom due to 4 kt surface current (the wire payout was greater than the overall depth).

- **11:30 TT-07 @ Richardson Hills**

We observed a profound DSL over the coral mound at Richardson Hills, so we deployed the net over the mound in order to capture some

- **15:00 CTD transect @ Richardson Hills: CTD-12, CTD-13, CTD-14, CTD-15**
- **22:00 TT-08 @ Richardson Hills**

## **October 29**

We began the day with recovering TT-08 and deployed CTD-16 for eDNA sampling at deep-scattering layer depths. Followed by CTD-16, we planned to survey the southern area of Richardson Hills with the EK710 multibeam sounder; however, this operation needed to be aborted due to a failure of the EK710 system to communicate with the ship's server. The survey team spent >8 hours troubleshooting this issue at sea but were unable to resolve the issue in the remaining time that we had before beginning our transit back to port at 14:00.

- **02:00 CTD-16 @ Richardson Hills**

**08:30 CTD with 911+ profiler unit for sound velocity profile for multibeam operations (did not log as an official cast because it was not conducted with the rosette and no samples were taken)**

14:00 begin transit back to Charleston Harbor

## Preliminary Results from Tucker Trawls:

TT-01: This was a sparse daytime epipelagic trawl. The catch included a standard depauperate daytime epipelagic sample, and the scientists believe this was due to “kiting” of the trawl or the absence of a deep-scattering layer (there was a minimal layer observed on the EK60 at 38 KHz). At 38 KHz it's possible that layering may be due to large planktonic organisms rather than micronekton.

TT-02: Caught bathypelagic fauna (e.g. bristle mouth (*Cyclothone microdon*), hatchetfish (*Sternoptyx diaphana*), and mysid shrimp which only occur below 1000 m. We didn't catch any shallow analogs of these organisms in the night trawl. We found deep fish in shallow waters but no shallow fish in shallow waters. The net could not have been deeper than 400 m. Here, this raises the question about Richardson Hills with the standard micronekton vertical distributions could be altered at this site perhaps by hydrography or topography. Also it is worth noting that the DSL was not readily visible at this site at night either.

TT-03: This trawl produced a highly diverse and abundant catch, including deep-scattering layer organism at the upper limit of their vertical migration range. At this site, a scattering layer was readily observable in the EK60 data from 540-630 m. A second scattering layer was observed at 0-150 m (migrating layer) – the net was deployed from 0 to 150 m and this sample produced a range of migrating micronekton.

TT-04: we started to see more standard migrating micronekton (likely due to deeper water) in association with a bright deep-scattering layer. Bristlemouths and deeper decapod shrimp were the dominant samples in this trawl. A couple squid were also sampled during this trawl.

TT-05: this trawl extended too far out and hit the bottom (or side of the canyon) and soft sediment came up in the trawl along with benthic organisms (a very large anemone) and demersal fishes. This trawl suggests that there are A LOT of fish at the bottom at this site. Samples included 15 large demersal fishes (that is a large number for the baby tucker trawl) – species included cusk eels (*Bassozetus compressus*) and three grenadiers (*Nezumia bairdi*).

TT-06: highly diverse tow, enormous catch of eel larvae (150) *Leptocephali*, took several hours to go through the entire trawl. We had deep-scattering fishes that showed up in 0-200 m trawl, showing that the canyon receives deep-scattering layer fishes that migrate up at night. We also caught a high number of juvenile reef fishes, showing demersal fishes are using the pelagic zone as habitat (including scorpionfishes).

TT-07: caught normally deep taxa in daytime tow, including deeper-living hatchetfish and deeper-living shrimp. A snipe eel was also caught in this tow. Lots of euphasiids were also caught, which probably made up a large component of the DSL.

TT-08: 0-200 m depth, high diversity of fishes, very few *Leptocephali* (eel larvae); species encountered include lanternfish and other vertical migrators. Also found lots of flounder larvae as another example of demersal fishes using pelagic habitat at night as juvenile habitat.



## Appendix A – CTD Logs

NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: CTD01	Start Lat: 32° 00.56	Start Lon: 77° 25.10	028m
Site ID: Richardson Hulls	Bottom Lat:	Bottom Lon:	
Date: 23-10-2019	End Lat:	End Lon:	
Start Time (GMT): 9:13	Comments: CTD for sound velocity profile multibeam Problems with the winch @ 188m		
On bottom (GMT):			
End Time (GMT):			
Logger:	Mono corer yes or no: no CTD aboarded -> no samples		

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom			NF1909_CTD _N01
2				NF1909_CTD _N02
3				NF1909_CTD _N03
4				NF1909_CTD _N04
5				NF1909_CTD _N05
6				NF1909_CTD _N06
7				NF1909_CTD _N07
8	✓			NF1909_CTD _N08
9	Surface			NF1909_CTD _N09
10				NF1909_CTD _N10
11				NF1909_CTD _N11
12	✓			NF1909_CTD _N12

NF1909  
DEEPSEARCH  
CTD CAST LOG

bottom depth;  
2169 m

Cast ID: NF1909-CTD02	Start Lat: 32° 31.762 N	Start Lon: 076° 13.515 W
Site ID: Blake Ridge	Bottom Lat:	Bottom Lon:
Date: 10-24-19	End Lat: 32° 31.864 N	End Lon: 076° 13.941 W
Start Time (GMT):	Comments: Running CTD w blue winch off of 3-frame	
On bottom (GMT):		
End Time (GMT):		
Logger: Hannah Cho	Mono corer yes or no: NO	

16:12 GMT

16:27 GMT

2168 m

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bot	sif		NF1909-CTD02-N01
2	bot			NF1909-CTD02-N02
3	bot			NF1909-CTD02-N03
4	bot			NF1909-CTD02-N04
5	bot <del>bot</del>			NF1909-CTD02-N05
6	1500?			NF1909-CTD02-N06
7	700			NF1909-CTD02-N07
8	250			NF1909-CTD02-N08
9	DCM			NF1909-CTD02-N09
10	sif			NF1909-CTD02-N10
11	sif			NF1909-CTD02-N11
12	sif			NF1909-CTD02-N12

Joye

Joye

A

B

C

D

E

~~F~~

Aborted - modulo errors during data collection. Re-termination required!

firing all bottles at surface

NF1909  
DEEPSEARCH  
CTD CAST LOG

536 - 600 = DSL  
max depth = 2200

Cast ID: NF1909-CTD03	Start Lat: 52°31.664 N	Start Lon: 076°14.764 W
Site ID: Blake Ridge	Bottom Lat: 32°32.05	Bottom Lon: 076°15.959
Date: 10/24/19	End Lat: 32°32.233	End Lon: 076°17.075
Start Time (GMT): 18:47:30	Comments: Running w/ blue winch off J frame. Reterminated cable. Test cast will proceed if successful	
On bottom (GMT): 19:41:56		
End Time (GMT): 20:41:47		
Logger: C. Morrison	Mono corer yes or no: No	

2132 =  
max depth  
CTD  
Pr. pressure  
Digi quartz

Chl. max ~  
90  
20:41  
O<sub>2</sub> min ~ 7.50

thermo ~  
1000 m.

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	2150	2132	Funn/Quist (4L) Morrison (1L)	NF1909-CTD03-N01
2	2150	2132	Funn/Quist (4L) Morrison (1L)	NF1909-CTD03-N02
3	2150	2132	Funn/Quist (4L) Morrison (1L)	NF1909-CTD03-N03
4	650	654	Morrison (1L)	NF1909-CTD03-N04
5	650	655	Morrison (1L)	NF1909-CTD03-N05
6	650	655	Morrison (1L)	NF1909-CTD03-N06
7	550	550	Quist (4L) Morrison (1L)	NF1909-CTD03-N07
8	550	550	Quist (4L) Morrison (1L)	NF1909-CTD03-N08
9	550	550	Quist (4L) Morrison (1L)	NF1909-CTD03-N09
10	450	450	Morrison (1L)	NF1909-CTD03-N10
11	450	450	Morrison (1L)	NF1909-CTD03-N11
12	450	450	Morrison (1L)	NF1909-CTD03-N12

A, B  
A, B  
A, B  
Temp = 13.  
O<sub>2</sub> = 4.57  
15.33 °C C, D  
O<sub>2</sub> = 5.21  
C, D  
C, D

NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: CTD_04	Start Lat: 32°29.145 N	Start Lon: 076°10.067 W
Site ID: Blake Ridge	Bottom Lat: 32°29.051 N	Bottom Lon: 076°11.362 W
Date: 10/24/19	End Lat: 32°29.048 N	End Lon: 076°12.469 W
Start Time (GMT): 21:46:17	Comments: Blake Ridge bottom depth: ~ 2170 m	
On bottom (GMT): 22:47:34		
End Time (GMT): 23:42:36		
Logger: Jay Lunden		
	Mono corer yes or no: NO	

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom	2170	Furu	NF1909_CTD04_N01
2	bottom	2170	Furu	NF1909_CTD04_N02
3	bottom	2170	Jay	NF1909_CTD04_N03
4	bottom	2170	Hannah	NF1909_CTD04_N04
5	50 m off	2115	Jay / Hannah	NF1909_CTD04_N05
6	1500 m	1500	Jay / Hannah	NF1909_CTD04_N06
7	750 m	750	Jay / Hannah	NF1909_CTD04_N07
8	250 m	250	Jay / Hannah	NF1909_CTD04_N08
9	DCM <sup>(99 m)</sup>	98	Jay / Hannah	NF1909_CTD04_N09
10	surface	4	Cheryl / Jay	NF1909_CTD04_N10
11	surface	4	Cheryl / Hannah	NF1909_CTD04_N11
12	surface	4	Cheryl / Furu	NF1909_CTD04_N12

NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: NF1909_CTD05	Start Lat: 32° 28.711	Start Lon: 76° 13.184
Site ID: CTD05	Bottom Lat: 32° 28.83	Bottom Lon: 76° 11.17
Date: 25/10/2019	End Lat: 32° 28.58	End Lon: 76° 15.67
Start Time (GMT): 00:28	Comments:  Mono corer yes or no: no	
On bottom (GMT): 01:21		
End Time (GMT): 02:30		
Logger: Furo		

depth 2182 m

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom	2175	Hannah	NF1909_CTD _N01
2	bottom	2175		NF1909_CTD _N02
3	bottom	2175		NF1909_CTD _N03
4	bottom-10	2165		NF1909_CTD _N04
5	bottom-25	2150		NF1909_CTD _N05
6	bottom-50	2125		NF1909_CTD _N06
7	bottom-100 (2080)	2075		NF1909_CTD _N07
8	bottom-200 (1980)	1974		NF1909_CTD _N08
9	900	900		NF1909_CTD _N09
10	500	500		NF1909_CTD _N10
11	DRM 85m	95		NF1909_CTD _N11
12	surf	3		NF1909_CTD _N12

NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: 060	Start Lat: 32°26.721	Start Lon: 076°15.926
Site ID: Black Ridge	Bottom Lat: 32°26.672	Bottom Lon: 076°16.097
Date: 10/25/19	End Lat: 32°26.598	End Lon: 076°16.342
Start Time (GMT): 7:12:50	Comments: CTD cast of DSL for eDNA and	
On bottom (GMT): 7:33 →	@ 600m PCM sampling Not full ocean depth	
End Time (GMT): 7:57.26	(bottom: ~2217m)	
Logger: Caitlin	Mono corer yes or no: No	

Furn:

A <  
B <  
C <  
D <  
E <  
F <  
G <  
H <

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	600	599.7	Cheryl-1L Furn-rest	NF1909_CTD06_N01
2	600	599.7	Cheryl-1L Furn	NF1909_CTD06_N02
3	600	599.7	Cheryl-1L Furn	NF1909_CTD06_N03
4	200	201.3	CM-1L Furn	NF1909_CTD06_N04
5	200	201.0	CM-1L Furn	NF1909_CTD06_N05
6	200	201.4	CM-1L Furn	NF1909_CTD06_N06
7	100	100.2	CM-1L Furn	NF1909_CTD06_N07
8	100	100.2	CM-1L Furn	NF1909_CTD06_N08
9	100	100.2	CM-1L Furn	NF1909_CTD06_N09
10	5	5.06	CM-1L Furn	NF1909_CTD06_N10
11	5	5.2	CM-1L Furn	NF1909_CTD06_N11
12	5	5.2	CM-1L Furn	NF1909_CTD06_N12

Furn - 2 bottles per depth - each combined for 5L bottles  
All bottles in bottom of fridge

NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: CTD-07	Start Lat: 33° 55.37	Start Lon: 75° 48.96
Site ID: Lockout Deep	Bottom Lat: 33° 56.025	Bottom Lon: 75° 48.535
Date: 26-10-2019	End Lat: 33° 68.30	End Lon: 75° 47.19
Start Time (GMT): 05:36	Comments: not at bottom depth, due to strong currents -> wire out > 100m over depth to risky to continue	
On bottom (GMT): 06:05		
End Time (GMT): 07:35		
Logger: Furu	Mono corer yes or no: no	

1169 m

~654 had to pay wire out. due to wrong wrapping of cable during up-cast

	Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
A	1	bottom	1085	Furu / AD	NF1909_CTD7_N01
B	2	bottom	1085	Furu / AD	NF1909_CTD7_N02
C	3	bottom	1085	Furu / AD	NF1909_CTD7_N03
D	4	bottom	1085	Furu / AD	NF1909_CTD7_N04
	5	bottom	1085	Jay	NF1909_CTD7_N05
	6	1000	990	Jay	NF1909_CTD7_N06
	7	750	760	Jay	NF1909_CTD7_N07
	8	500	500	Jay	NF1909_CTD7_N08
	9	250	250	Jay	NF1909_CTD7_N09
	10	surface	3	Jay	NF1909_CTD7_N10
E	11	surface	3	Furu / AD	NF1909_CTD7_N11
F	12	surface	3	Furu / AD	NF1909_CTD7_N12



NF1909  
DEEPSEARCH  
CTD CAST LOG

Ramhead  
WP1

Ship Time  
17:07:26  
17:36  
18:06

Cast ID: CTD08	Start Lat: 34:55.472N	Start Lon: -75:10.947W
Site ID: Ramhead Canyon	Bottom Lat:	Bottom Lon: @ planned station 4
Date: 26/10/2019	End Lat: 34:57.046N	End Lon: -75:10.116W
Start Time (GMT): 21:07:26	Comments: This started as a test cast to determine whether current would allow us to do all planned depths.	
On bottom (GMT): 21:36	Stopped at sign of allimeter	
End Time (GMT): 22:06	likely still on slope when	
Logger: Rachel Brissett	Mono corer yes or no: Yes	

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom	1024 m	AD/FM Cheryl	NF1909_CTD08_N01
2	bottom		AD/FM Cheryl	NF1909_CTD08_N02
3	bottom		AD/FM Cheryl	NF1909_CTD08_N03
4	22		Hannah	NF1909_CTD08_N04
5	DSL - 550m	548m	AD/FM Cheryl	NF1909_CTD08_N05
6	DSL		AD/FM Cheryl	NF1909_CTD08_N06
7	DSL		AD/FM Cheryl	NF1909_CTD08_N07
8	DSL		Hannah	NF1909_CTD08_N08
9	Surface	4m	AD/FM Cheryl	NF1909_CTD08_N09
10	Surface		AD/FM Cheryl	NF1909_CTD08_N10
11	Surface		AD/FM Cheryl	NF1909_CTD08_N11
12	Surface		Hannah	NF1909_CTD08_N12

bottom samples were taken ~1180 m real depth of canyon axis

NF1909  
DEEPSEARCH  
CTD CAST LOG

local time  
19:06  
19:56  
20:18

Cast ID: CTD09	Start Lat: 34.55.804	Start Lon: 075.12.321 W
Site ID: Pamlico Canyon	Bottom Lat: 34.57.043	Bottom Lon: 075.11.867
Date: 10/26/2019	End Lat: 34.52.49	End Lon: 076.11.645
Start Time (GMT): 23:06:49	Comments: drifting to Pamlico WP 3 From southern edge of canyon	
On bottom (GMT): 23:56:00		
End Time (GMT): 00:18		
Logger: Jay Lundén & Rachel Bassett	Mono core yes or no: YES - 856m	

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom	843	Cheryl / FM	NF1909_CTD09_N01
2	bottom	843	Cheryl / FM	NF1909_CTD09_N02
3	bottom	843	Cheryl / FM	NF1909_CTD09_N03
4	bottom	843	Hannah	NF1909_CTD09_N04
5	DSL	492	Cheryl / FM	NF1909_CTD09_N05
6	DSL	492	Cheryl / FM	NF1909_CTD09_N06
7	DSL	492	Cheryl / FM	NF1909_CTD09_N07
8	DSL	492	Hannah	NF1909_CTD09_N08
9	Surface	3	Cheryl / FM	NF1909_CTD09_N09
10	Surface	3	Cheryl / FM	NF1909_CTD09_N10
11	Surface	3	Cheryl / FM	NF1909_CTD09_N11
12	Surface	3	Hannah	NF1909_CTD09_N12

DSL = 492 m

NF1909  
DEEPSEARCH  
CTD CAST LOG

local time  
01:18:31  
01:52  
02:32

Cast ID: CTD10	Start Lat: 34°57.500	Start Lon: 75°10.507
Site ID: Pamlico	Bottom Lat: 34°59.19	Bottom Lon: -75°10.00
Date: 27/10/2019	End Lat: 34°59.73	End Lon: 75°09.91
Start Time (GMT): 05:18:31	Comments: CTD at end of trawl open	
On bottom (GMT): 05:52	slope N of Pamlico	
End Time (GMT): 06:30		
Logger: Rachel Bassett	Mono core: <input checked="" type="checkbox"/> Yes	

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom	785	Cheryl/FM	NF1909_CTD10_N01
2	bottom	785	Cheryl/FM	NF1909_CTD10_N02
3	bottom	785	Cheryl/FM	NF1909_CTD10_N03
4	bottom	785	Handwah	NF1909_CTD10_N04
5	DSL	100	Cheryl/FM	NF1909_CTD10_N05
6	DSL	100	Cheryl/FM	NF1909_CTD10_N06
7	DSL	100	Cheryl/FM	NF1909_CTD10_N07
8	DSL	100	Handwah	NF1909_CTD10_N08
9	surface	4	Cheryl/FM	NF1909_CTD10_N09
10	surface	4	Cheryl/FM	NF1909_CTD10_N10
11	surface	4	Cheryl/FM	NF1909_CTD10_N11
12	surface	4	Handwah	NF1909_CTD10_N12

~100m = DSL (from 0-200)

NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: CTD11	Start Lat: 31° 59.827	Start Lon: 77° 24.871
Site ID: Richardson Hills	Bottom Lat: 31° 59.57	Bottom Lon: 77° 23.00
Date: 08/10/2019	End Lat: 31° 59.30	End Lon: 77° 21.07
Start Time (GMT): 13:06	Comments: not at bottom due to strong currents, bottom depth 700m stepped at 600m	
On bottom (GMT): 13:20		
End Time (GMT): 14:03		
Logger: Furu		
	Mono corer yes or no: no	

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom	607 m	Cheryl/FM	NF1909_CTD11_N01
2	bottom	607 m		NF1909_CTD11_N02
3	bottom	607 m		NF1909_CTD11_N03
4	bottom	607 m	Hannah	NF1909_CTD11_N04
5	dsl <sup>~480m</sup>	480 m	Cheryl/FM	NF1909_CTD11_N05
6	dsl	480 m		NF1909_CTD11_N06
7	dsl	480 m		NF1909_CTD11_N07
8	dsl	480 m	Hannah	NF1909_CTD11_N08
9	surface	4	Cheryl/FM	NF1909_CTD11_N09
10	surface	4		NF1909_CTD11_N10
11	surface	4		NF1909_CTD11_N11
12	surface	4	Hannah	NF1909_CTD11_N12

NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: CTD-12	Start Lat: 31 59.053	Start Lon: 077 24.762
Site ID: Richardson Hills	Bottom Lat: 31 59.068	Bottom Lon: 077 23.803
Date: 10/28/19	End Lat: 31 59.099	End Lon: 077 22.829
Start Time (GMT): 20:10:21	Comments: Hannah takes nutrient samples	
On bottom (GMT): 20:33:02	Starting west of ridge feature @ Richardson	
End Time (GMT): 20:58:39		
Logger: Rachel Bassett	Mono corer yes or no: No	

