

SEADESC I REPORT
2012 Pulley Ridge Cruise
August 14-25, 2012
R/V *Walton Smith* – Cruise No. WS1213
UNCW *SuperPhantom II* ROV

**Project Title: Connectivity of the Pulley Ridge - South Florida Coral Reef Ecosystem:
Processes to Decision-Support Tools**

Project Grant: NOAA-NOS-NCCOS-2011-2002586; REPP-Connectivity-Pulley Ridge

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Executive Summary

The University of Miami's R/V *Walton Smith* Cruise No. WS1213 was conducted from August 14 to 25, 2012 on Pulley Ridge, a mesophotic reef in the Gulf of Mexico off southwestern Florida. This cruise was funded in part by the NOAA-NOS-NCCOS grant titled 'Connectivity of the Pulley Ridge - South Florida Coral Reef Ecosystem: Processes to Decision-Support Tools'. Ship and ROV time was funded in part by the Cooperative Institute for Ocean Exploration, Research, and Technology (CIOERT) at Harbor Branch Oceanographic Institute-Florida Atlantic University (HBOI-FAU). This cruise was conducted in collaboration with the University of Miami, HBOI-CIOERT, NOAA Fisheries, and the University of North Carolina at Wilmington which provided the UNCW *Superphantom II* ROV.

A Preliminary Cruise Report was previously submitted to the Principal Investigators and agencies on August 29, 2012 and provided a detailed cruise summary including maps of deployment sites, list of stations, list of samples collected, distribution of specimens to PIs, and dive notes from the ROV dives. Chapters included the following:

1. Map of ROV dive tracks and tech dive sites
2. Map of CTD, MOCNESS, physical oceanographic buoys, and light trap stations
3. Collection Method Summary- List of collection gear and sensors
4. Cruise Summary- List of station deployments and collections
5. Station Summary- List of all station deployments, including Cruise Site Number (DD-MM-YY-#), UM Site Number, location, Latitude/longitude, and depth
6. Sample Summary- List of samples collected including tech dives (coral, fish, sponges, algae), light trap (plankton), and MOCNESS (plankton)
7. Sample Distribution List- List of samples, preservative, PI/Lab receiving
8. Plankton Sample List- Details of light trap and MOCNESS plankton sample collections
9. List of Random Blocks used for ROV and tech dives, including coordinates for corners and center of each block
10. ROV Dive Summary Report- Details of each ROV dive including: dive date/time, location, start and end coordinates, depth, ROV setup information, dive events, habitat characterization, list of benthic biota and fish observed.

This SEADESC I Report provides additional details of each dive site, in particular, maps (Figs. 1-7) showing the distributions of taxa of interest (listed below) based on observations during the ROV and technical scuba dives. Appendix 1 is the NOAA SEADESC Level 1 Report which describes in detail each ROV dive including: cruise metadata, figures showing each dive track overlaid on multibeam sonar maps, dive track data (start and end latitude, longitude, depth), objectives, general description of the habitat and biota, and images of the biota and habitat that characterize the dive site. In the future, a Final Cruise Report (SEADESC Level II Report) will provide for each dive site quantitative analyses detailing the densities of the benthic biota and fish, and percent cover of substrate type and sessile biota. These data are to characterize and document the habitat, benthic and fish communities, and to assess the coral health on southern Pulley Ridge and within the Pulley Ridge Habitat Area of Particular Concern (HAPC). These data may then be compared to previous and future research cruises to better understand the long-term health and status of this important mesophotic reef system.

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RESULTS

ROV Dives

The UNCW *Superphantom II* ROV was used to conduct survey transects to quantify benthic habitat and organisms, and identify suitable specimen collection sites. Based on various discussions initiated at the All-PI meeting last fall, we pursued a statistically rigorous sampling protocol for the ROV quantitative sampling of Pulley Ridge. Figure 1 shows the location of the twenty (random) chosen grids along the primary/ secondary ridge (~ 90 potential sites). Within each sampling box (“site”), we conducted five 100-m transects with the ROV. We made 2 ROV dives per op day for 7 days, completing 14 of the random boxes (20 had been planned; 6 were lost due to Isaac) (Fig. 2). We had a problem with the still camera in Box 20, so this site should re-sampled in the future as we will not have enough good photos to adequately quantify.

During these dives, it appears that we saw more coral than in our 2010 and 2011 cruises, but still not near the percent of cover reported in 2005 and earlier. These transect data will need to be quantified for better comparisons. The distribution of the corals remains patchy (both among and within boxes). The approach of randomizing our sampling effort over the designated area of interest proved quite helpful in extending our knowledge of benthic distribution. We also have a good snapshot of the fish, algal and sponge communities and distributions. Figures 3-6 map the distribution of observations (from both ROV and technical dives) of each of the 7 target taxa. Although not called out in the proposal, we clearly are seeing a large increase in lionfish, since our first observations of that exotic species on Pulley Ridge in 2010 (Fig. 7). Our total lionfish count during all ROV dives was 332 individuals.

Technical Scuba Dives

Specimen collections were initiated by a team of technical scuba divers from the University of Miami (DSO and Lead Diver- Rich Gomez) and the Florida Aquarium. Collections of 7 target species (listed below), and 60 samples of each, are to be used for the genetics and connectivity objectives of the grant. We utilized sampling collection methods and processing plans that were provided by various PIs for the target species to guide the technical dive team and onboard science team. During the 7 op days on site, we conducted 12 tech dives within the randomly selected blocks on Pulley Ridge and collected a total of 133 targeted specimens:

Coral:

Agaricia spp. - 30 (these could be a variety of species including *A. lamacki*, *A. grahamae*,
A. fragilis)

Montastraea cavernosa - 13

Porites asteroides - 0

Fish:

Stegastes partitus (bicolor damselfish) - 36

Thalassoma bifasciatum (bluehead wrasse) - 0

Sponge:

Xestospongia muta - 39

Alga:

Halimeda sp. – 15

We believe there should be no problem on the next cruise to complete the remaining collections (n=60) for the following taxa: *Agaricia*, *Montastraea*, *Stegastes*, *Xestospongia*, and *Halimeda*. However, no *Porites asteroides* were observed; nor were these expected based on previous ROV dives and literature. Also no *Thalassoma bifasciatum* were collected or observed on the tech dives, and only a few have been observed on the previous ROV dives.

The Population Group may wish to evaluate these collections and provide guidance for the next cruise in regards to numbers of samples still desired and if any changes in target species are to be made.

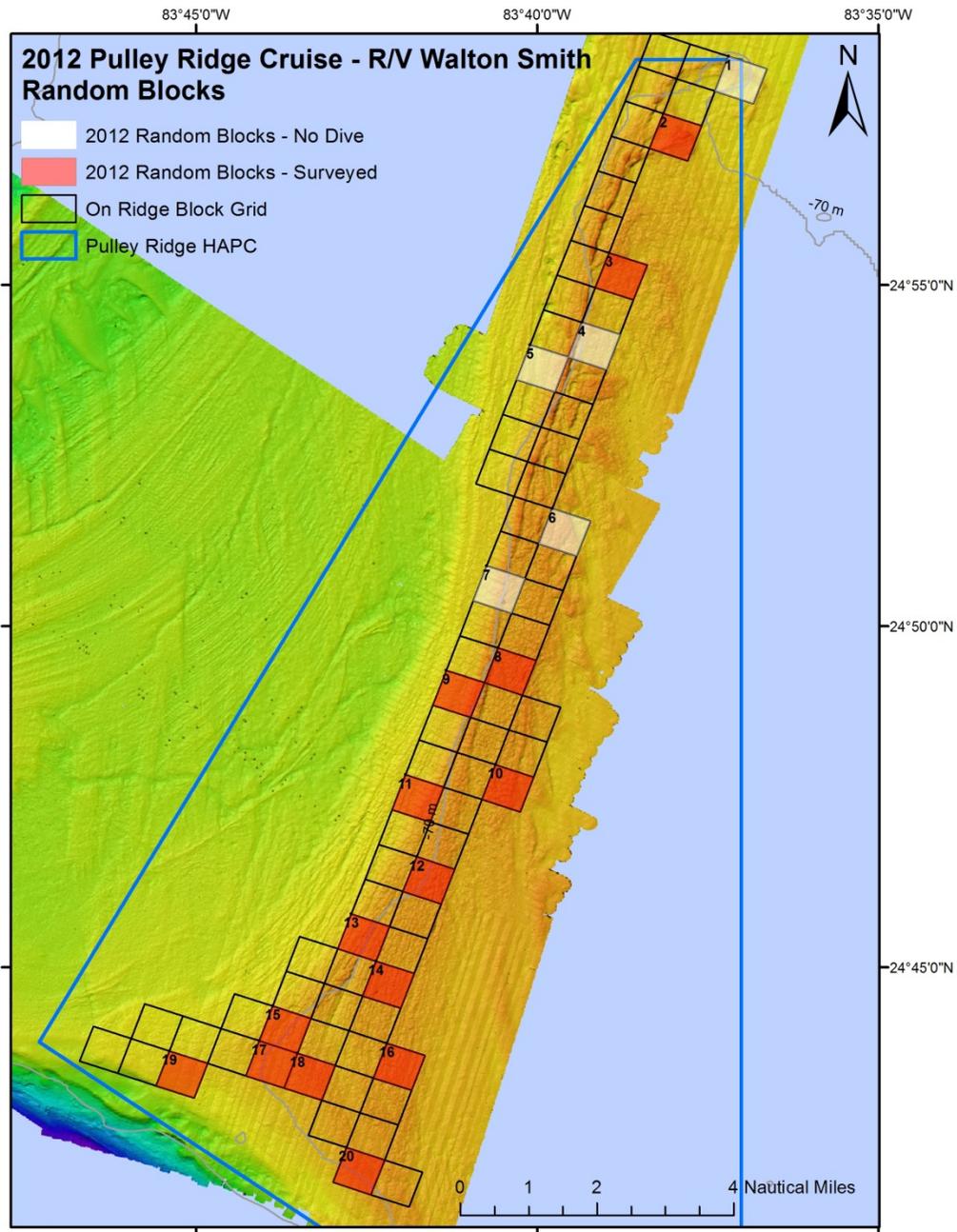


Figure 1. Map of 20 randomly selected 1 km x 1km blocks to be used for the ROV surveys and technical scuba dives in the region of Pulley Ridge Habitat Area of Particular Concern (HAPC) during the University of Miami R/V *Walton Smith* cruise, August 14-25, 2012. Red blocks – surveyed during cruise, white blocks- not surveyed during cruise.

2012 Pulley Ridge Cruise - R/V Walton Smith ROV and Tech Dive Stations

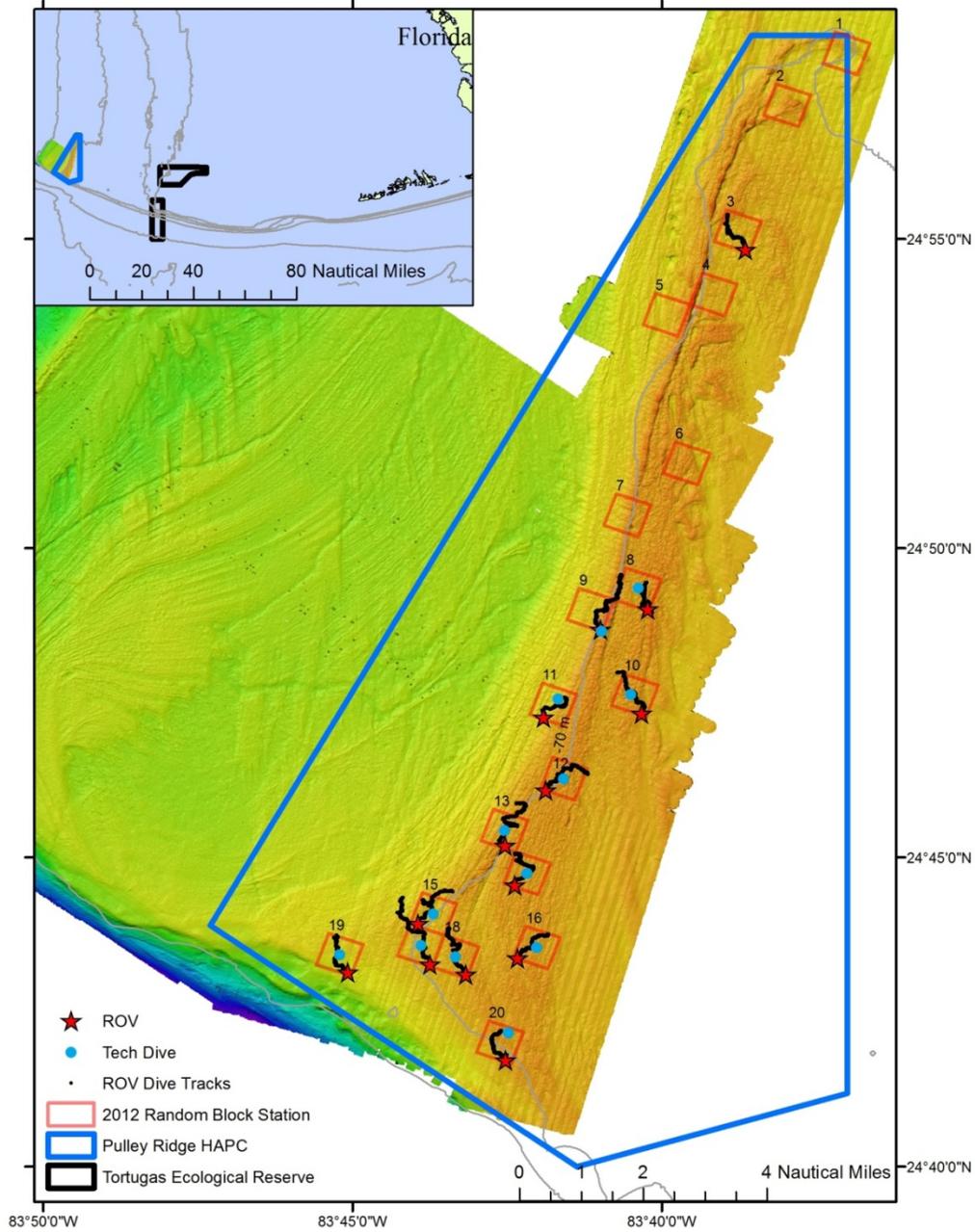


Figure 2. Map of ROV dive tracks and technical scuba dive sites in the region of Pulley Ridge Habitat Area of Particular Concern (HAPC) during the University of Miami R/V *Walton Smith* cruise, August 14-25, 2012. Red stars- starting point of ROV dives, black polylines- ROV dive tracks, blue dots- technical scuba dive sites, red squares- 1 km² random blocks, blue polygon- Pulley Ridge HAPC (background multibeam sonar map- D. Naar, USF).

Species Distributions

Figures 3-7 show the distribution of species of interest based solely on observations from the ROV dives (Preliminary Cruise Report, ROV Summary Report) and technical scuba collections. This certainly does not mean to imply the relative abundance or overall distribution of these species over the entire Pulley Ridge region.

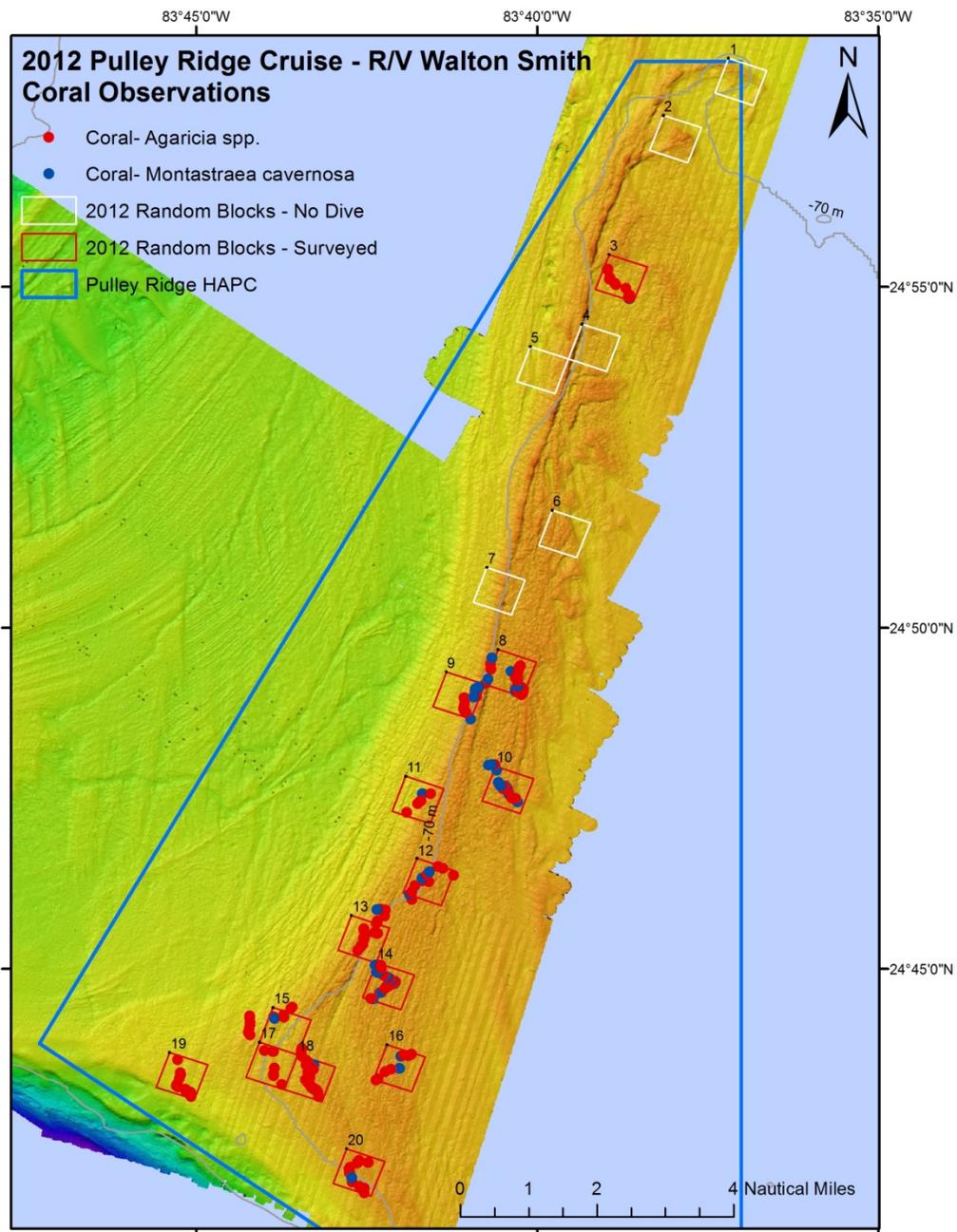


Figure 3. *Montastraea cavernosa* and *Agaricia* spp. coral observations during ROV dives and technical scuba dives on Pulley Ridge HAPC during the University of Miami R/V *Walton Smith* cruise, August 14-25, 2012.

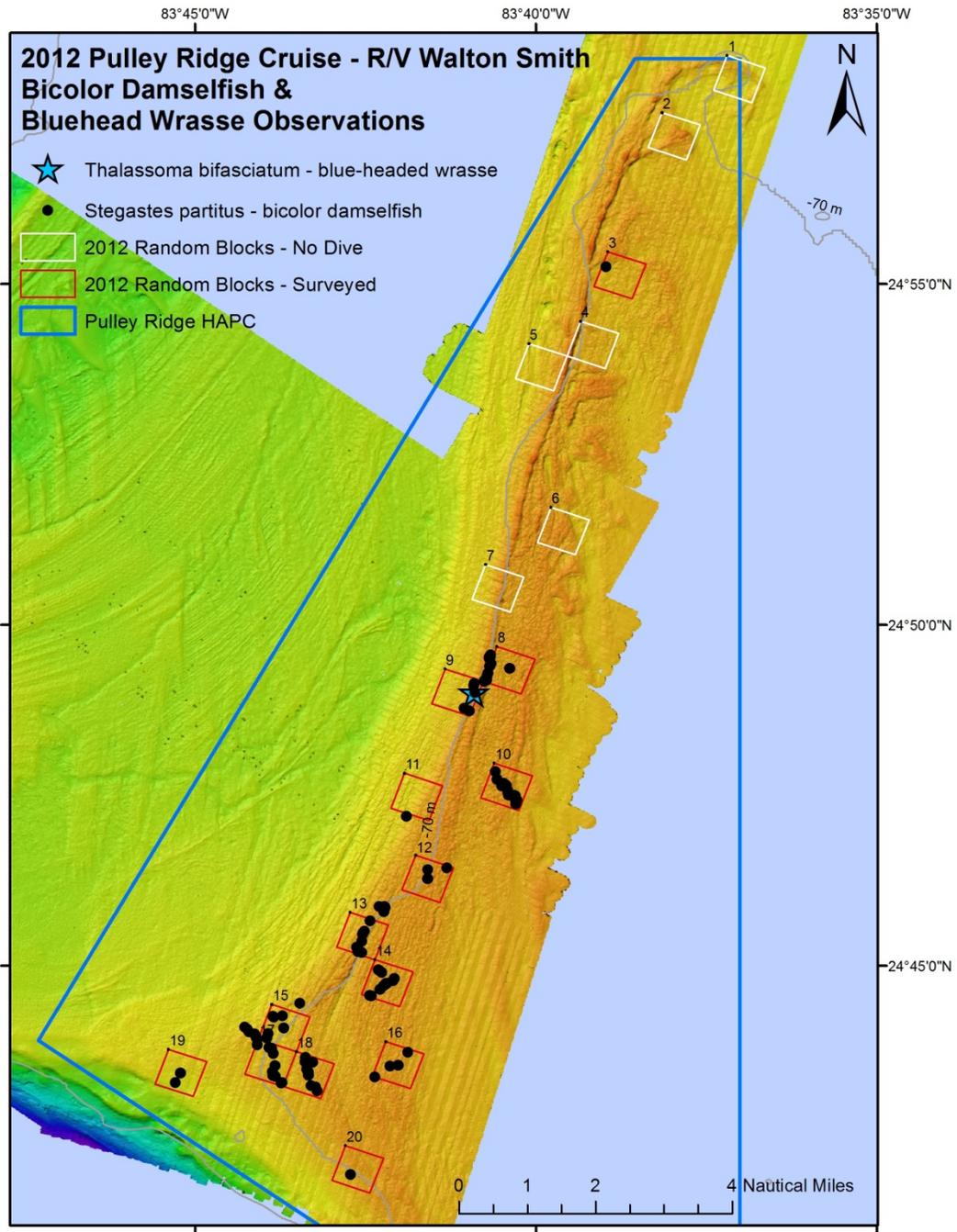


Figure 4. Observations of bicolor damselfish and bluehead wrasse during ROV dives and technical scuba dives on Pulley Ridge HAPC during the University of Miami R/V *Walton Smith* cruise, August 14-25, 2012.

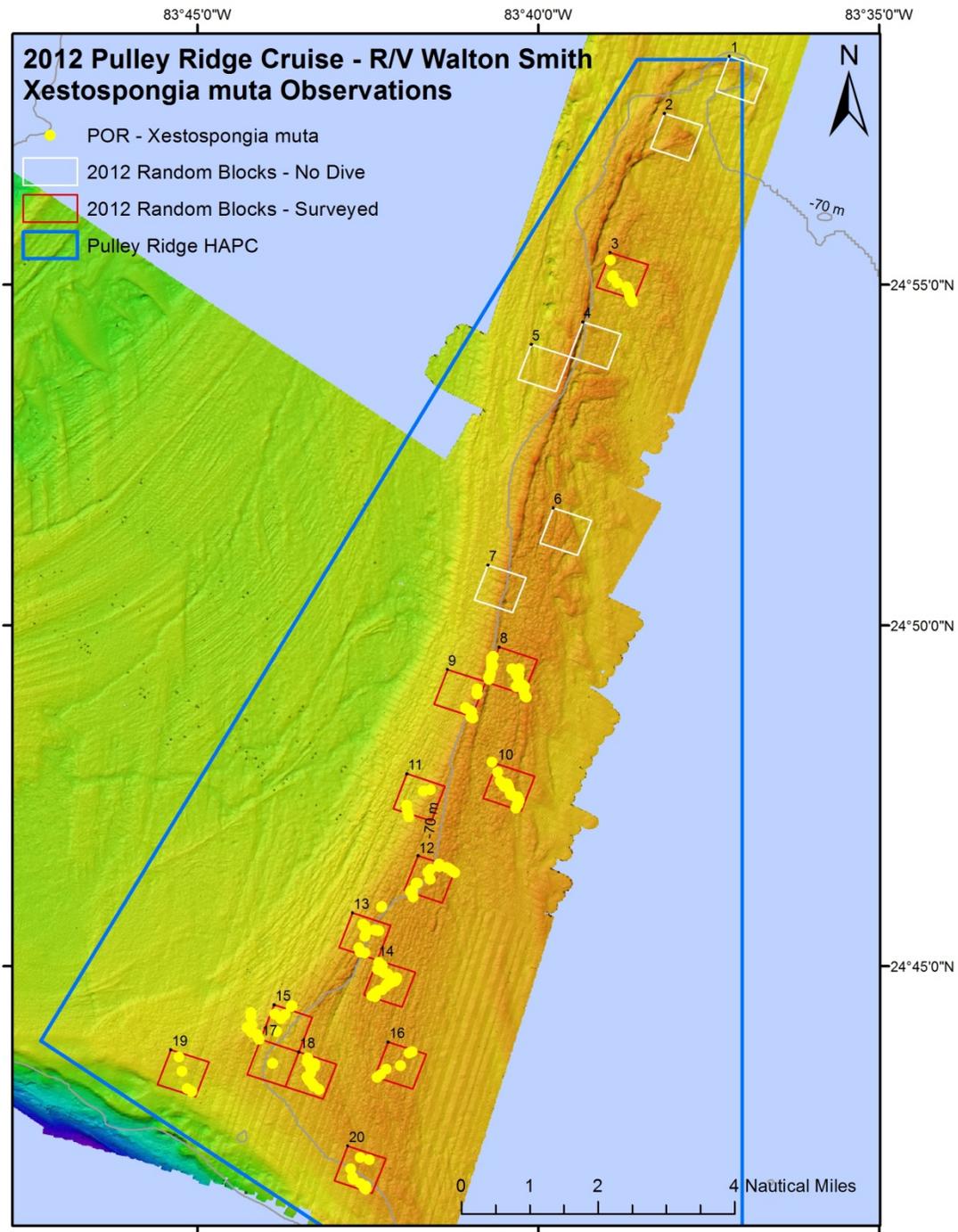


Figure 5. Observations of *Xestospongia muta* during ROV dives and technical scuba dives on Pulley Ridge HAPC during the University of Miami R/V Walton Smith cruise, August 14-25, 2012.