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom	751	Furu / AWSD	NF1909_CTD12_N01
2	bottom	751	Furu / AWSD	NF1909_CTD12_N02
3	bottom	751	Furu / AWSD	NF1909_CTD12_N03
4	bottom	751	Furu / AWSD	NF1909_CTD12_N04
5	bottom	751	Jay / Hannah	NF1909_CTD12_N05
6	500	500	Jay / Hannah	NF1909_CTD12_N06
7	400	400	Jay / Hannah	NF1909_CTD12_N07
8	300	300	Jay / Hannah	NF1909_CTD12_N08
9	DCM	91	Jay / Hannah	NF1909_CTD12_N09
10	surface	3	Jay / Hannah	NF1909_CTD12_N10
11	surface	3	Furu / AWSD	NF1909_CTD12_N11
12	surface	3	Furu / AWSD	NF1909_CTD12_N12

"Richardson 2 DS" start of transect

NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: CTD-13	Start Lat: 31.9852	Start Lon: -77.3709
Site ID: Richardson Hills	Bottom Lat: 31.9842	Bottom Lon: -77.3607
Date: 10/28/19	End Lat: 31.987	End Lon: -77.3473
Start Time (GMT): 21:29	Comments:	
On bottom (GMT): 21:54		
End Time (GMT): 22:16		
Logger: C. Morrison		
Mono corer yes or (no):		

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom <sup>820</sup>	819	Furu / AWTD	NF1909_CTD _N01
2	bottom	819	Furu / AWTD	NF1909_CTD _N02
3	bottom	819	Furu / AWTD	NF1909_CTD _N03
4	bottom	819	Furu / AWTD	NF1909_CTD _N04
5	bottom	819	Jay / Hannah	NF1909_CTD _N05
6	500	501	Jay / Hannah	NF1909_CTD _N06
7	400	400	Jay / Hannah	NF1909_CTD _N07
8	300	301	Jay / Hannah	NF1909_CTD _N08
9	DCM <sup>91</sup>	91	Jay / Hannah	NF1909_CTD _N09
10	Surface	4	Jay / Hannah	NF1909_CTD _N10
11	Surface	4	Furu / AWTD	NF1909_CTD _N11
12	Surface	4	Furu / AWTD	NF1909_CTD _N12

GMT

21:54

22:03

22:05

22:08

22:12

22:16

NF1909  
DEEPSEARCH  
CTD CAST LOG



Cast ID: CTD-14	Start Lat: 31 59.214	Start Lon: 077 20.813
Site ID: Richardson Hill	Bottom Lat: 31 59.278	Bottom Lon: 077 19.836
Date: 10/28/19	End Lat: 31 59.380	End Lon: 077 18.713
Start Time (GMT): 22:45:10	Comments:	
On bottom (GMT): 23:08:01		
End Time (GMT): 23:35:18		
Logger: R. Bassett		
Mono corer yes or no: <input checked="" type="radio"/>		

9/m

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	bottom	809	Furu/AWJD	NF1909_CTD14_N01
2	bottom	809	Furu/AWJD	NF1909_CTD14_N02
3	bottom	809	Furu/AWJD	NF1909_CTD14_N03
4	bottom	809	Furu/AWJD	NF1909_CTD14_N04
5	bottom	809	Jay/Hannah	NF1909_CTD14_N05
6	500	500	Hannah	NF1909_CTD14_N06
7	400	400	Jay/Hannah	NF1909_CTD14_N07
8	300	300	Hannah	NF1909_CTD14_N08
9	DCM	91	Jay/Hannah	NF1909_CTD14_N09
10	Surface	2	Jay/Hannah	NF1909_CTD14_N10
11	Surface	2	Furu/AWJD	NF1909_CTD14_N11
12	Surface	2	Furu/AWJD	NF1909_CTD14_N12

NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: CTD15	Start Lat: 31:59.607	Start Lon: 77:18.085
Site ID: Richardson Hills	Bottom Lat: _____	Bottom Lon: _____
Date: 10/28/19	End Lat: 31:59.636	End Lon: 77:17.474
Start Time (GMT): 00:01:03	Comments: for surface water for Hannah	
On bottom (GMT): _____		
End Time (GMT): 00:04:28		
Logger: Jay Lunden		
		Mono corer yes or <input checked="" type="radio"/> no

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
1	surface	2.5 m	Hannah	NF1909_CTD15_N01
2	↓	↓	↓	NF1909_CTD15_N02
3				NF1909_CTD15_N03
4				NF1909_CTD15_N04
5				NF1909_CTD15_N05
6				NF1909_CTD15_N06
7				NF1909_CTD15_N07
8				NF1909_CTD15_N08
9				NF1909_CTD15_N09
10				NF1909_CTD15_N10
11				NF1909_CTD15_N11
12				NF1909_CTD15_N12



NF1909  
DEEPSEARCH  
CTD CAST LOG

Cast ID: CTD 16	Start Lat: 32 00.012	Start Lon: 077 18.813
Site ID: Richardson Hill	Bottom Lat: 32 00.1013	Bottom Lon: 077 17.63032
Date: 10/29/19	End Lat: 32 00.402	End Lon: 077 16.308
Start Time (GMT): 6:59:51	Comments:	
On bottom (GMT): 7:29:50		
End Time (GMT): 7:55:59		
Logger: R. Bassett		
	Mono corer yes or no: <input checked="" type="checkbox"/>	

Niskin	Depth_planned	Depth_actual (m)	Lab	Sample #
7:29:50 1	bottom	792	Cheryl	NF1909_CTD16_N01
2	bottom	792		NF1909_CTD16_N02
3	bottom	792		NF1909_CTD16_N03
7:35:35 4	550	550		NF1909_CTD16_N04
5	550	550		NF1909_CTD16_N05
6	550	550		NF1909_CTD16_N06
7:52:20 7	75	75		NF1909_CTD16_N07
8	75	75		NF1909_CTD16_N08
9	75	75		NF1909_CTD16_N09
7:55:59 10	Surface	7		NF1909_CTD16_N10
11	Surface	7		NF1909_CTD16_N11
12	Surface	7		NF1909_CTD16_N12

## Appendix B – Trawl Logs

NF1909  
 DEEPSEARCH  
 Trawl LOG

Cast ID: TT-01	
Site ID: Richardson Hills	
Date: 10/23/19	
Time Trawl in water (GMT): 16:39:14	
Time in scattering layer (GMT): 17:22 <sup>CS</sup>	
Time out scattering layer (GMT): not recorded	
Time Trawl on deck (GMT): 20:27:25	
Initial wire out:	
Start Lat: 31° 55.875N	Start Lon: 077° 20.367 W
Scattering layer start Lat: not recorded	Scattering layer start Lon: not recorded
Scattering layer stop Lat: not recorded	Scattering layer stop Lon: not recorded
End Lat: 31° 59.646N	End Lon: 077° 08.070 W
Comments:	
<p>Ship's speed 1.5 kts          Winch issues did not allow for towing above/below layer          and sampling stayed at a relatively constant depth          Estimated depth of 300-400m</p>	

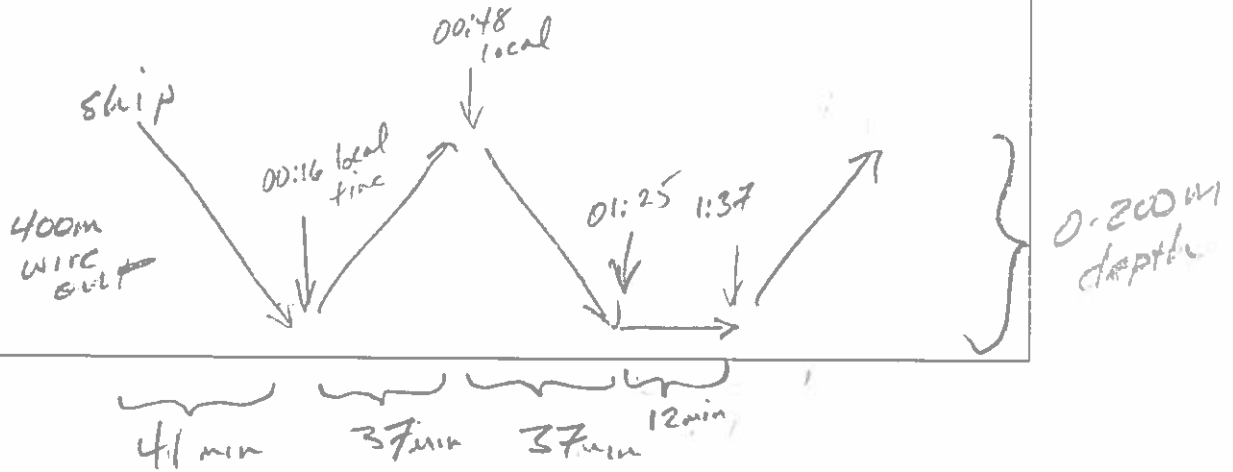
NF1909  
DEEPSEARCH  
Trawl LOG

Cast ID:	T02		
Site ID:	Richardson Hills		
Date:	10/23/19 (into 10/24/19)		
Time Trawl in water (GMT):	02:47:30		
Time in scattering layer (GMT):			
Time out scattering layer (GMT):			
Time Trawl on deck (GMT):	6:45:47		
Initial wire out:			
Start Lat: 30° 00.777	Start Lon:	077° 24.847	
Scattering layer start Lat:	Scattering layer start Lon:		
Scattering layer stop Lat:	Scattering layer stop Lon:		
End Lat: 31° 59.921 N	End Lon:	077° 26.918 W	
Comments:	STW 3.1 kn SOG 0.6 kn  (GMT) 6:05:00 - began recovery @ 20 m/min		