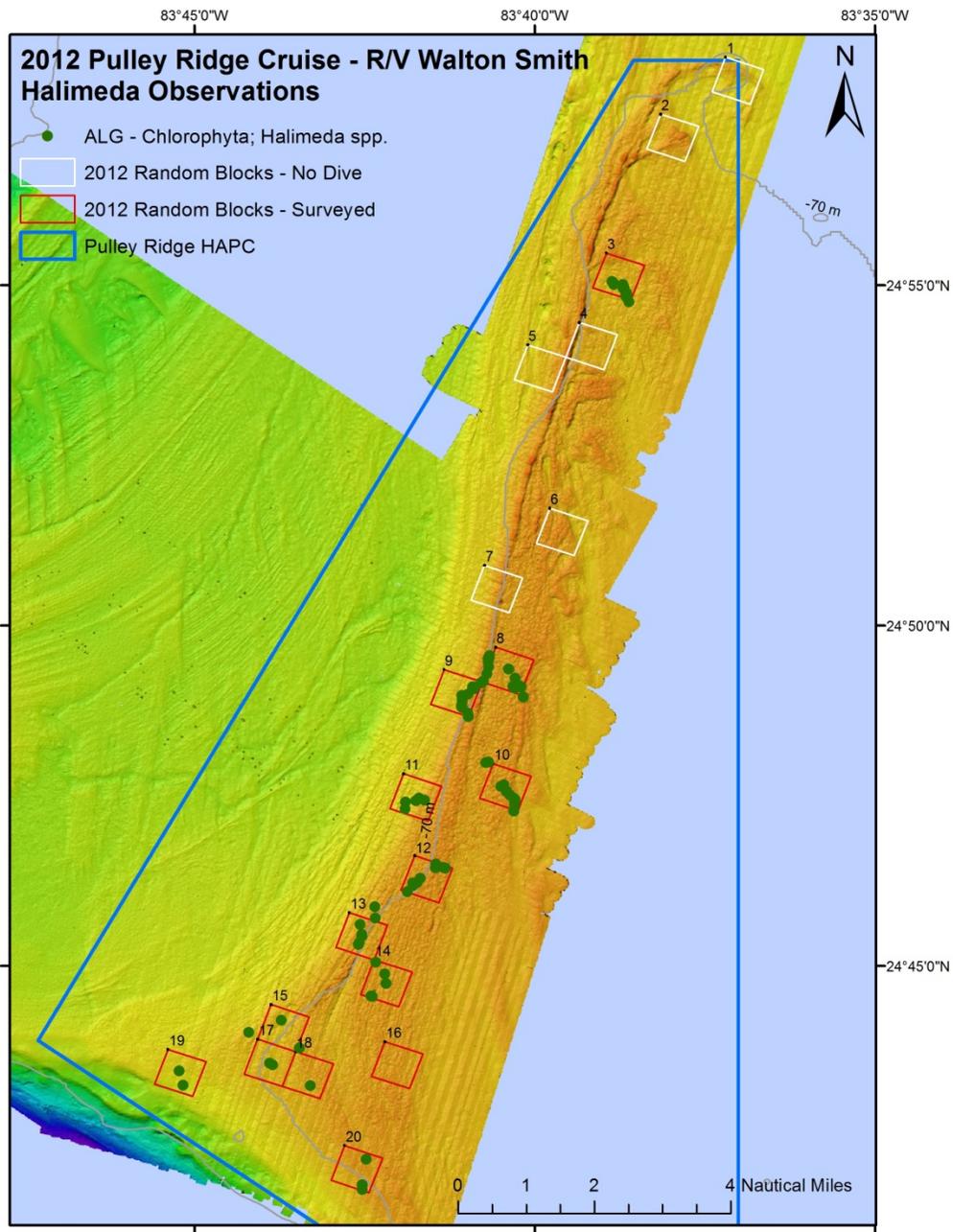


Figure 6. Observations of *Halimeda* algae during ROV dives and technical scuba dives on Pulley Ridge HAPC during the University of Miami R/V *Walton Smith* cruise, August 14-25, 2012.

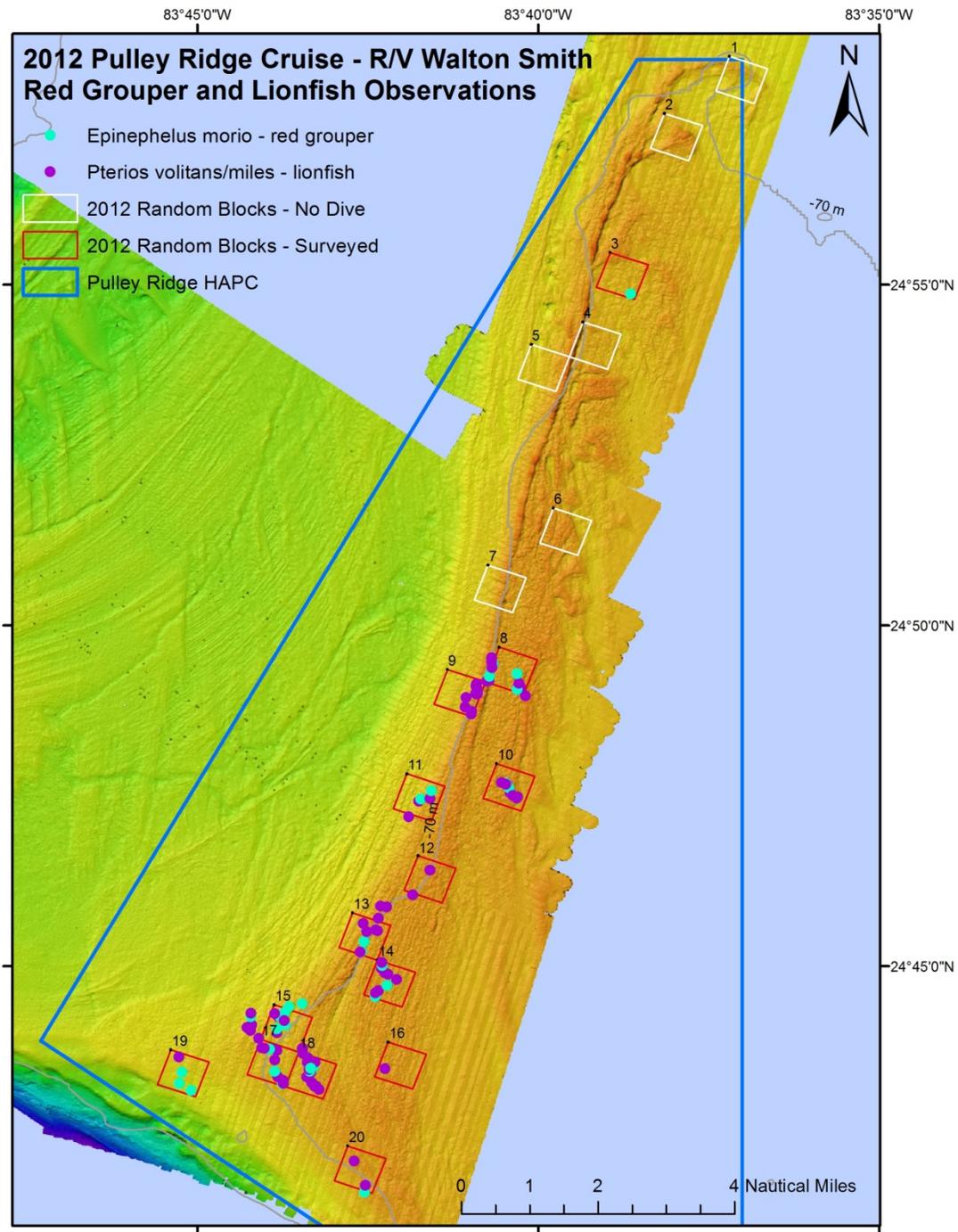


Figure 7. Observations of lionfish and red grouper during ROV dives on Pulley Ridge HAPC during the University of Miami R/V *Walton Smith* cruise, August 14-25, 2012.

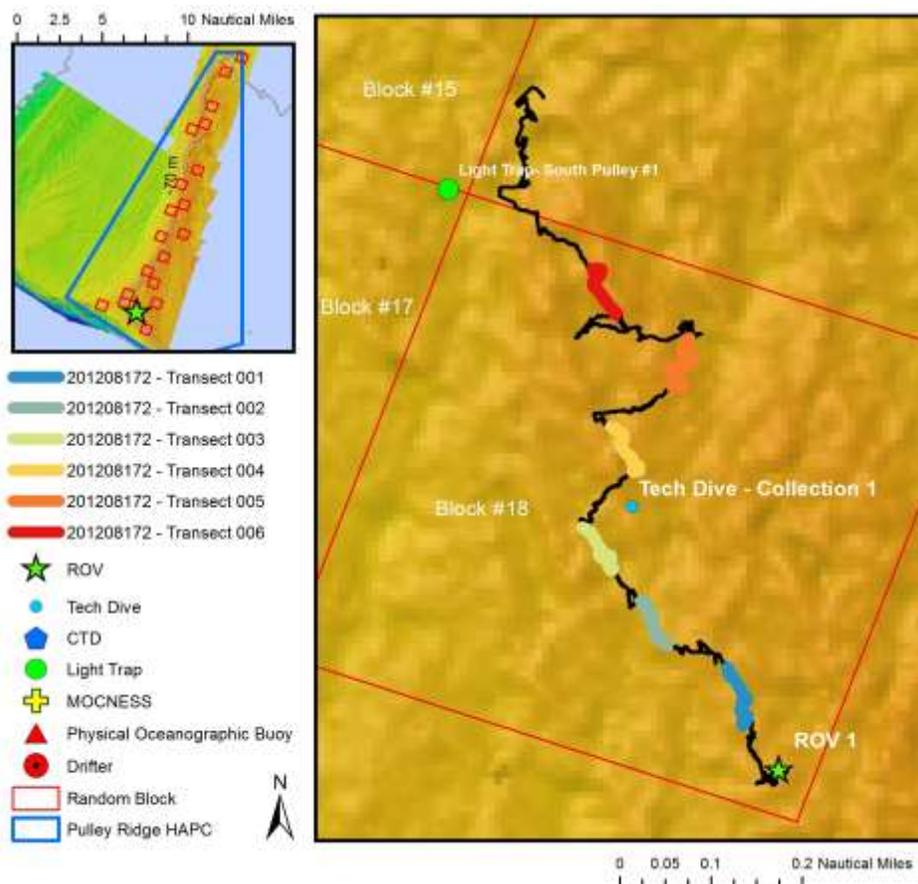
APPENDIX 1

SEADESC I Report detailing each UNCW *Superphantom II* ROV dive during the University of Miami R/V *Walton Smith* cruise, August 14-25, 2012, in the region of Pulley Ridge Habitat Area of Particular Concern (HAPC). Each dive report includes the following: cruise metadata, figure of each dive track overlaid on multibeam sonar map, dive track data (start and end latitude, longitude, and depth), objectives, general description of the habitat and biota, and images of the biota and habitat that characterize the dive site.

SEADESC Report - Walton Smith Cruise

Dive Number: ROV 1

Location: Florida, Pulley Ridge HAPC, random block #18



Dive Overview:

Project:	University of Miami Pully Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	159
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	4
Dive #:	ROV 1	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #18	Ship Position System:	DGPS
Date of Dive:	8/17/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	67	Total Transect Length (km):	7.83
Maximum Bottom Depth (m):	70	Surface Current (kn):	
On Bottom (Time- ESDT):	0:14	On Bottom (Lat/Long):	24°43.1077'N ; 83°43.1860'W
Off Bottom (Time- ESDT):	15:45	Off Bottom (Lat/Long):	24°43.8429'N ; 83°43.4462'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	
		Current (kn):	



Figure 1: Agaricia



Figure 2: Anadyo + Agaricia

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 1; Florida, Pulley Ridge HAPC, random block #18; 24°43.1055'N, 83°43.1735'W, 64 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 18.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every 30 sec. Off transects between the photo transects were 10-15 minutes. Six 100 m photo transects were made; the first will be discarded as a practice transect. Direction of transects were generally heading NW to NE, but dependent on the ship's maneuverability with the wind and current.