NF1909  
DEEPSEARCH  
Trawl LOG

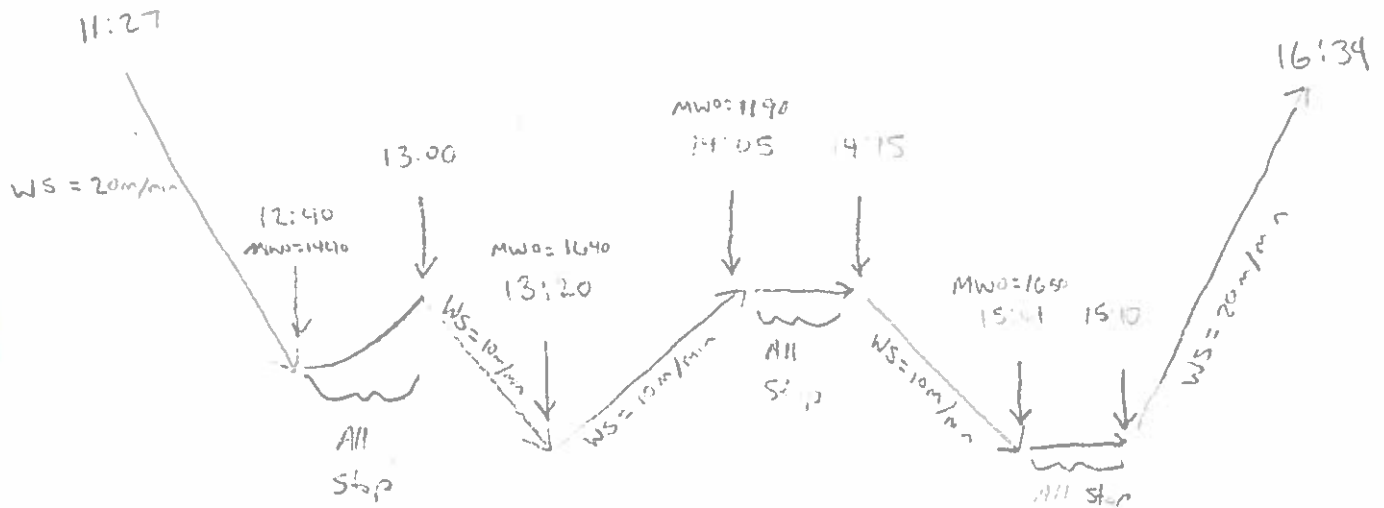
LOCAL  
TIME,  
PLEASE  
Record both  
all other  
data in  
GMT

Cast ID: TT03	
Site ID: Blake Ridge	
Date: 10/24/19 - 10/25/19	
Time Trawl in water (GMT): 22:35	(03:35 GMT)
Time in scattering layer (GMT):	
Time out scattering layer (GMT):	
Time Trawl on deck (GMT): 02:14 (06:14:38)	
Initial wire out:	
Start Lat: 32° 29.282 N	Start Lon: 076° 13.124 W
Scattering layer start Lat:	Scattering layer start Lon:
Scattering layer stop Lat:	Scattering layer stop Lon:
End Lat: 32° 26.852	End Lon: 076° 15.586
Comments:	



NF1909  
 DEEPSEARCH  
 Trawl LOG

Cast ID:	TT-04	
Site ID:	Blk Ridge	
Date:	10/25/19	
Time Trawl in water (GMT):	15:27:39	local 11:27:39
Time in scattering layer (GMT):		
Time out scattering layer (GMT):		
Time Trawl on deck (GMT):	16:36:30	local 20:36:30
Initial wire out:	1440 m	
Start Lat:	32° 29.545 N	Start Lon: 076° 11.897 W
Scattering layer start Lat:		Scattering layer start Lon:
Scattering layer stop Lat:		Scattering layer stop Lon:
End Lat:	32° 21.618 N	End Lon: 076° 08.707 W
Comments:	<p>net          @ surface: 16:34 / 20:34</p> <p>net          on deck: 16:36 / 20:36</p> <p>cod end          on deck: 16:38 / 20:38</p>	



10/28/19

Day track

Wish list

Part deck

Launch at

11:20

TT04

1. 65 min out @ 20 m/min

2. ALL STOP 20 min

3. 20 min out @ 10 m/min

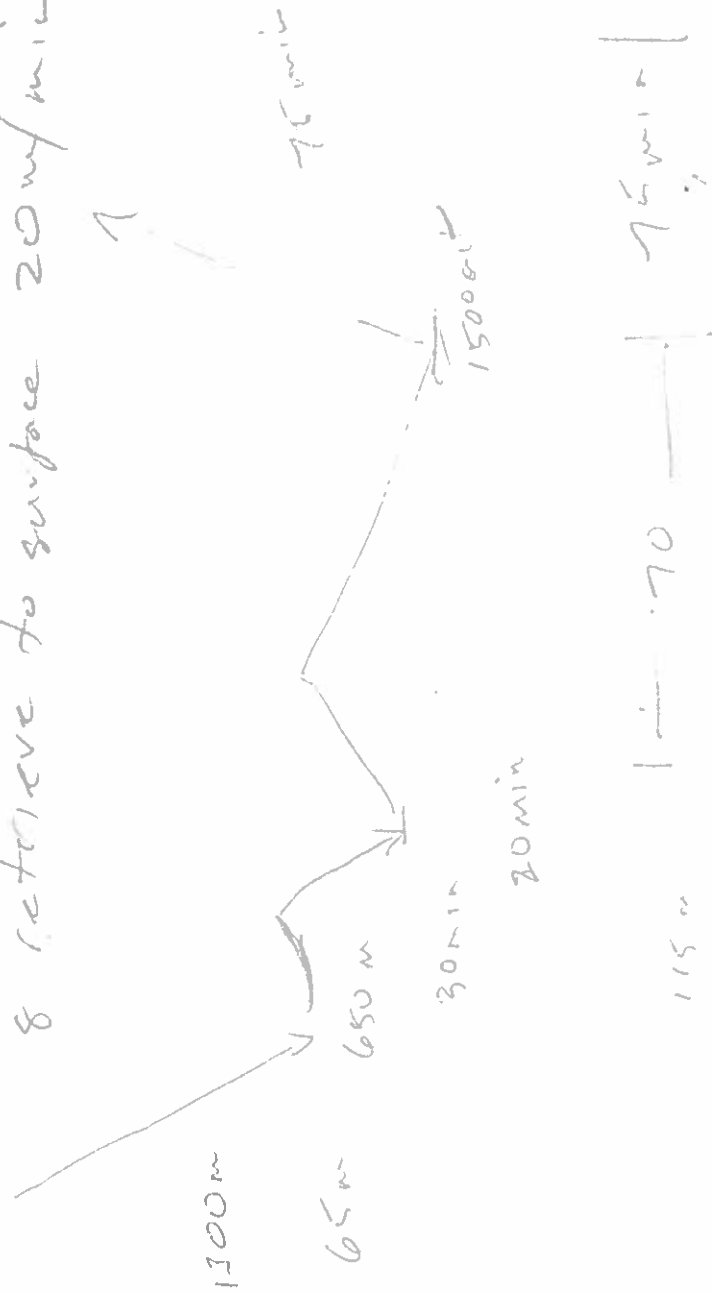
4. 45 min in @ 10 m/min

5. 10 min all stop

6. 45 min out @ 10 m/min

7. all stop 10 min

8. retrieve to surface 20 m/min



200 min  
 4. 20  
 4. 20

NF1909  
DEEPSEARCH  
Trawl LOG

Cast ID:	TT-05	
Site ID:	Pamlico Canyon	
Date:	10/26/2019	
Time Trawl in water (GMT):	Local	15:54:50 / 11:54:50
Time in scattering layer (GMT):		
Time out scattering layer (GMT):		
Time Trawl on deck (GMT):	Local	19:55:50 /
Initial wire out:		
Start Lat:	34° 57.551	Start Lon: 75° 12.929
Scattering layer start Lat:		
Scattering layer start Lon:		
Scattering layer stop Lat:		
Scattering layer stop Lon:		
End Lat:	34° 56.667	End Lon: 75° 10.128
Comments:	<p>STLW - ~3.4 km</p> <p>Ship estimates we hit bottom @ 15.10 local          which was at a position of:          34° 56.72791 N          075° 10.52897 W</p>	

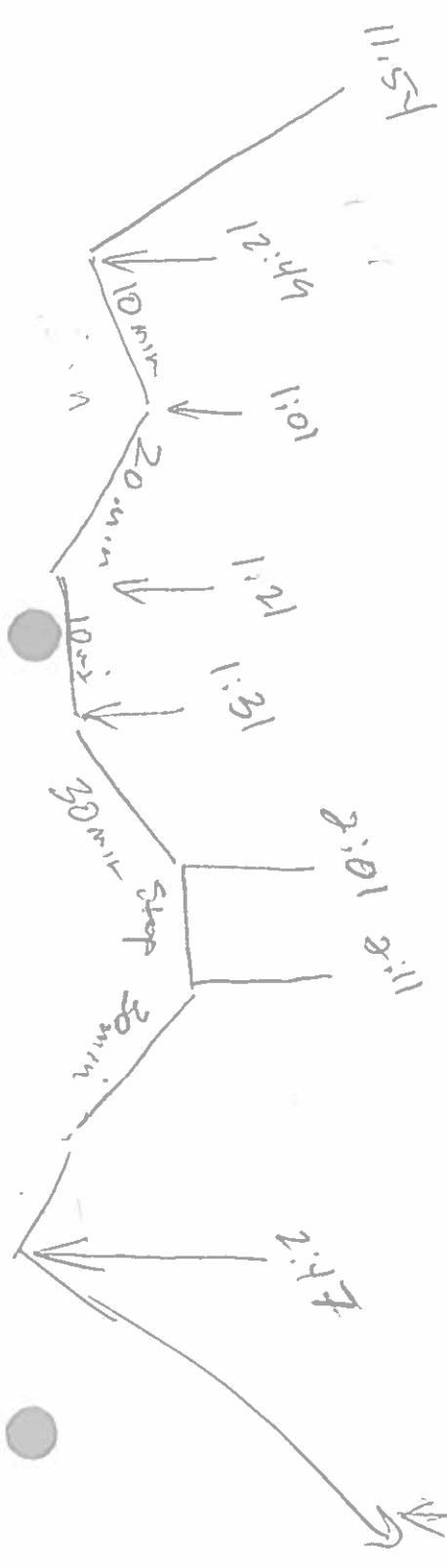




10/26/19 NF 1409 TT  $\Phi$  5 travel plan

**0. offroad in 11:54 lead**

- ✓ 1. wire out - 55 min @ 20 m/min
- ✓ 2. winch stop - 10 min 1:01
- ✓ 3. wire out - 20 min @ 10 m/min
- ✓ 4. winch stop - 10 min 1:11
- ✓ 5. wire in - 30 min @ 10 m/min
- ✓ 6. winch stop - 10 min
- ✓ 7. wire out - 30 min @ 10 m/min
- ✓ 8. wire in to surface @ 20 m/min ~ 65 min