Site Description/Habitat/Biota:

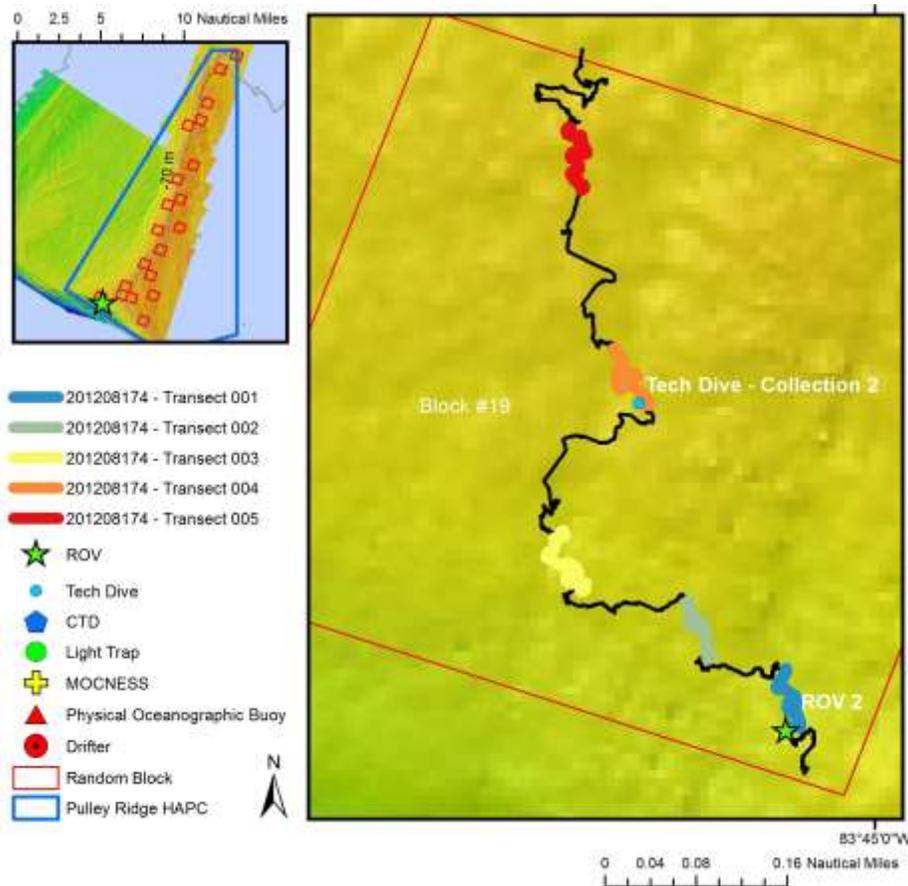
The entire dive transected most of the block from the southeast corner to the northwest; depth range- 67 to 69.5 m. The bottom was very consistent with no obvious changes throughout or between photo transects. The bottom was 100% hard bottom, flat, and predominantly covered with old dead plate coral and coral rubble. There were no ledges or ridges except for occasional red grouper pits, ~5-8 m diameter, 1-2 m deep, which had exposed excavated rock burrows in the bottom. Most grouper pits had a red grouper, lionfish (few to 13), and other reef fish.

Benthic Biota: The exposed dead coral rock was mostly encrusted with crustose coralline algae and Peyssonnelia red algae. There was a dense cover (50-80%) of Anadyomene green algae, patchy Agaricia coral (10-20 cm diam) were common, and demosponges were common but not abundant. Dominant sponges included Xestospongia muta, Ircinia spp., Geodia, Verongida, Agelas.

Dominant Benthic Taxa: Scleractinia- Agaricia spp. (common), Leptoseris cucullatta (?), Madracis (few), Montastraea cavernosa (1); Gorgonacea (rare)- Telesto (1), Bebryce (1); Corallimorpharia; Hydroida; Actiniaria: Condylactis gigantea; Antipatharia- Stichopathes; Demospongiae (common)- Ircinia campana, Ircinia

strobilina, Niphates sp., Polymastia, Plakortis?, Spirastrellidae, Verongida, Xestospongia muta; Crinoidea-Comatulida (abundant); Ascidiacea- Eudistoma, Didemnidae; Chlorophyta- Anadyomene menziesii (abundant), Codium (rare), Halimeda (rare), Valonia; Rhodophyta- crustose coralline algae (abundant). Peyssonellia (abundant); Phaeophyta- Dictyota, Lobophora.

Fish: Acanthostracion polygonia - honeycomb cowfish, Balistes vetula - Queen Triggerfish, Bodianus pulchellus - Spotfin hogfish, Canthigaster rostrata - Sharpnose puffer, Centropyge argi - Cherubfish, Cephalopholis cruentata - graysby, Chaetodon aculeatus - Longsnout butterflyfish, Chaetodon sedentarius - Reef butterflyfish, Chromis cyanea - blue chromis, Chromis enchrysurus - Yellowtail Reefish, Chromis insolata - Sunshinefish, Chromis scotti - Purple reefish, Chromis sp. - unid chromis, Epinephelus adscensionis - rock hind, Epinephelus morio - Red grouper, Fistularia tabacaria - cornetefish, Haemulon album - margate, Haemulon striatum - Striped grunt, Halichoeres sp. - wrasse, Holacanthus bermudensis - Blue angelfish, Holacanthus tricolor - Rock beauty, Holocentrus adscensionis - Squirrelfish, Inermiidae - Boga/bonnetmouth, Labrisomidae - scaly blenny, Liopropoma eukrines - Wrasse bass, Lutjanus jocu - dog snapper, Monacanthus tuckeri - slender filefish, Mycteroperca bonaci - black grouper, Mycteroperca interstitailis - yellowmouth grouper, Mycteroperca phenax - Scamp, Mycteroperca venenosa - yellowfin grouper, Neoniphon marianus - Longjaw squirrelfish, Pomacentridae - unid damselfish, Pseudupeneus maculatus - Spotted goatfish, Pterios volitans/miles - Lionfish, Scarus coelestinus - midnight parrotfish, Seriola rivoliana - Almaco jack, Serranus annularis - Orangeback seabass, Serranus tortugarum - Chalk bass, Sparisoma atomarium - Greenblotch Parrotfish, Stegastes partitus - bicolor damselfish (common).



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	131
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	3
Dive #:	ROV 2	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #19	Ship Position System:	DGPS
Date of Dive:	8/17/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	73	Total Transect Length (km):	5.34
Maximum Bottom Depth (m):	78	Surface Current (kn):	0.6
On Bottom (Time- ESDT):	21:18	On Bottom (Lat/Long):	24°43.1052'N; 83°45.0602'W
Off Bottom (Time- ESDT):	23:42	Off Bottom (Lat/Long):	24°43.6380'N; 83°45.2571'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	15
		Current (kn):	



Figure 1: Montastrea



Figure 2: Agaricia

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 2; Florida, Pulley Ridge HAPC, random block #19, (starting at SE corner); 24° 43.1386'N, 83°45.0783'W, 76.5 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 19.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made. Direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Night dive- visibility of effective lights ~1.5-2 m. Very few fish observed and most in different coloration than day. Difficult to differentiate live plate coral from Peyssonnelia unless directly over.

Site Description/Habitat/Biota:

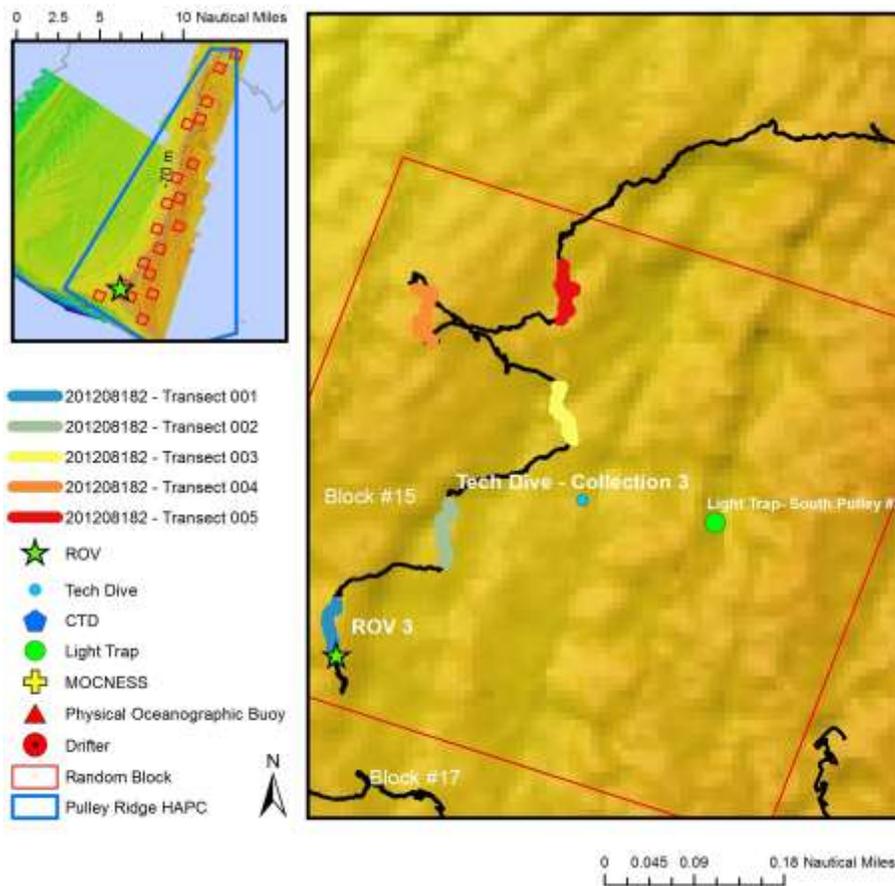
The entire dive transected most of the block from the southeast corner to the northwest. The bottom was fairly consistent but swalled from 77.5 m to 73 m from S to N, and some variability in fauna S to N. The bottom was 100% hard bottom, flat, and predominantly covered with coral rubble and dead plate coral. There were no ledges or ridges except for occasional red grouper pits, which have exposed excavated rock burrows in the bottom.

Benthic Biota: Benthos dominated by Anadyomene (10-30% cover) but less dense than ROV 1, Peyssonnelia, and coralline algae; macro demosponges were present but not dense, gorgonians were sparse, fan mesh Antipatharia were common, Stylaster were common at southern portion but absent to the north, Agaricia were rare at southern end but more common at northern, and Oculina/Madracis? colonies were common.

Dominant Benthic Taxa: Scleractinia- Stylasteridae (common), Oculina/Madracis (common), Montastraea

cavernosa (rare-1), Agaricia (10-15 cm, common); Hydroida; Actiniaria- *Condylactis gigantea*; Corallimorpharia; Gorgonacea (uncommon)- Ellisellidae, *Diodogorgia*, *Telesto*; Antipathidae- *Stichopathes*, *Antipathes?* fine mesh; Demospongiae- Axinellidae, *Xestospongia muta*, *Verongida*, *Geodia*, *Aplysina*, *Polymastia*; Annelida- Sabellidae; Arthropoda- *Pycnogonida*, *Stenorhynchus seticornis*; Mollusca- squid; Crinoidea- *Comatulida*; Holothuroidea- *Uapta lapta*; Asteroidea; Ascidiacea- *Didemnidae*; Chlorophyta- *Anadyomene menziesii* (common), *Halimeda* (rare), *Codium* (rare); Rhodophyta- *Peyssonnelia*, crustose coralline algae.

Fish- *Acanthostracion polygonia* - honeycomb cowfish, *Apogon* sp. - cardinalfish, *Apogon?*, *Centropyge argi* - cherubfish, *Chaetodon sedentarius* - reef butterflyfish, *Chilomycterus* sp. - burrfish, *Chromis enchrysurus* - yellowtail reeffish, *Chromis* sp. - chromis, *Diodon hystrix* - porcupine fish, *Epinephelus morio* - red grouper, *Fistularia tabacaria* - cornetfish, *Gymnothorax moringa* - spotted moray, *Haemulon striatum* - striped grunt, *Holacanthus bermudensis* - blue angelfish, *Holocentrus adscensionis* - squirrelfish, *Holocentrus rufus* - longspine squirrelfish, *Holocentrus* sp. - unid squirrelfish, *Lutjanus analis* - mutton snapper, *Mycteroperca phenax* - scamp, *Neoniphon marianus* - longjaw squirrelfish, *Ophidiidae* - cusk-eels, *Pomacentridae* - unid damselfish, *Priacanthus arenatus* - bigeye, *Pterios volitans/miles* - lionfish, *Rhomboplites aurorubens* - vermilion snapper, *S. tortugarum* or *R. aurorubens*, *Scombridae?* / *Carangidae?*, *Serranus tortugarum* - chalk bass, *Sparisoma atomarium* - greenblotch parrotfish, squirrelfish?, *Stegastes partitus* - bicolor damselfish (rare), *Synodus* sp. - lizardfish, unid fish,



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	173
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	4
Dive #:	ROV 3	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #15	Ship Position System:	DGPS
Date of Dive:	8/18/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, Glenn Taylor, John Reed, Kevin Rademacher, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	68	Total Transect Length (km):	6.80
Maximum Bottom Depth (m):	72	Surface Current (kn):	0.6
On Bottom (Time- ESDT):	12:19	On Bottom (Lat/Long):	24°43.9064'N; 83°43.9361'W
Off Bottom (Time- ESDT):	15:46	Off Bottom (Lat/Long):	24°44.4540'N; 83°43.4030'W
Physical (bottom); Temp (°C):		Salinity:	Visibility (ft): 50 Current (kn): 0.2



Figure 1: Agaricia



Figure 2: Dead Agaricia plates

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 3; Florida, Pulley Ridge HAPC, random block #15, (starting at SW corner); 24° 43.9290'N, 83°43.9408'W, 69.3 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 15.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made; direction of transects were based on flip of coin, and ship's maneuverability due to wind/current.