NF1909  
DEEPSEARCH  
Trawl LOG

Cast ID:	1106	
Site ID:	Pamlico Canyon	
Date:	10/26/19	
Time Trawl in water (GMT and local):	01:21:31	21:21:31
Time Trawl on deck (GMT and local):	4:09:51	00:09:51
Initial wire out:		
Start Lat: 34 58.113	Start Lon:	75 10.950
End Lat: 34 57.985	End Lon:	75 11.292
Comments:	Didn't want to wait to get back to transect line so didn't start on transect line or waypoints - 10m/min winch speed SOG < 1 kt → not really covering much ground  Depth:	

NF1909  
DEEPSEARCH  
Trawl LOG

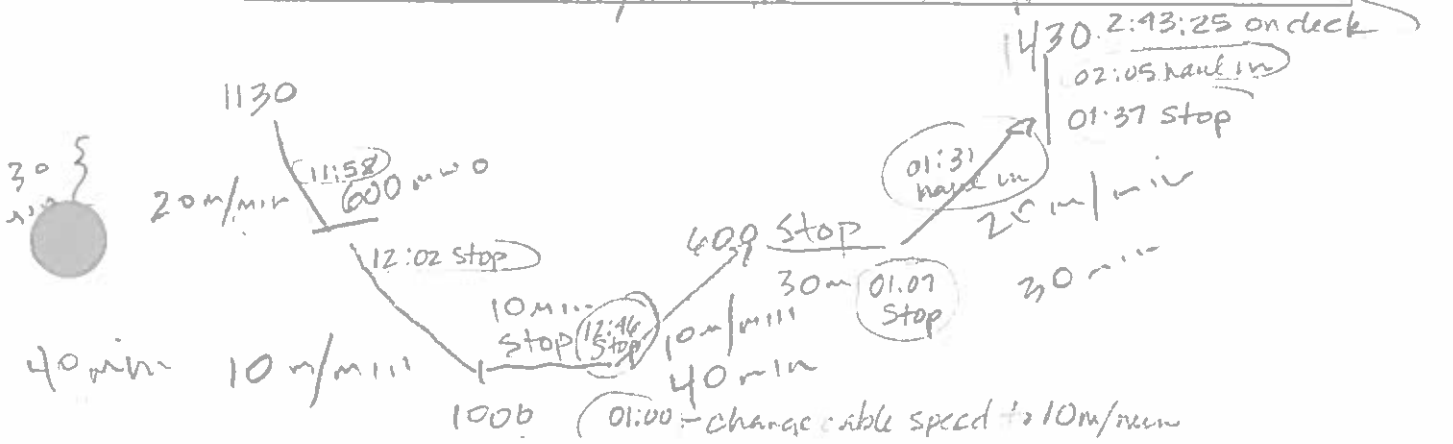
Cast ID:	TT-07	
Site ID:	Richardson Hills	
Date:	10/28/19	
Time Trawl in water (GMT and local):	15:29:12	± 11:29:12
Time Trawl on deck (GMT and local):	18:43:25	± 2:43:25
Initial wire out:		
Start Lat: 32° 00.115	Start Lon:	077° 20.683
End Lat: 31° 59.754	End Lon:	077° 15.548

Comments:

While transiting we observed a nice DSL over the coral mound at Richardson Hills, with a surface current ~4 knots 90° hdg. we are setting up due east (0.5 mile from coral feature) & will hold station w/ net in water, allowing current to fish for us

Target depth: 418-559m DSL (bottom: 822)

plan  
 20m/min for 30 min to 640 mwo (30 min stop)  
 10m/min for 40 min to 740 mwo  
 35 min stop  
 up 10m/min for 40 min to 640 mwo  
 30 min stop  
 up 20m/min to 580 mwo (30 min stop)  
 then 20m/min to surface (30 min total)



NF1909  
DEEPSEARCH  
Trawl LOG

Cast ID: T108	
Site ID: Richardson Hills	
Date: 10/29/19	
Time Trawl in water (GMT and local): 2:49 local / 01:49 GMT	
Time Trawl on deck (GMT and local): 2:21 = local / 6:21 = GMT	
Initial wire out:	
Start Lat: 31° 59.61217 N	Start Lon: 077° 24.11496 W
End Lat: 31° 59.973 N	End Lon: 077° 18.820 W
Comments: Need to get initial position of trawl in water from ET.  900 mwo (45 min hauled in 500mw → 400 mwo slowed winch to 10m/min brought in 350m 10 min winch cool down - fished flat @ 50m Let out 400mw for 40min Brought in 350mw Winch cool off @ 50m for 10min Let out 400m for 40min Stopped, fished flat 10min Brought to surface (45min)	

Target: 0-200m DSL  
(first bit of wire out was at ship's request)

10/26/14

NF 1909 TT & S trawl plan

1. wire out - 55 min @ 20 m/min
2. winch stop - 10 min
3. wire out - 20 min @ 10 m/min
4. winch stop - 10 min
5. wire in - 30 min @ 10 m/min
6. winch stop - 10 min
7. wire in to surface @ 20 m/min  
~65 min

# Appendix C – POD

NOAA SHIP NANCY FOSTER			
Plan Of the Day			
<b>Tuesday</b>			
<b>22-Oct-19</b>			
		Sunrise	0729
		Sunset	1830
Vessel	Time		
NF	0700-0730	Breakfast	
	0930	Depart Pier Papa	
	0900-1200	Small boat - TX ISA for troubleshooting	
	1100 - 1200	Lunch	
	1300 -1500	Some time in 1300 and 1500 conduct gear deployment	
	1630 - 1730	Dinner	
	~2300	Arrive at Richardson Hills?	
<b>Safety of all personnel and property takes priority over operational requirements.</b>			
POD is subject to change at all times (e.g., cox'n assignments, times, etc.)			
Weather:	<b>S to SW winds 10 to 20 kt. Seas 3 to 6 ft. Scattered showers and tstms.</b>		
	KEY	<b>&lt; 3FT</b>	
		<b>3-6FT</b>	
		<b>&gt;6FT (get your sea sickness pills!)</b>	

**NOAA SHIP NANCY FOSTER  
Plan Of the Day**

<b>Wednesday 23-Oct-19</b>		<b>Site:</b>	Richardson Hills	<b>Sunrise</b>	0720
<b>Vessel</b>	<b>Time</b>	<b>Depth:</b>	790 m	<b>Sunset</b>	1829
NF	0400	Arrive at Richardson Hills. CTD, Mapping			
	0700-0800	Breakfast			
	0745	Safety Meeting (CO, Chiefs, Ops, Chief Sci, Furu)			
	0800	Release Lander	(Weather dependent)		
	0830-1100	Recover Lander			
	1100	Trawl			
	1100 - 1200	Lunch			
	1600	CTD (X3)			
	1630 - 1730	Dinner			
	1900	Mapping Richardson Hills			
	2100	Trawl			
	0100	CTD (X2)			
	0200	Trawl			
	0400	Transit to Blake Ridge			

**Safety of all personnel and property takes priority over operational requirements.**

**LANDER RECOVER TIME SUBJECT TO CHANGE BASED ON WEATHER IN AM**

POD is subject to change at all times (e.g., cox'n assignments, times, etc.)

Weather:

**Winds veering to N to NE 15 to 25 kt. Seas 3 to 6 ft.**

<b>KEY</b>	<b>&lt; 3FT</b>
	<b>3-6FT</b>
	<b>&gt;6FT (get your sea sickness pills!)</b>

**Lander Site:** 31.8987      -77.3528

**Blake Ridge** 32.494      -76.199

## NOAA SHIP NANCY FOSTER

### Plan Of the Day

<b>Thursday</b>			<b>Sunrise</b>	<b>0716</b>
<b>24-Oct-19</b>		<b>Site:</b>	Blake Ridge	
<b>Vessel</b>	<b>Time</b>	<b>Depth:</b>	2200M	
<b>NF</b>	0400	Transit to Blake Ridge		
	0700-0800	Breakfast		
	0745	Safety Meeting (CO, Chiefs, Ops, Chief Sci, Furu)		
	0930/arrival	CTD from A-Frame		
	1030	Trawl (if no CTD at 0930), 1130 Trawl (If we do do a CTD)		
	1100 - 1200	Lunch		
	1630	CTD		
	1630 - 1730	Dinner		
	1830	CTD		
	2030	CTD		
	2230	Trawl		
	0300	Transit to Cape Fear Mounds		

**Safety of all personnel and property takes priority over operational requirements.**

POD is subject to change at all times (e.g., cox'n assignments, times, etc.)

**Weather:**

**E to NE winds 10 to 20 kt. Seas 3 to 6 ft.**

**KEY**

**< 3FT**

**3-6FT**

**>6FT (get your sea sickness pills!)**

**Blake Ridge** 32.494

-76.199

**Cape Fear Mounds** 33.575

-76.465



**NOAA SHIP NANCY FOSTER**  
**Plan Of the Day**

<b>Friday</b>			<b>Sunrise</b>	<b>0717</b>
<b>25-Oct-19</b>		<b>Site:</b>	Blake Ridge	<b>Sunset</b>
	<b>Time</b>	<b>Depth:</b>	2200M	1821
<b>24-Oct</b>	2230 - 0300	Trawl (Blake Ridge)		
<b>25-Oct</b>	0400	CTD (as many as we can)		
	0700-0800	Breakfast		
	0745	Safety Meeting (CO, Chiefs, Ops, Chief Sci, Furu)		
	1100 - 1200	Lunch		
	1100 - 1630	Trawl		
	1630 - 1730	Dinner		
	1800	Transit to Lookout Deep (90 nm), Morale Activity		
<b>26-Oct</b>	0300	Arrive, CTD		
	0400	Transit to Palmico (70 NM)		
	1100	Trawl		

**Safety of all personnel and property takes priority over operational requirements.**

POD is subject to change at all times (e.g., cox'n assignments, times, etc.)

**Weather:**

<b>E winds 10 to 20 kt. Seas 3 to 6 ft.</b>	
<b>KEY</b>	<b>&lt; 3FT</b>
	<b>3-6FT</b>
	<b>&gt;6FT (get your sea sickness pills!)</b>

<b>Blake Ridge</b>	<b>32.494</b>	<b>-76.199</b>
<b>Cape Fear Mounds</b>	<b>33.923</b>	<b>-75.812</b>
<b>Pamlico</b>	<b>34.956</b>	<b>-75.224</b>

<b>NOAA SHIP NANCY FOSTER</b>			
<b>Plan Of the Day</b>			
<b>Saturday</b>			
<b>26-Oct-19</b>		<b>Sunrise</b>	0717
	<b>Site:</b>	Lookout Deep, Palmico	
	<b>Depth:</b>	1200, 600	
	<b>Time</b>		
<b>25-Oct</b>	1800	Transit to Lookout Deep (90 nm)	
<b>26-Oct</b>	0300	Arrive, CTD (x1)	
	0400	Transit to Palmico (70 NM)	
	0700-0800	Breakfast	
	0745	Safety Meeting (CO, Chiefs, Ops, Chief Sci, Furu)	
	1100 - 1200	Lunch	
	1100 - 1630	Trawl	
	1630	CTD transect (waypoints TBD)	
	1630 - 1730	Dinner	
	1800	Pumpkin Chuckin, fruit baseball	
	2230 - 0300	Trawl	
	0400	CTD	
<b>Safety of all personnel and property takes priority over operational requirements.</b>			
POD is subject to change at all times (e.g., cox'n assignments, times, etc.)			
<b>Weather:</b>	<b>E to SE winds 10 to 20 kt. Seas 3 to 6 ft. Slight chance of showers.</b>		
	<b>KEY</b>	<b>&lt; 3FT</b>	
		<b>3-6FT</b>	
		<b>&gt;6FT (get your sea sickness pills!)</b>	
	<b>Lookout Deep</b>	<b>33.923</b>	<b>-75.812</b>
	<b>Pamlico</b>	<b>34.956</b>	<b>-75.224</b>

NOAA SHIP NANCY FOSTER				
Plan Of the Day				
<b>Sunday</b>				<b>Sunrise</b> 0717
<b>27-Oct-19</b>		<b>Site:</b>	Pamlico, Richardson Hills	<b>Sunset</b> 1825
	<b>Time</b>	<b>Depth:</b>	600,800 m	
<b>26-Oct</b>	2230	Trawl		
<b>27-Oct</b>	0300	Recover Trawl		
	0400	CTD		
	0500	Transit to Richardson Hills		
	0700-0800	Breakfast		
	0745	Safety Meeting (CO, Chiefs, Ops, Chief Sci, Furu)		
	1100 - 1200	Lunch		
		Pumpkin Chuckin, fruit baseball		
	1630 - 1730	Dinner		
<b>28-Oct</b>	0600	Arrive Richardson Hills		
<b>Safety of all personnel and property takes priority over operational requirements.</b>				
POD is subject to change at all times (e.g., cox'n assignments, times, etc.)				
Weather:	<b>S winds 20 to 30 kt, becoming SW 15 to 25 kt. Seas 4 to 7 ft. Scattered showers and tstms. of showers.</b>			
	<b>KEY</b>	<b>&lt; 3FT</b>		
		<b>3-6FT</b>		
		<b>&gt;6FT (get your sea sickness pills!)</b>		
		<b>Pamlico</b>	<b>34.956</b>	<b>-75.224</b>
		<b>Richardson Hills</b>	<b>32</b>	<b>-77.43</b>

<b>NOAA SHIP NANCY FOSTER</b>			
<b>Plan Of the Day</b>			
<b>Monday</b>			Sunrise 0723
<b>28-Oct-19</b>		<b>Site:</b> Richardson Hills	Sunset 1824
	<b>Time</b>	<b>Depth:</b> 800 m	
<b>27-Oct</b>		Transit to Richardson Hills	
<b>28-Oct</b>	0700-0800	Breakfast	
	0745	Safety Meeting (CO, Chiefs, Ops, Chief Sci, Furu)	
	1030	Tucker Trawl on arrival	
	1100 - 1200	Lunch	
	1500	CTDs	
	1630 - 1730	Dinner	
	2100	Trawl	
	0100	CTD	
		Multibeam....	
<b>Safety of all personnel and property takes priority over operational requirements.</b>			
POD is subject to change at all times (e.g., cox'n assignments, times, etc.)			
<b>Weather:</b>	<b>N to NE winds 10 to 20 kt, becoming NE 5 to 15 kt. Seas 3 to 5 ft. Showers and tstms.</b>		
	<b>KEY</b>	<b>&lt; 3FT</b>	
		<b>3-6FT</b>	
		<b>&gt;6FT (get your sea sickness pills!)</b>	
		Richardson Hills 32	-77.43

## Appendix D – Master Sample Log

NF1909 Master Sample Log

Sample Number	Trawl or CTD #	Site	Date Collected	Start Time (GMT)	End Time (GMT)	Start Latitude	Start Longitude	End Latitude	End Longitude	Depth (m)	Tentative ID	# Individuals in sample	Standard length (mm) – if measured	Curation method	Disposition
NF1909_TT01_01	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Dacrya sp.	27		Ethanol	Morrison
NF1909_TT01_02	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Puwerina sp.	28		Ethanol	Morrison
NF1909_TT01_03	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Heteropod (damaged)	1		Formalin	Sutton
NF1909_TT01_04	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Lobster larva	1		Ethanol	Morrison
NF1909_TT01_05	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Doliolids	2		Ethanol	Morrison
NF1909_TT01_06	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Squilla sp.	6		Ethanol	Morrison
NF1909_TT01_07	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Bramidae	1		Formalin	Sutton
NF1909_TT01_08	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Gobiidae	1		Formalin	Sutton
NF1909_TT01_09	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Acanthurus	3		Formalin	Sutton
NF1909_TT01_10	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Pleuraneciformes	3		Formalin	Sutton
NF1909_TT01_11	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Miscellaneous (unidentifiable)	3		Formalin	Sutton
NF1909_TT01_12	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Apogonidae	1		Formalin	Sutton
NF1909_TT01_13	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Scopelarchidae (juvenile)	1		Formalin	Sutton
NF1909_TT01_14	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Acanthogaster	1		Formalin	Sutton
NF1909_TT01_15	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Leptocephali	1		Ethanol/frozen	Demopoulos
NF1909_TT01_16	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Leptocephali	1		Ethanol/frozen	Demopoulos
NF1909_TT01_17	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Squid (largest in trawl)	1		Glutaraldehyde	Davis
NF1909_TT01_18	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Squid (medium sized in trawl)	1		Glutaraldehyde	Davis
NF1909_TT01_19	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Squid (smallest in trawl)	1		Glutaraldehyde	Davis
NF1909_TT01_20	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Lobster phylzoama	1		Ethanol	Morrison
NF1909_TT01_21	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Ostracods, copepods (3)	4		Ethanol	Morrison
NF1909_TT01_22	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Ctenophore	1		Frozen	Demopoulos
NF1909_TT01_23	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Mantis shrimp	1		Frozen	Demopoulos
NF1909_TT01_24	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Mantis shrimp	1		Frozen	Demopoulos
NF1909_TT01_25	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Amphipod	1			Unknown, Not in AWS logs
NF1909_TT01_26	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Amphipod	1		Frozen	Demopoulos
NF1909_TT01_27	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Amphipod	1		Frozen	Demopoulos
NF1909_TT01_28	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Amphipod	1		Frozen	Demopoulos
NF1909_TT01_29	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Amphipod	1		Frozen	Demopoulos
NF1909_TT01_30	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Crab larva	1		Frozen	Demopoulos
NF1909_TT01_31	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Crab larva	1		Ethanol	Demopoulos
NF1909_TT01_32	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Shrimp	1		Frozen	Demopoulos
NF1909_TT01_33	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Shrimp	1		Ethanol	Demopoulos
NF1909_TT01_34	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Shrimp	1		Frozen	Demopoulos
NF1909_TT01_35	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Shrimp	1		Frozen	Demopoulos
NF1909_TT01_36	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Shrimp	1		Frozen	Demopoulos
NF1909_TT01_37	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Ostracod	1		Ethanol	Demopoulos
NF1909_TT01_38	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Ostracod	1		Frozen	Demopoulos
NF1909_TT01_39	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Ostracod	1		Frozen	Demopoulos
NF1909_TT01_40	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Ostracod	1		Frozen	Demopoulos
NF1909_TT01_41	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Ostracod	1		Frozen	Demopoulos
NF1909_TT01_42	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Pteropod	1		Frozen	Demopoulos
NF1909_TT01_43	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Mantis shrimp	1		Ethanol	Demopoulos
NF1909_TT01_44	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Mantis shrimp	1		Frozen	Demopoulos
NF1909_TT01_45	TT01	Richardson Hills	10/23/2019	16:39:14	20:27:25	31 55.875	77 20.367	31 59.646	077 08.070	300-400m	Trawl sieve (miscellaneous)	?		Ethanol	Demopoulos
NF1909_CTD02_N03	CTD02	Blake Ridge	10/24/2019	16:12	16:27	32 31.762	076 13.515	32 31.864	076 13.941	Surface	Water			Joye	
NF1909_CTD02_N04	CTD02	Blake Ridge	10/24/2019	16:12	16:27	32 31.762	076 13.515	32 31.864	076 13.941	Surface	Water			Joye	
NF1909_CTD02_N05	CTD02	Blake Ridge	10/24/2019	16:12	16:27	32 31.762	076 13.515	32 31.864	076 13.941	Surface	Water			Demopoulos	
NF1909_CTD02_N06	CTD02	Blake Ridge	10/24/2019	16:12	16:27	32 31.762	076 13.515	32 31.864	076 13.941	Surface	Water			Demopoulos	
NF1909_CTD02_N07	CTD02	Blake Ridge	10/24/2019	16:12	16:27	32 31.762	076 13.515	32 31.864	076 13.941	Surface	Water			Demopoulos	
NF1909_CTD02_N08	CTD02	Blake Ridge	10/24/2019	16:12	16:27	32 31.762	076 13.515	32 31.864	076 13.941	Surface	Water			Demopoulos	
NF1909_CTD02_N09	CTD02	Blake Ridge	10/24/2019	16:12	16:27	32 31.762	076 13.515	32 31.864	076 13.941	Surface	Water			Demopoulos	
NF1909_CTD03_N01	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	2132	Water			Morrison, Demopoulos	
NF1909_CTD03_N02	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	2132	Water			Morrison, Demopoulos	
NF1909_CTD03_N03	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	2132	Water			Morrison, Demopoulos	
NF1909_CTD03_N04	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	654	Water			Morrison	
NF1909_CTD03_N05	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	655	Water			Morrison	
NF1909_CTD03_N06	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	655	Water			Morrison	
NF1909_CTD03_N07	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	550	Water			Morrison, Demopoulos	
NF1909_CTD03_N08	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	550	Water			Morrison, Demopoulos	
NF1909_CTD03_N09	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	550	Water			Morrison, Demopoulos	
NF1909_CTD03_N10	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	450	Water			Morrison	
NF1909_CTD03_N11	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	450	Water			Morrison	
NF1909_CTD03_N12	CTD03	Blake Ridge	10/24/2019	18:47	20:41	32 31.664	076 14.764	32 32.233	076 17.075	450	Water			Morrison	
NF1909_CTD04_N01	CTD04	Blake Ridge	10/24/2019	21:46:17	23:42:36	32 29.145	076 10.067	32 29.048	076 12.469	2170	Water			Menis	
NF1909_CTD04_N02	CTD04	Blake Ridge	10/24/2019	21:46:17	23:42:36	32 29.145	076 10.067	32 29.048	076 12.469	2170	Water			Morrison	
NF1909_CTD04_N03	CTD04	Blake Ridge	10/24/2019	21:46:17	23:42:36	32 29.145	076 10.067	32 29.048	076 12.469	2170	Water			Lunden	
NF1909_CTD04_N04	CTD04	Blake Ridge	10/24/2019	21:46:17	23:42:36	32 29.145	076 10.067	32 29.048	076 12.469	2170	Water			Joye	
NF1909_CTD04_N05	CTD04	Blake Ridge	10/24/2019	21:46:17	23:42:36	32 29.145	076 10.067	32 29.048	076 12.469	2115	Water			Lunden, Joye	