Site Description/Habitat/Biota:

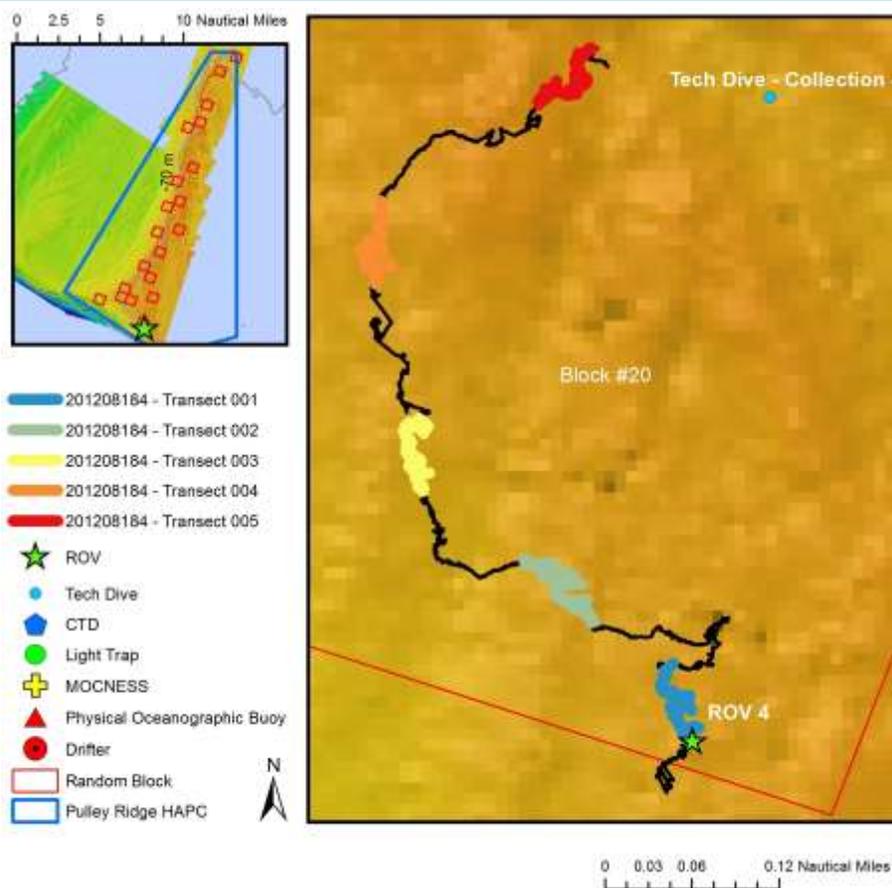
The entire dive transected most of the block from the southwest corner to the north; depth range- 68.5 to 72 m. The bottom was fairly consistent. The bottom was 100% hard bottom, flat, and predominantly covered with coral rubble and dead plate coral. There were no ledges or ridges except for occasional red grouper pits, which have exposed excavated rock burrows in the bottom. End of dive traveled north of block to ground truth features of multibeam; apparent N-S ridges and valleys were 1.5 m relief with no change in habitat or fauna.

Benthic Biota: Benthos dominated by Anadyomene (50% cover), Peyssonnelia, and coralline algae; macro demosponges were present but not common except for Geodia; no gorgonians; Agaricia corals were sparse and patchy.

Dominant Benthic Taxa: Corals- Agaricia, Madracis, Madracis/Oculina?; Hydroida; Antipathidae (rare)- Antipathes?, Tanacetipathes, Stichopathes; Actiniaria- Condylactis gigantea; Gorgonacea- none; Demospongiae- Aplysina, Callyspongia vaginalis, Geodia (common), Ircinia, Ircinia campana, Polymastia, Xestospongia sp., Xestospongia muta (uncommon); Annelida- Filograna; Crinoidea - Comatulida (common);

Chlorophyta- *Anadyomene menziesii*, *Halimeda*, *Ventricaria ventricosa*, *Verdigellas*; Rhodophyta- crustose coralline algae, *Peyssonellia* (abundant); Cyanophyta; Phaeophyta- *Dictyota* (one patch).

Fish: *Balistes vetula* - queen triggerfish, *Bodianus pulchellus* - spotfin hogfish, *Canthigaster rostrata* - sharpnose puffer, *Centropyge argi* - cherubfish, *Cephalopholis cruentata* - graysby, *Chaetodon aculeatus* - longsnout butterflyfish, *Chaetodon sedentarius* - reef butterflyfish, *Chaetodon* spp - butterflyfish, *Chromis enchrysurus* - yellowtail reeffish, *Chromis insolata* - sunshinefish, *Chromis scotti* - purple reeffish, *Chromis* spp. - unid damselfish, *Epinephelus morio* - red grouper, *Gobiidae* - goby, *Haemulon album* - margate, *Holacanthus tricolor* - rock beauty, *Holocentrus adscensionis* - squirrelfish, *Holocentrus* spp - unid squirrelfish, *Inermia vittata* - boga, *Inermiidae* - boga/bonnetmouth, *Liopropoma eukrines* - wrasse bass, *Lutjanus analis* - mutton snapper, *Monacanthus tuckeri* - slender filefish, *Mycteroperca bonaci* - black grouper, *Mycteroperca phenax* - scamp, *Neoniphon marianus* - longjaw squirrelfish, *Pterios volitans/miles* - lionfish (20 +), *Serranus annularis* - orangeback seabass, *Serranus tortugarum* - chalk bass, *Sparisoma atomarium* - greenblotch parrotfish, *Sphyræna barracuda* - great barracuda, *Stegastes partitus* - bicolor damselfish, *Xanthichthys ringens* - sargassum triggerfish,



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	157
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	3
Dive #:	ROV 4	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #20	Ship Position System:	DGPS
Date of Dive:	8/18/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, Glenn Taylor, John Reed, Kevin Rademacher, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	66	Total Transect Length (km):	6.42
Maximum Bottom Depth (m):	69	Surface Current (kn):	0.4
On Bottom (Time- ESDT):	21:05	On Bottom (Lat/Long):	24°41.6955'N; 83°42.5525'W
Off Bottom (Time- ESDT):	23:59	Off Bottom (Lat/Long):	24°42.1970'N; 83°42.5967'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	
		Current (kn):	0.25



Figure 1: CCA and Demosponges



Figure 2: Agarcia

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 4; Florida, Pulley Ridge HAPC, random block #20, (starting at SE corner); 24° 41.7170'N, 83°42.5293'W, 66 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 20.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20o with 15 cm parallel lasers; digital still camera pointed down 90o with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~ 30 sec. Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20o with 15 cm parallel lasers; digital still camera pointed down 90o with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~ 30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made. Direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Night dive- visibility of effective lights ~1.5-2 m. Difficult to differentiate live plate coral from Peyssonnelia unless directly over. Digital still images came out very poor- most blurred, and zoomed to <30 cm field of view. Working to solve problem. Camera unable to focus in dark on auto focus and manual focus not good either.

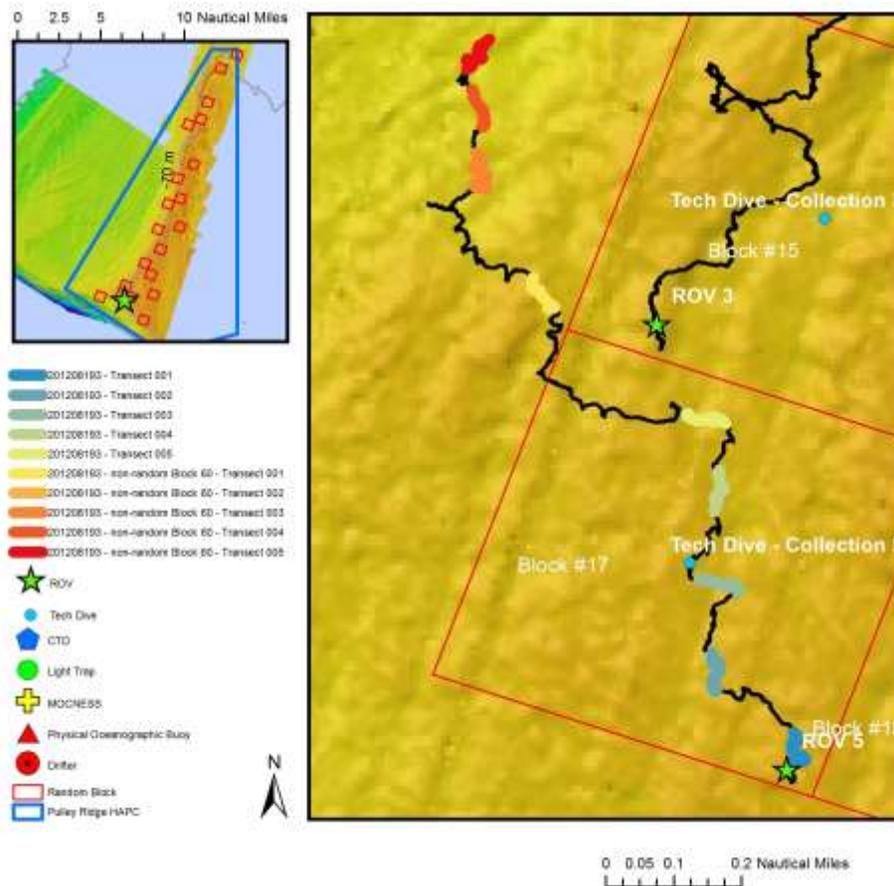
Site Description/Habitat/Biota:

The entire dive transected most of the block from the southwest corner to the north; depth range 66.5 to 69 m. The bottom was fairly consistent. The bottom was 100% hard bottom, flat, and predominantly covered with coral rubble and dead plate coral. There were no ledges or ridges.

Benthic Biota: Benthos dominated by *Anadyomene* (50% cover), *Peyssonnelia*, and coralline algae; macro demosponges were common and diverse, *Xestospongia muta* were common; *Agaricia* corals were sparse and patchy.

Dominant Benthic Taxa: Scleractinia- *Agaricia*, *Madracis/Oculina?*, *Montastraea cavernosa* (1); Hydroida (white, black stinging); Gorgonacea- 3; Antipathidae- *Antipathes* (white mesh fan), *Tanacetipathes*, *Stichopathes*; Actiniaria- *Condylactis gigantea*; Demospongiae- *Agelas*, *Agelas clathrodes*, *Aplysina*, *Cinachyra*, *Geodia*, *Ircinia campana*, *Niphates erecta*, *Plakortis?*, *Polymastia*, *Verongida*, *Xestospongia* (*EB*), *Xestospongia muta* (common); Annelida- *Filograna*; Mollusca- squid, *Triton?*; Arthropoda- *Paguridae*; Ascidiacea- *Didemnidae*; Chlorophyta- *Anadyomene menziesii* (abundant), *Halimeda* (rare), *Ventricaria ventricosa*; Rhodophyta- crustose coralline algae, *Peyssonnelia*, *Botryocladia*; Phaeophyta- *Dictyota* (uncommon).

Fish: *Acanthostracion polygonia* - honeycomb cowfish, *Apogon pseudomaculatus* - twospot cardinalfish, *Apogon* sp. - cardinalfish, *Balistes vetula* - queen triggerfish, *Chaetodon sedentarius* - reef butterflyfish, *Chromis enchrysurus* - yellowtail reeffish, *Decapterus macarellus* - mackerel scad, *Diodon hystrix* - porcupinefish, *Epinephelus morio* - red grouper, *Fistularia tabacaria* - cornetefish, *Gymnothorax moringa* - spotted moray, *Holacanthus tricolor* - rock beauty, *Holocentrus adscensionis* - squirrelfish, *Holocentrus rufus* - longspine squirrelfish, *Inermia vittata* - boga/ *Schultzea beta* - school bass, *Lutjanus analis* - mutton snapper, *Neoniphon marianus* - longjaw squirrelfish, *Priacanthus arenatus* - bigeye, *Pseudupeneus maculatus* - spotted goatfish, *Pterios volitans/miles* - lionfish (3), *Rhomboplites aurorubens* - vermilion snapper, *Sparisoma atomarium* - greenblotch parrotfish, *Sphyrnaena barracuda* - great barracuda, *Stegastes partitus* - bicolor damselfish, unid fish. Sand tilefish burrows present, and one red grouper burrow.



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	267
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	3
Dive #:	ROV 5	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #17	Ship Position System:	DGPS
Date of Dive:	8/19/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	69	Total Transect Length (km):	8.65
Maximum Bottom Depth (m):	74	Surface Current (kn):	0.4
On Bottom (Time- ESDT):	12:12	On Bottom (Lat/Long):	24°43.2565'N; 83°43.7393'W
Off Bottom (Time- ESDT):	16:06	Off Bottom (Lat/Long):	24°43.3507'N; 83°44.1289'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	40
		Current (kn):	0.5



Figure 1: Xestospongia



Figure 2: Lionfish

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 5; Florida, Pulley Ridge HAPC, random block #17, (starting at SE corner); 24° 43.2702'N, 83°43.7490'W, 72 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 17.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~ 30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made; direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Completed 5 transects within block 17. Continued to NW and completed 5 more quantitative photo transects in non-random block 60.