NF1909 Master Sample Log

Sample Number	Trawl or CTD #	Site	Date Collected	Start Time (GMT)	End Time (GMT)	Start Latitude	Start Longitude	End Latitude	End Longitude	Depth (m)	Tentative ID	# Individuals in sample	Standard length (mm) - if measured	Curation method	Disposition
NF1909_CTD06_N11	CTD06	Blake Ridge	10/25/2019	7:12:50	7:57:26	32 26.721	076 15.926	32 26.598	076 16.342	5	Water				Morrison, Demopoulos, Menis
NF1909_CTD06_N12	CTD06	Blake Ridge	10/25/2019	7:12:50	7:57:26	32 26.721	076 15.926	32 26.598	076 16.342	5	Water				Morrison, Demopoulos, Menis
NF1909_TT02_01	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Sternopygia diaphana	1	9.8	Ethanol	Morrison
NF1909_TT02_02	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Sternopygia diaphana	1	9	Ethanol	Morrison
NF1909_TT02_03	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Sternopygia diaphana	1	24.5	Ethanol	Morrison
NF1909_TT02_04	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Sternopygia diaphana	1	17.8	Frozen	Demopoulos
NF1909_TT02_05	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Sternopygia diaphana	1	21	Frozen	Demopoulos
NF1909_TT02_06	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Sternopygia diaphana	1	16.1	Frozen	Demopoulos
NF1909_TT02_07	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Diaphus dumerilii	1	14.3	Ethanol	Morrison
NF1909_TT02_08	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Diaphus dumerilii	1	13.5	Ethanol	Morrison
NF1909_TT02_09	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Diaphus dumerilii	1	13.2	Frozen	Demopoulos
NF1909_TT02_10	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Periphyllia periphyllia	2		Frozen	Calhoun
NF1909_TT02_11	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Diaphus brachycephalus	1		Ethanol	Morrison
NF1909_TT02_12	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Paralepididae	2		Formalin	Sutton
NF1909_TT02_13	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Diretmidae juvenile	1		Frozen	Cortesi
NF1909_TT02_14	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Gobiidae	2		Formalin	Sutton
NF1909_TT02_15	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Bramidae	1		Formalin	Sutton
NF1909_TT02_16	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Chaulichthys stuarti	1		Frozen	Sutton
NF1909_TT02_17	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Stephanolepis sp.	1		Formalin	Sutton
NF1909_TT02_18	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Acanthurus sp.	3		Ethanol	Morrison
NF1909_TT02_19	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Foeterepus sp.	1		Formalin	Sutton
NF1909_TT02_20	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Syngnathidae	1		Formalin	Sutton
NF1909_TT02_21	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Antigonia combata	1		Ethanol	Morrison
NF1909_TT02_22	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Little squid	2		Formalin	Vecchione
NF1909_TT02_23	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Sphaeroides sp.	2		Formalin	Sutton
NF1909_TT02_24	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Little yellow fish	1		Formalin	Sutton
NF1909_TT02_25	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Leptocephali	1		Ethanol	Morrison
NF1909_TT02_26	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Leptocephali	1		Ethanol	Morrison
NF1909_TT02_27	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Leptocephali	1		Ethanol	Morrison
NF1909_TT02_28	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Leptocephali	1		Frozen	Demopoulos
NF1909_TT02_29	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Leptocephali	1		Frozen	Demopoulos
NF1909_TT02_30	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Leptocephali	1		Frozen	Demopoulos
NF1909_TT02_31	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Leptocephali	1		Frozen	Demopoulos
NF1909_TT02_32	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Leptocephali	1		Frozen	Demopoulos
NF1909_TT02_33	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Leptocephali	1		Formalin	Sutton
NF1909_TT02_34	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Pleuraneciformes	1		Ethanol	Morrison
NF1909_TT02_35	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Pleuraneciformes	1		Ethanol	Morrison
NF1909_TT02_36	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Pleuraneciformes	1		Ethanol	Morrison
NF1909_TT02_37	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Pleuraneciformes	1		Frozen	Demopoulos
NF1909_TT02_38	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Pleuraneciformes	1		Frozen	Demopoulos
NF1909_TT02_39	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Pleuraneciformes	1		Frozen	Demopoulos
NF1909_TT02_40	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Pleuraneciformes	1		Frozen	Demopoulos
NF1909_TT02_41	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Pleuraneciformes	1		Frozen	Demopoulos
NF1909_TT02_42	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Pleuraneciformes	3		Formalin	Sutton
NF1909_TT02_43	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Notolychnus valdiviae	1		Ethanol	Morrison
NF1909_TT02_44	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Crab megalope juvenile	1		Ethanol	Morrison
NF1909_TT02_45	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche pallida	1		Ethanol	Morrison
NF1909_TT02_46	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche pallida	1		Ethanol	Morrison
NF1909_TT02_47	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche pallida	1		Ethanol	Morrison
NF1909_TT02_48	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche pallida	1		Ethanol	Morrison
NF1909_TT02_49	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Chlorophthalmus agassizii	1		Ethanol	Morrison
NF1909_TT02_50	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Unidentified myctophid larva	2		Frozen	Fogg
NF1909_TT02_51	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Bregmaceros atlanticus	2		Ethanol	Morrison
NF1909_TT02_52	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche pseudopallida	2		Ethanol	Morrison
NF1909_TT02_53	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche microdon	1		Ethanol	Morrison
NF1909_TT02_54	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche microdon	1		Ethanol	Morrison
NF1909_TT02_55	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche microdon	1		Ethanol	Morrison
NF1909_TT02_56	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche microdon	1		Frozen	Demopoulos
NF1909_TT02_57	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche microdon	1		Frozen	Demopoulos
NF1909_TT02_58	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche microdon	1		Frozen	Demopoulos
NF1909_TT02_59	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847	31 59.921	077 26.918	0-200	Cyathoche microdon	1		Frozen	Demopoulos
NF1909_TT02_60	TT02	Richardson Hills	10/24/2019	2:47:30	6:45:47	32 00.777	077 24.847								