Site Description/Habitat/Biota:

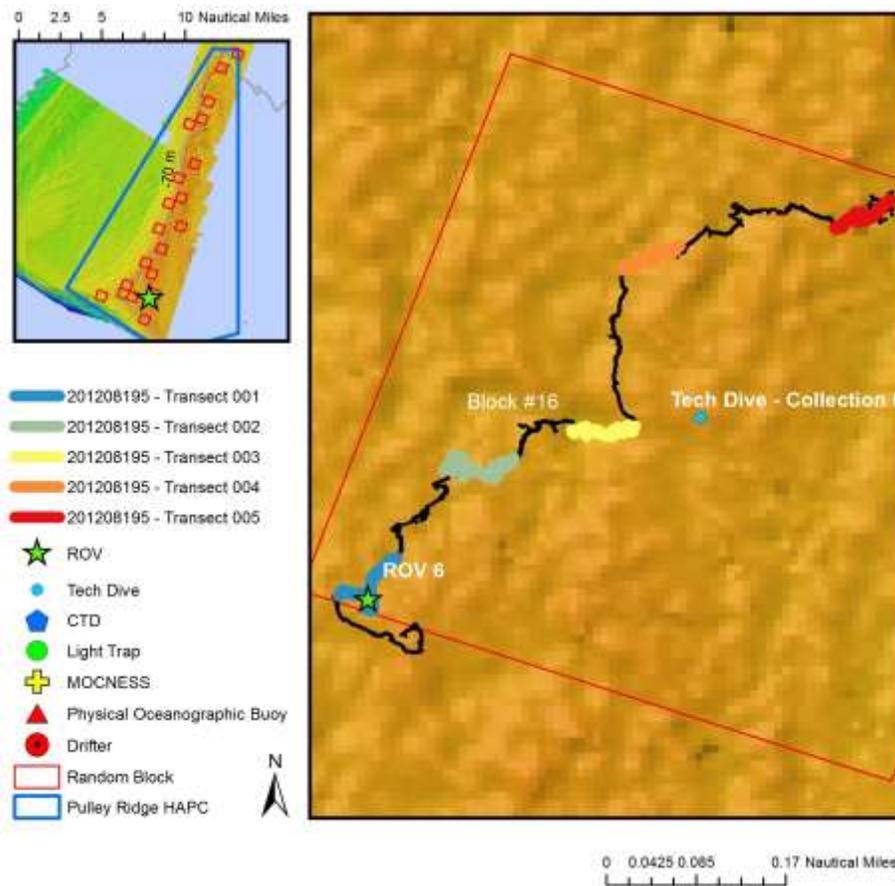
The entire dive transected most of block 17 from the southwest corner to the north; depth range- 69 to 71 m. The bottom was fairly consistent. The bottom was 100% hard bottom, flat, and predominantly covered with coral rubble and dead plate coral. There were no ledges or ridges except for occasional red grouper pits, which have exposed excavated rock burrows in the bottom. Five transects were also conducted in non-random block 60 which was slightly deeper and less biota; depth range 70-74 m.

Benthic Biota: Benthos of block 17 dominated by Anadyomene (50% cover), Peyssonnelia, and coralline algae; macro demosponges were common; Geodia were common, Xestospongia were present; few gorgonians were observed; Agaricia were common but patchy.

Dominant Benthic Taxa: Corals- Agaricia (33 counts), Madracis, Madracis/Oculina?, Montastraea cavernosa (1); Hydroida; Antipathidae- Antipathes, Stichopathes; Hydroida; Actiniaria- Condylactis gigantea; Corallimorpharia; Gorgonacea- Diodogorgia; Demospongiae- Agelas, Aplysina, Callyspongia vaginalis, Ircinia

campana, Polymastia, Ircinia strobilina, Rhaphidophlus?, Xestospongia muta (common); Arthropoda- Stenorhynchus seticornis; Crinoidea- Comatulida; Chlorophyta- Anadyomene menziesii (abundant), Halimeda (small and sparse), Verdigellas; Rhodophyta- Peyssonellia, crustose coralline algae; Phaeophyta- Dictyota (rare).

Fish: Anthias tenuis - threadnose bass, Anthiinae - unid sea bass, Apogon maculatus - flamefish, Apogon pseudomaculatus - twospot cardinalfish, Apogon sp. - cardinalfish, Balistes vetula - queen triggerfish, Ballistae - unid triggerfish, Bodianus pulchellus - spotfin hogfish, Canthidermis sufflamen - ocean trigger, Canthigaster rostrata - sharpnose puffer, Centropyge argi - cherubfish, Cephalopholis cruentata - graysby, Chaetodon aculeatus - longsnout butterflyfish, Chaetodon aculeatus - longsnout butterflyfish, Chaetodon sedentarius - reef butterflyfish, Chaetodontidae - unid butterflyfish, Chromis cyanea - blue chromis, Chromis enchrysurus - yellowtail reeffish, Chromis insolata - sunshinefish, Chromis scotti - purple reeffish, Chromis sp. - unid chromis, Diodon hystrix - porcupinefish, Epinephelus morio - red grouper, Epinephelus morio - red grouper, Gobiidae - unid goby, Halichoeres sp. - unid wrasse, Holacanthus tricolor - rock beauty, Holocentrus adscensionis - squirrelfish, Inermia vittata - boga/ Schultzea beta - school bass, Liopropoma eukrines - wrasse bass, Lutjanus analis - mutton snapper, Monacanthus tuckeri - slender filefish, Mycteroperca bonaci - black grouper, Mycteroperca interstitailis - yellowmouth grouper, Mycteroperca phenax - scamp, Neoniphon marianus - longjaw squirrelfish, Pomacanthus paru - french angelfish, Pomacentridae - unid damselfish, Pseudupeneus maculatus - spotted goatfish, Pterios volitans/miles - lionfish (80), Seriola dumerili - greater amberjack, Serranidae - unid sea bass, Serranus annularis - orangeback seabass, Serranus tortugarum - chalk bass, Serranus spp - unid sea bass, Seriola dumerili - greater amberjack, Sparisoma atomarium - greenblotch parrotfish, Stegastes partitus - bicolor damselfish (1), red grouper burrows (>12) .



Dive Overview:

Project:	University of Miami Pulley Ridge	Sensors Used:	Depth (m), GPS
Principal Investigator:	Robert Cowen	Digital Photos:	143
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	3
Dive #:	ROV 6	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #16	Ship Position System:	DGPS
Date of Dive:	8/19/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	67	Total Transect Length (km):	6.27
Maximum Bottom Depth (m):	68	Surface Current (kn):	0.5
On Bottom (Time- ESDT):	21:27	On Bottom (Lat/Long):	24°43.3358'N ; 83°42.2975'W
Off Bottom (Time- ESDT):	23:50	Off Bottom (Lat/Long):	24°43.7525'N ; 83°41.8368'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	
		Current (kn):	



Figure 1: Lobster

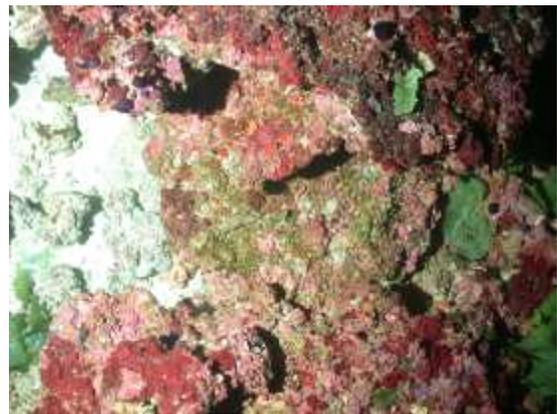


Figure 2: Dead Montastrea coral

Notes (Objectives, Site Description, Habitat, Fauna):

Site/Objectives:

UNCW Super Phantom - ROV 6; Florida, Pulley Ridge HAPC, random block #16, (starting at SW corner); 24° 43.3692'N, 83°42.3334'W, 68 m . Conduct ROV video/photo survey; conduct five - 100 m random transects within block 16.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~ 30 sec. Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~ 30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made. Direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Night dive- visibility of effective lights ~1.5-2 m. Difficult to differentiate live plate coral from Peyssonnelia unless directly over. Camera unable to focus in dark on auto focus and manual focus not good either. After launch tracking started jumping 50-100 m then cleared up after 10 minutes.

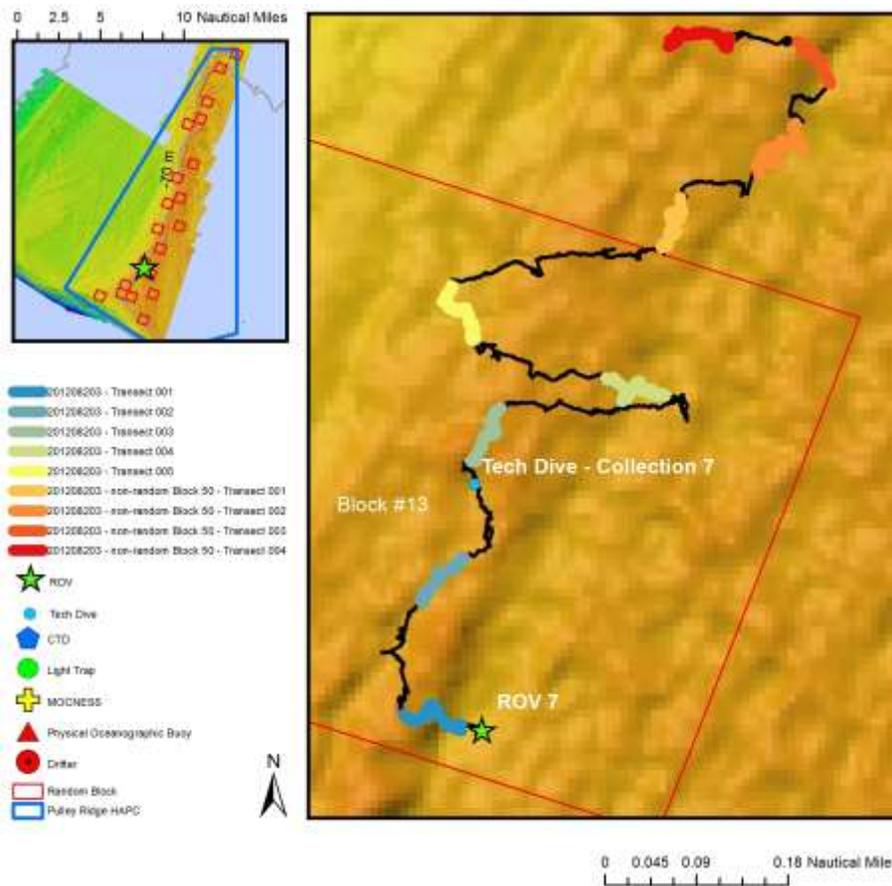
Site Description/Habitat/Biota:

The entire dive transected most of block 16 from the southwest corner to the north; depth range- 67 to 68 m. The bottom was fairly consistent. The bottom was 100% hard bottom, flat, and predominantly covered with coral rubble and dead plate coral. There were no ledges or ridges except for numerous apparent bluetile mounds (1/2 m diam) with associated excavated pit.

Benthic Biota: Benthos dominated by *Anadyomene* (30-50% cover), *Peyssonnelia*, and coralline algae; macro demosponges were common; *Geodia* were common, *Xestospongia* were present; gorgonians were rare; *Agaricia* were common but patchy; several *Montastraea* were present. There was some variation among the transects; some had more coral and sponges than others.

Dominant Benthic Taxa: Scleractinia- *Agaricia* (common), *Montastraea cavernosa* (11), *Madracis/Oculina?* (1); Gorgonacea- *Diodogorgia?*, *Telesto*; Hydroida; Actiniaria- *Condylactis gigantea*; Antipatharia- *Stichopathes*; Demospongiae- *Agelas clathrodes*, *Agelas*, *Aplysina*, *Callyspongia vaginalis*, *Cinachyra*, *Geodia*, *Ircinia campana*, *Polymastia*, *Xestospongia muta* (21); Mollusca- squid; Arthropoda- *Panulirus argus* (1), *Periclimenes* (on honeycomb cowfish), decorator crab; Crinoidea- *Comatulida*; Echinoidea (1); Ophiuroidea; Ascidiacea- *Eudistoma* (white mushroom); Chlorophyta- *Anadyomene menziesii*, *Halimeda* (1), *Verdigellas*; Rhodophyta- *Peyssonnelia*, crustose coralline algae; Phaeophyta- *Dictyota*, *Lobophora* (patchy, dense).

Fish: *Acanthostracion polygonia* - honeycomb cowfish, *Apogon pseudomaculatus* - twospot cardinalfish, *Apogon* sp. - cardinalfish, *Aulostomus maculatus* - trumpetfish, *Chaetodon sedentarius* - reef butterflyfish, *Chromis enchrysurus* - yellowtail reeffish, *Chromis insolata* - sunshinefish, *Chromis* sp. - chromis, *Decapterus macarellus* - mackerel scad, *Diodon hystrix* - porcupinefish, *Gymnothorax moringa* - spotted moray, *Haemulon striatum* - striped grunt, *Holocentrus adscensionis* - squirrelfish, *Inermia vittata* - boga, *Monacanthus tuckeri* - slender filefish, *Neoniphon marianus* - longjaw squirrelfish, *Pseudupeneus maculatus* - spotted goatfish, *Pterios volitans/miles* - lionfish, *Schultzea beta* - school bass, *Serraniculus pumilio* - pygmy sea bass, *Sparisoma atomarium* - greenblotch parrotfish, *Stegastes partitus* - bicolor damselfish (very few), *Synodus* sp. - lizardfish, unid eel, unid fish; numerous apparent sandtile mounds.



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	258
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	4
Dive #:	ROV 7	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #13	Ship Position System:	DGPS
Date of Dive:	8/20/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, John Reed, Kevin Rademacher, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	65	Total Transect Length (km):	9.30
Maximum Bottom Depth (m):	70	Surface Current (kn):	0.02
On Bottom (Time- ESDT):	12:20	On Bottom (Lat/Long):	24°45.1920'N; 83°42.5326'W
Off Bottom (Time- ESDT):	16:18	Off Bottom (Lat/Long):	24°45.8678'N; 83°42.3500'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	30
		Current (kn):	0.25



Figure 1: Anadyomene



Figure 2: small Agaracia

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 7; Florida, Pulley Ridge HAPC, random block #13; 24°45.7229'N, 83°42.9753'W, 66 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 13.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20o with 15 cm parallel lasers; digital still camera pointed down 90o with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made; direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Completed 5 transects within block 13. Continued to NE and completed 4 more quantitative photo transects in non-random block 50 and ground truthed multibeam map (Naar).

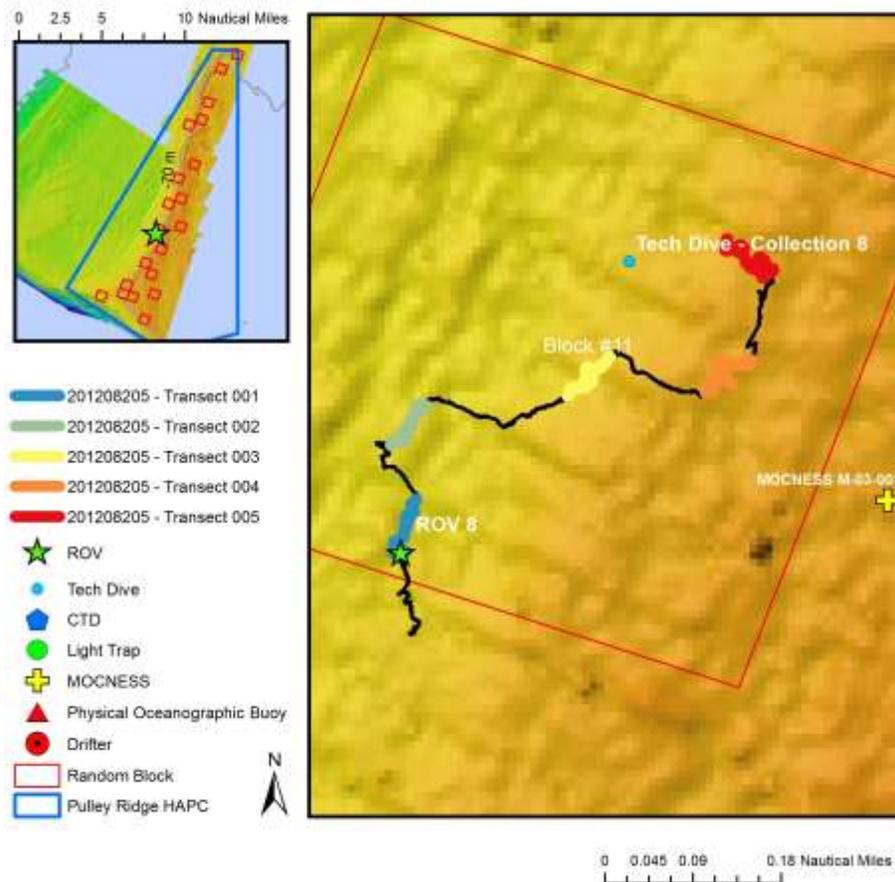
Site Description/Habitat/Biota:

The dive transected block 13 from the south to north; depth range- 65 to 70 m. The bottom was fairly consistent. The bottom was 100% hard bottom, flat, and predominantly covered with coral rubble and dead plate coral. There were no ledges or ridges except for occasional red grouper pits, which have exposed excavated rock burrows in the bottom. The second set of 4 transects continued into non-random block 50. Ground-truthed strong NNE-SSW linear ledge on multibeam map (XS-3); base was 68.8 m, top was 66.5 m, 100 m to the west; no obvious slope was apparent in the video, no ledges, and habitat remained constant.

Benthic Biota: Benthos of block 13 dominated by Anadyomene (50% cover), Peyssonnelia, and coralline algae; macro demosponges were common but not abundant; Geodia were common, Xestospongia were present; gorgonians were very rare; Agaricia were rare and patchy. Transect 1 in block 50 had fairly dense but patchy areas of Agaricia, and some Montastraea. Rubble mounds of 1/2 to 1 m diameter were common, most with excavation pit at base. Larger red grouper burrows usually had several lionfish.

Dominant Benthic Taxa: Scleractinia- Agaricia (common but patchy, 26), Montastraea (4); Antipathidae- Antipathes, Tanacetipathes, Stichopathes; Actiniaria- Condylactis gigantea; Corallimorpharia; Gorgonacea- Diodogorgia; Hydroida; Demospongiae- Agelas, Agelas clathrodes, Erylus, Callyspongia vaginalis, Geodia, Ircinia campana, Niphates erecta, Plakortis?, Polymastia, Pseudoceratina crassa?, Xestospongia muta (common, 21); Annelida- Filograna; Crinoidea- Comatulida; Arthropoda- Thor amboinensis; Ascidiacea- Eudistoma; Chlorophyta- Halimeda, Anadyomene menziesii, Verdigellas; Rhodophyta- crustose coralline algae, Peyssonellia; Phaeophyta - Dictyota, Lobophora.

Fish: Acanthostracion polygonia - honeycomb cowfish, Apogon maculatus - flamefish, Apogon sp. - cardinalfish, Balistes vetula - queen triggerfish, Bodianus pulchellus - spotfin hogfish, Canthigaster rostrata - sharpnose puffer, Centropyge argi - cherubfish, Chaetodon aculeatus - longsnout butterflyfish, Chaetodon sedentarius - reef butterflyfish, Chromis cyanea - blue chromis, Chromis enchrysurus - yellowtail reeffish, Chromis insolata - sunshinefish, Chromis scotti - purple reeffish, Chromis sp. - unid chromis, Decapterus macarellus - mackerel scad, Epinephelus morio - red grouper, Holacanthus bermudensis - blue angelfish, Holacanthus tricolor - rock beauty, Holocentrus adscensionis - squirrelfish, Holocentrus rufus - longspine squirrelfish, Inermia vittata - boga, Liopropoma eukrines - wrasse bass, Lutjanus analis - mutton snapper, Monacanthus tuckeri - slender filefish, Mycteroperca bonaci - black grouper, Mycteroperca interstitailis - yellowmouth grouper, Mycteroperca phenax - scamp, Neoniphon marianus - longjaw squirrelfish, Pomacanthus sp. - unid angelfish, Pterios volitans/miles - lionfish, Seriola dumerili - greater amberjack, Seriola rivoliana - almaco jack, Serranus annularis - orangeback seabass, Serranus tortugarum - chalk bass, Sparisoma atomarium - greenblotch parrotfish, Stegastes partitus - bicolor damselfish (few). Few red grouper burrows, 1/2 m rubble mounds with associated excavated pits were common, but patchy.



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	174
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	3
Dive #:	ROV 8	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #11	Ship Position System:	DGPS
Date of Dive:	8/20/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, Glenn Taylor, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	68	Total Transect Length (km):	5.57
Maximum Bottom Depth (m):	74	Surface Current (kn):	0.4
On Bottom (Time- ESDT):	20:59	On Bottom (Lat/Long):	24°47.1901'N; 83°41.8964'W
Off Bottom (Time- ESDT):	23:44	Off Bottom (Lat/Long):	24°47.5890'N; 83°41.5782'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	
		Current (kn):	



Figure 1: Lionfish



Figure 2: rubble habitat

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 8; Florida, Pulley Ridge HAPC, random block #11; 24°47.2675'N, 83°42.9104'W, 66 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 11.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made. Direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Night dive- visibility of effective lights ~2 m. Difficult to differentiate live plate coral from Peyssonnelia unless directly over. Camera unable to focus in dark on auto focus and manual focus not good either. Tracking jumping 10-20+ m during dive.

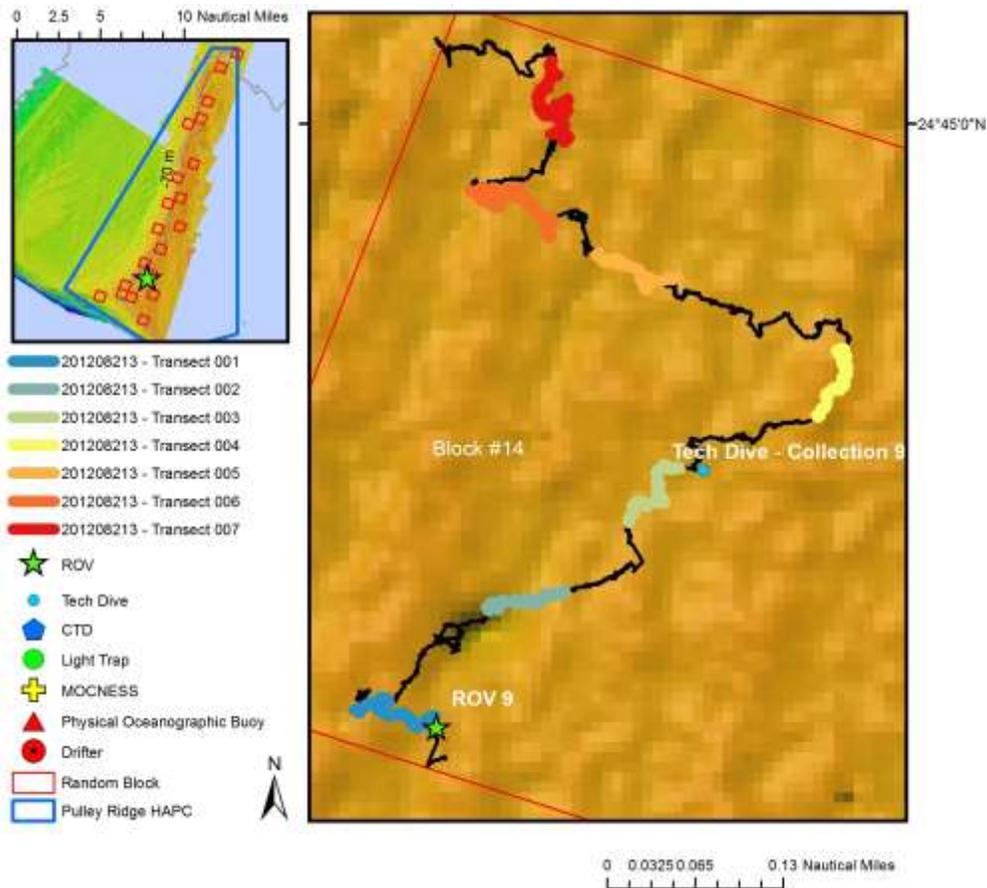
Site Description/Habitat/Biota:

The dive transected block 11 from the southwest to northeast, crossing low flat region of multibeam to higher NE-SW ridges to the eastern portion of the block; depth range- 68 to 74 m. The bottom was fairly consistent but showed obvious gradation in biota and habitat from 68 m to 74 m. The deeper region to the west was relatively flat, hard bottom but was 80-90% cover of dead coral plate/coral rubble and 10-20% sand patches. Anadyomene in this region was sparser (20-30% cover), smaller, and less vibrant green than the other sites. The shallower region on the ridges (68 m) had denser and larger Anadyomene.

Benthic Biota: Benthos in the deeper region had a number of new species for the cruise- *Aphanipathes*, *Cribrochalina vasculum*, large red blade algae, and possibly different dark purple *Peyssonnelia*. Several large red grouper burrows provided habitat for numerous small reef fish, and some with lionfish. *Agaricia* were common and patchy in some transects but sparse in others.

Dominant Benthic Taxa: Scleractinia- *Agaricia* (common, 19); *Leptoseris*; *Madracis formosa* (branching brown pencil coral), *Scolymia*; Antipathidae- *Antipathes*, *Aphanipathes?*, *Stichopathes*; Corallimorpharia; Gorgonacea- *Diodogorgia*; Hydroida; Demospongiae; *Agelas*, *Aplysina*, *Astrophorida*, *Axinellidae*, *Cinachyra*, *Cribrochalina vasculum*, *Erylus*, *Geodia*, *Ircinia* sp., *Ircinia campana*, *Niphates erecta*, *Xestospongia muta*; Annelida- *Sabellidae* (feather duster worms); Mollusca- squid; Crinoidea- *Comatulida*; Echinoidea- *Arbacia punctulata*; Ascidiacea- *Didemnidae*; Chlorophyta- *Anadyomene menziesii*, *Halimeda*, *Verdigellas*; Rhodophyta- crustose coralline algae, *Peyssonnelia*, large red blade algae; Phaeophyta- *Dictyota*.

Fish: *Acanthostracion polygonia* - honeycomb cowfish, *Acanthostracion quadricornis* - scrawled cowfish, *Apogon pseudomaculatus* - twospot cardinalfish, *Apogon* sp. - cardinalfish, *Aulostomus maculatus* - trumpetfish, *Calamus bajonado* - jolthead porgy, *Calamus nodosus* - knobbed porgy, *Chaetodon sedentarius* - reef butterflyfish, *Chromis enchrysurus* - yellowtail reeffish, *Chromis scotti* - purple reeffish, *Decapterus macarellus* - mackerel scad, *Epinephelus morio* - red grouper, *Haemulon striatum* - striped grunt, *Holacanthus bermudensis* - blue angelfish, *Inermia vittata* - boga, *Myripristis jacobus* - Blackbar soldier, *Neoniphon marianus* - longjaw squirrelfish, *Pseudupeneus maculatus* - spotted goatfish, *Pterios volitans/miles* - lionfish, *Rhomboplites aurorubens* - vermilion snapper, *Schultzea beta* - school bass, *Sparisoma atomarium* - greenblotch parrotfish, *Sphyrna barracuda* - great barracuda. Several large red grouper burrows with associated fish and lionfish.