NF1909 Master Sample Log

Sample Number	Trawl or CTD #	Site	Date Collected	Start Time (GMT)	End Time (GMT)	Start Latitude	Start Longitude	End Latitude	End Longitude	Depth (m)	Tentative ID	# Individuals in sample	Standard length (mm) – if measured	Curation method	Disposition
NF1909_CTD14_N02	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	809	Water				Demopouls, Miens
NF1909_CTD14_N03	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	809	Water				Demopouls, Miens
NF1909_CTD14_N04	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	809	Water				Demopouls, Miens
NF1909_CTD14_N05	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	809	Water				Lunden, Joye
NF1909_CTD14_N06	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	500	Water				Lunden, Joye
NF1909_CTD14_N07	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	400	Water				Lunden, Joye
NF1909_CTD14_N08	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	300	Water				Lunden, Joye
NF1909_CTD14_N09	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	91	Water				Lunden, Joye
NF1909_CTD14_N10	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	2	Water				Lunden, Joye
NF1909_CTD14_N11	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	2	Water				Demopouls, Miens
NF1909_CTD14_N12	CTD14	Richardson Hills	10/28/2019	22:45:10	23:35:18	31 59 21.4	077 20 81.3	31 59 38.0	077 18 71.3	2	Water				Demopouls, Miens
NF1909_CTD15_N01	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N02	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N03	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N04	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N05	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N06	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N07	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N08	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N09	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N10	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N11	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD15_N12	CTD15	Richardson Hills	10/29/2019	01:03	0:04:28	31 59 60.7	077 18 08.5	31 59 63.6	077 17 87.4	2.5	Water				Joye
NF1909_CTD16_N01	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	792	Water				Morrison
NF1909_CTD16_N02	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	792	Water				Morrison
NF1909_CTD16_N03	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	792	Water				Morrison
NF1909_CTD16_N04	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	550	Water				Morrison
NF1909_CTD16_N05	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	550	Water				Morrison
NF1909_CTD16_N06	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	550	Water				Morrison
NF1909_CTD16_N07	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	75	Water				Morrison
NF1909_CTD16_N08	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	75	Water				Morrison
NF1909_CTD16_N09	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	75	Water				Morrison
NF1909_CTD16_N10	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	7	Water				Morrison
NF1909_CTD16_N11	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	7	Water				Morrison
NF1909_CTD16_N12	CTD16	Richardson Hills	10/29/2019	6:57:51	7:55:59	32 00 01.2	077 18 81.3	32 00 40.3	077 16 30.8	7	Water				Morrison
NF1909_TT03_01	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Lepidophanes guentheri	1		Formalin	Subton
NF1909_TT03_02	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Nannochloris equatorum	3		Formalin	Subton
NF1909_TT03_03	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Bolnichthys supralateralis	4		Ethanol	Morrison
NF1909_TT03_04	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Bolnichthys photothorax	2		Ethanol	Morrison
NF1909_TT03_05	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Notolychnus valdiviae	1		Ethanol	Morrison
NF1909_TT03_06	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	undetermined myctophid (damaged)	1		Formalin	Subton
NF1909_TT03_07	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Diaphus mollis	1		Ethanol	Subton
NF1909_TT03_08	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Vinciguieria nimbaria	2		Ethanol	Morrison
NF1909_TT03_09	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Policthys maui	3		Ethanol	Morrison
NF1909_TT03_10	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Idcaulus fasciola (f)	1		Ethanol	Morrison
NF1909_TT03_11	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Chauliodus sloani	1		Frozen	Subton
NF1909_TT03_12	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Chauliodus danae	1		Frozen	Subton
NF1909_TT03_13	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Photostomias guernei	1		Ethanol	Subton
NF1909_TT03_14	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Sigmops elongatus	2		Ethanol	Morrison
NF1909_TT03_15	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Astronesthes similis	1		Ethanol	Morrison
NF1909_TT03_16	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Melamphaes	5		Formalin	Subton
NF1909_TT03_17	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Acanthurus sp. (juvenile)	1		Formalin	Subton
NF1909_TT03_18	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Caranx sp. (juvenile)	1		Formalin	Subton
NF1909_TT03_19	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Paralichthidae	3		Formalin	Subton
NF1909_TT03_20	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Lophiform larva	1		Formalin	Subton
NF1909_TT03_21	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Valenciennes tripunctatus	4		Formalin	Subton
NF1909_TT03_22	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Plurancistriformes larvae	9		Formalin	Inventory
NF1909_TT03_23	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Leptocephali	17		Formalin	Subton
NF1909_TT03_24	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Gobiidae larva	2		Formalin	Subton
NF1909_TT03_25	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Notoseiidae larvae	2		Formalin	Subton
NF1909_TT03_26	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Scopelarchidae larva	1		Formalin	Subton
NF1909_TT03_27	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Systellaspis debilis	1		Ethanol	Morrison
NF1909_TT03_28	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Systellaspis debilis	1		Frozen	Demopouls
NF1909_TT03_29	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	Systellaspis debilis	1		Frozen	Demopouls
NF1909_TT03_30	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	"Sergia" sp.	1		Ethanol	Morrison
NF1909_TT03_31	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	"Sergia" sp.	1		Ethanol	Morrison
NF1909_TT03_32	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	"Sergia" sp.	1		Ethanol	Morrison
NF1909_TT03_33	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4	32 26 85.2	076 15 58.6	0-200	"Sergia" sp.	1		Mixed	Demopouls
NF1909_TT03_34	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29 28.2	076 13 12.4</								

NF1909 Master Sample Log

Sample Number	Trawl or CTD #	Site	Date Collected	Start Time (GMT)	End Time (GMT)	Start Latitude	Start Longitude	End Latitude	End Longitude	Depth (m)	Tentative ID	# Individuals in sample	Standard length (mm) – if measured	Curation method	Disposition
NF1909_TT03_80	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29.282	076 13.124	32 26.852	076 15.586	0-200	Copepod	1		Frozen	Demopoules
NF1909_TT03_81	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29.282	076 13.124	32 26.852	076 15.586	0-200	Copepod	1		Frozen	Demopoules
NF1909_TT03_82	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29.282	076 13.124	32 26.852	076 15.586	0-200	Pluteanacifomes	1		Frozen	Demopoules
NF1909_TT03_83	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29.282	076 13.124	32 26.852	076 15.586	0-200	Pluteanacifomes	1		Frozen	Demopoules
NF1909_TT03_84	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29.282	076 13.124	32 26.852	076 15.586	0-200	Pluteanacifomes	1		Frozen	Demopoules
NF1909_TT03_85	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29.282	076 13.124	32 26.852	076 15.586	0-200	Pluteanacifomes	1		Ethanol	Demopoules
NF1909_TT03_86	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29.282	076 13.124	32 26.852	076 15.586	0-200	Juvenile benthic shrimp	1			Missing - not in AD inventory
NF1909_TT03_87	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29.282	076 13.124	32 26.852	076 15.586	0-200	Pluteanacifomes	1		Mixed	Demopoules
NF1909_TT03_88	TT03	Blake Ridge	10/25/2019	3:35	6:14:38	32 29.282	076 13.124	32 26.852	076 15.586	0-200	Sieve bits	7		Frozen	Demopoules
NF1909_TT04_01	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	22		Ethanol	Morrison
NF1909_TT04_02	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	21		Ethanol	Morrison
NF1909_TT04_03	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Frozen	Demopoules
NF1909_TT04_04	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Frozen	Demopoules
NF1909_TT04_05	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Frozen	Demopoules
NF1909_TT04_06	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Frozen	Demopoules
NF1909_TT04_07	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Frozen	Demopoules
NF1909_TT04_08	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Ethanol	Demopoules
NF1909_TT04_09	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Ethanol	Demopoules
NF1909_TT04_10	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Ethanol	Demopoules
NF1909_TT04_11	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Ethanol	Demopoules
NF1909_TT04_12	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Seriola violana	2		NA	Released Live
NF1909_TT04_13	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Notolychnus vaidivae	1		Frozen	Demopoules
NF1909_TT04_14	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Notolychnus vaidivae	1		Frozen	Demopoules
NF1909_TT04_15	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Notolychnus vaidivae	1		Frozen	Demopoules
NF1909_TT04_16	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Notolychnus vaidivae	1		Frozen	Demopoules
NF1909_TT04_17	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Notolychnus vaidivae	1		Frozen	Demopoules
NF1909_TT04_18	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Eustomias sp.	1		Formalin	Sutton
NF1909_TT04_19	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Formalin	Sutton
NF1909_TT04_20	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Signmus elongatus	1		Frozen	Demopoules
NF1909_TT04_21	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Pollichthys maull	1		Frozen	Demopoules
NF1909_TT04_22	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Canthigaster sp. (juvenile)	1		Ethanol	Morrison
NF1909_TT04_23	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Canthigaster sp. (juvenile)	1		Frozen	Demopoules
NF1909_TT04_24	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Canthigaster sp. (juvenile)	1		Frozen	Demopoules
NF1909_TT04_25	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Chauliodus sloani	1		Frozen	Sutton
NF1909_TT04_26	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Scopelarchidae juvenile	1		Formalin	Sutton
NF1909_TT04_27	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Photostomias guernei	1		Frozen	Demopoules
NF1909_TT04_28	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Melanphases sp.	1		Formalin	Sutton
NF1909_TT04_29	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Leptocephalus	1		Frozen	Demopoules
NF1909_TT04_30	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Stomidae larvae	1		Formalin	Sutton
NF1909_TT04_31	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Unidentified myctophid larvae	1		Formalin	Sutton
NF1909_TT04_32	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Melaniphaid juvenile damaged	1		Formalin	Sutton
NF1909_TT04_33	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Large lobster larva	1		Glutaraldehyde/Ethanol	Davis/Morrison
NF1909_TT04_34	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Small lobster larva	1		Glutaraldehyde/Ethanol	Davis
NF1909_TT04_35	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Octopus	1		Formalin	Sutton
NF1909_TT04_36	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Squid	1		Formalin	Sutton
NF1909_TT04_37	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Psaenes arafurensis	1		Multiple	Sutton, Morrison, Demopoules
NF1909_TT04_38	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Eteles oculatis	1		Multiple	Sutton, Morrison, Demopoules
NF1909_TT04_39	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Crab larva	1		Ethanol	Morrison
NF1909_TT04_40	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Lobster larva	1		Ethanol	Morrison
NF1909_TT04_41	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Lobster larva	1		Ethanol	Morrison
NF1909_TT04_42	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Lobster larva	1		Ethanol	Morrison
NF1909_TT04_43	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Lobster larva	1		Ethanol	Morrison
NF1909_TT04_44	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Phronima sedentaria	1		Ethanol	Morrison
NF1909_TT04_45	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Inchythoderm larva	1		Ethanol	Morrison
NF1909_TT04_46	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Large red amphipod	1		Ethanol	Morrison
NF1909_TT04_47	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Quadracanthus lucifer	1		Ethanol	Morrison
NF1909_TT04_48	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Lobster larva	1		Davis	Glutaraldehyde/Ethanol
NF1909_TT04_49	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Lobster larva	1		Davis	Glutaraldehyde/Ethanol
NF1909_TT04_50	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Stomatopoda larva	2		Ethanol	Morrison
NF1909_TT04_51	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Cyathocystis braueri	1		Ethanol	Demopoules
NF1909_TT04_52	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Euphausiid	4		Ethanol	Morrison
NF1909_TT04_53	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Opliothoracidae	1		Ethanol	Morrison
NF1909_TT04_54	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Opliothoracidae	1		Frozen	Demopoules
NF1909_TT04_55	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Amphipod	1		Ethanol	Morrison
NF1909_TT04_56	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Amphipod	1		Frozen	Demopoules
NF1909_TT04_57	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545	076 11.897	32 21.618	076 08.707	500-650	Amphipod	1		Frozen	Demopoules
NF1909_TT04_58	TT04	Blake Ridge	10/25/2019	15:27:39	20:36:30	32 29.545									