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	195
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	4
Dive #:	ROV 9	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #14	Ship Position System:	DGPS
Date of Dive:	8/21/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, John Reed, Kevin Rademacher, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	66	Total Transect Length (km):	7.87
Maximum Bottom Depth (m):	69	Surface Current (kn):	1
On Bottom (Time- ESDT):	12:18	On Bottom (Lat/Long):	24°44.5293'N ; 83°42.3707'W
Off Bottom (Time- ESDT):	15:43	Off Bottom (Lat/Long):	24°45.0570'N ; 83°42.3730'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	30
		Current (kn):	



Figure 1: Xestospongia and Porites



Figure 2: Montastrea

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

ROV 9; Florida, Pulley Ridge HAPC, random block #14; 24°44.5523'N, 83°42.3771'W, 65.4 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 14.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20o with 15 cm parallel lasers; digital still camera pointed down 90o with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~ 30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made; direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Completed 5 transects within block 13. Continued to NW and completed 2 more quantitative photo transects within the block to make up for transects 1 and 2 which were a little fast (<10 minutes), and had fewer photos than normal due to combination of wind and current. Also ground-truthed features of multibeam map (Naar).

Site Description/Habitat/Biota:

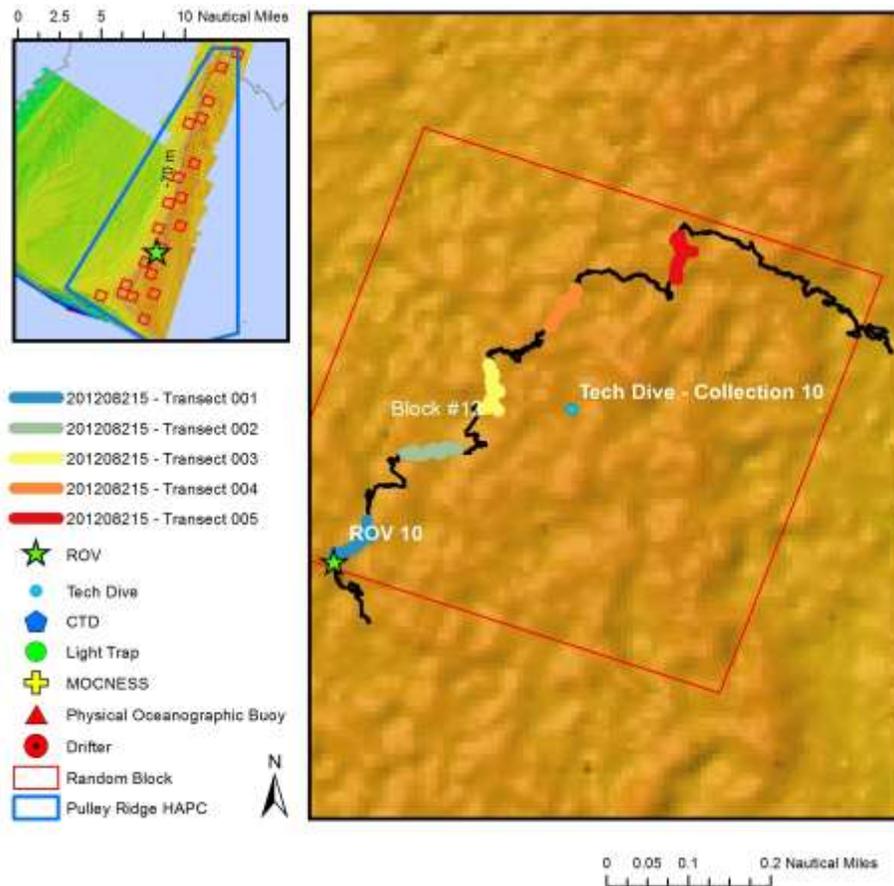
The dive transected block 14 from the southwest to north; depth range- 66 to 69 m. The bottom was very consistent. The bottom was 100% hard bottom, flat, and predominantly covered with dead plate coral forming almost pavement structure, with little coral rubble. There were no ledges or ridges except for occasional red grouper pits and small rubble mounds (sandtile? burrows), which have exposed excavated rock burrows in the bottom. The transects showed some variability with the first 2 having more sandtile rubble mounds.

Benthic Biota: Benthos of block 14 was dominated by Anadyomene (50% cover) and coralline algae with some Peyssonnelia; macro demosponges were common but not abundant nor diverse; Geodia were common, Xestospongia were present; no gorgonians were observed; Agaricia and Montastraea were very patchy; some sites near the center of the block had patches of 5-10 m² of dense coral; this block had the most Montastraea

observed to date on the cruise. One large *Siderastrea siderea*? (~1.5 m diameter, very flat) was observed for first time.

Dominant Benthic Taxa: Coral - *Siderastrea siderea* (1), *Agaricia* (common, 28), *Montastraea cavernosa* (common in patches, 14), *Scolymia*, *Madracis formosa*; Antipathidae- *Antipathes caribbeana*? *Stichopathes*; *Corallimorpharia*; *Hydroida*; *Demospongiae*- *Agelas* (plate, fan, vase, hollow tube), *Aplysina fistularis*, *Aplysina* sp., *Bubaris*?, *Callyspongia vaginalis*, *Callyspongia* sp., *Erylus*?, *Geodia*, *Niphates erecta*, *Polymastia*, *Xestospongia muta* (common); *Annelida*- *Filograna*; *Bryozoa*; *Arthropoda*- *Periclimenes*, *Stenorhynchus seticornis*, *Panulirus argus*; *Crinoidea*- *Comatulida*; *Echinoidea*- *Centrostephanus*; *Asciacea*- *Eudistoma*; *Chlorophyta*- *Anadyomene menziesii*, *Halimeda*, *Verdigellas*; *Rhodophyta*- crustose coralline algae, *Peyssonellia*; *Phaeophyta*- *Dictyota*, *Lobophora*.

Fish: *Acanthostracion polygonia* - honeycomb cowfish, *Acanthostracion quadricornis* - scrawled cowfish, *Apogon maculatus* - flamefish, *Balistes vetula* - queen triggerfish, *Bodianus pulchellus* - spotfin hogfish, *Canthigaster rostrata* - sharpnose puffer, *Centropyge argi* - cherubfish, *Cephalopholis cruentata* - graysby, *Chaetodon aculeatus* - longsnout butterflyfish, *Chaetodon sedentarius* - reef butterflyfish, *Chromis cyanea* - blue chromis, *Chromis enchrysurus* - yellowtail reeffish, *Chromis insolata* - sunshinefish, *Chromis scotti* - purple reeffish, *Chromis* sp. - unid chromis, *Epinephelus morio* - red grouper, *Gymnothorax moringa* - spotted moray, *Holacanthus bermudensis* - blue angelfish, *Holacanthus tricolor* - rock beauty, *Holocentrus adscensionis* - squirrelfish, *Inermia vittata* - boga, *Liopropoma eukrines* - wrasse bass, *Lutjanus cyanopterus* - cubera snapper, *Malacanthus plumieri* - sand tilefish, *Mycteroperca interstitailis* - yellowmouth grouper, *Mycteroperca phenax* - scamp, *Myripristis jacobus* - blackbar soldier, *Neoniphon marianus* - longjaw squirrelfish, *Pterios volitans/miles* - lionfish, *Serranus annularis* - orangeback seabass, *Serranus tortugarum* - chalk bass, *Sparisoma atomarium* - greenblotch parrotfish, *Sphyrnaena barracuda* - great barracuda, *Stegastes partitus* - bicolor damselfish (very few). Red grouper burrows and sandtile rubble mounds were common,



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	158
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	3
Dive #:	ROV 10	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #12	Ship Position System:	DGPS
Date of Dive:	8/21/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, Glenn Taylor, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	65	Total Transect Length (km):	7.83
Maximum Bottom Depth (m):	68	Surface Current (kn):	0.8
On Bottom (Time- ESDT):	20:38	On Bottom (Lat/Long):	24°46.0144'N; 83°41.8324'W
Off Bottom (Time- ESDT):	23:35	Off Bottom (Lat/Long):	24°46.3558'N; 83°41.1992'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	15
		Current (kn):	



Figure 1: Montastraea



Figure 2: Xestospongia

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 10; Florida, Pulley Ridge HAPC, random block #12; 24°46.0886'N 83°41.8745'W, 67.5 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 12; ground-truth features of multibeam (Naar).

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made. Direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Night dive- visibility of effective lights ~2-3 m. Difficult to differentiate live plate coral from Peyssonnelia unless directly over. Camera unable to focus in dark on auto focus and manual focus not good either.

Site Description/Habitat/Biota:

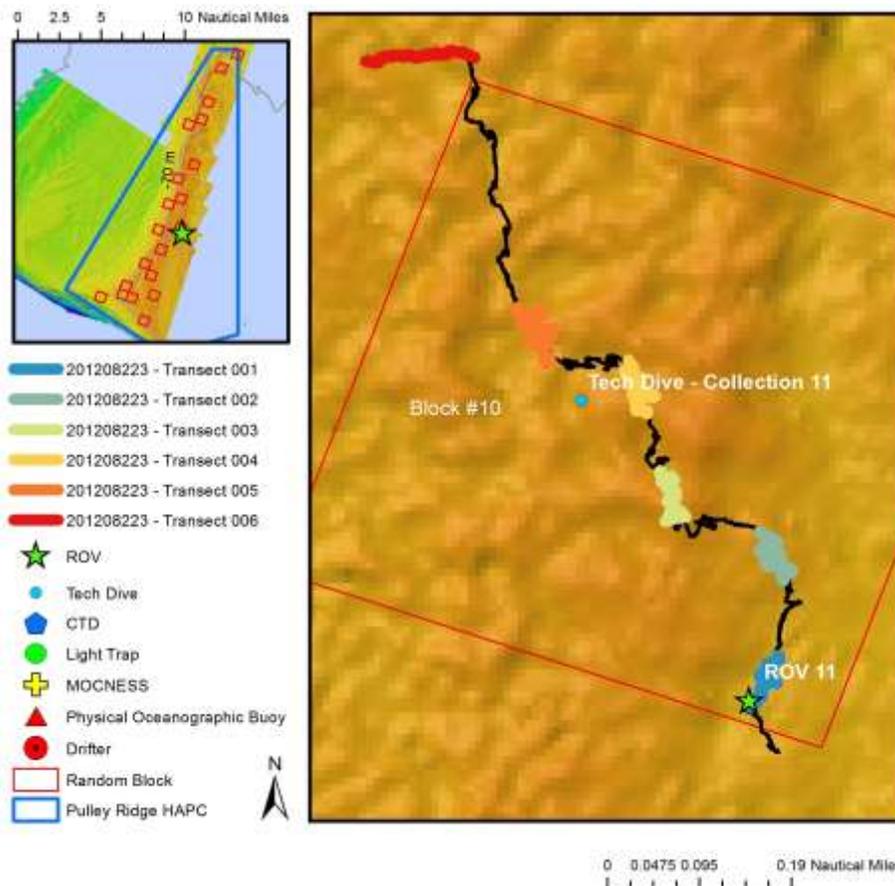
The dive transected block 10 from the southwest to northeast; depth range- 65 to 68.5 m. The bottom was fairly consistent. The bottom was 100% hard bottom, flat, and predominantly covered with dead plate coral and coral rubble. There were no ledges or ridges except for occasional red grouper pits and small rubble mounds (sandtile? burrows), which have exposed excavated rock burrows in the bottom. Following the 5 quantitative transects a qualitative transect was made at the east edge of the box and east of the box to

ground-truth the multibeam which shows the eastern 'slope' of Pulley Ridge and the low relief flat at the base. This slope dropped from 66 m to 68.5 m over 150 m, with little change in biota but changing to 10-30% sediment patches on the lower slope and flat.

Benthic Biota: Benthos of block 10 was dominated by *Anadyomene* (50% cover) and coralline algae and *Peyssonnelia*; macro demosponges were common and fairly diverse; *Xestospongia* were common; gorgonians were rare; *Agaricia* and *Montastraea* were very patchy and sparse.

Dominant Benthic Taxa: Coral- *Agaricia* (patchy, 18), *Montastraea* (uncommon, 6), *Madracis* (rare); Antipatharia- *Antipathes* (common), *Stichopathes*; Hydroida; Actiniaria- *Condylactis gigantea*; Gorgonacea (rare)- *Diodogorgia*; Demospongiae- *Agelas*, *Agelas clathrodes*, *Aplysina*, *Aplysina fistularis?*, *Callyspongia vaginalis*, *Cinachyra*, *Geodia*, *Ircinia*, *Ircinia campana*, *Niphates erecta* (on east slope), *Polymastia*, *Pseudoceratina crassa*, *Xestospongia muta* (common, 17); Annelida- Sabellidae; Mollusca- spiny oyster, squid; Arthropoda- Paguridae, shrimp; Bryozoa; Crinoidea- Comatulida (2 spp, 15 cm, and small); Echinoidea- *Arbacia punctulata*; Ophiuroidea; Ascidiacea- *Eudistoma*, Didemnidae; Chlorophyta- *Anadyomene menziesii* (abundant), *Halimeda* (uncommon), *Ventricaria*; Rhodophyta- crustose coralline algae, *Peyssonnelia*; Phaeophyta- *Dictyota*, *Lobophora* (patchy, dense). Human debris- one ghost trap with long line.

Fish: *Acanthostracion polygonia* - honeycomb cowfish, *Apogon pseudomaculatus* - twospot cardinalfish, *Apogon* sp. - cardinalfish, *Calamus* spp - unid porgy, *Carcharhinus* sp. - unid shark, *Centropyge argi* - cherubfish, *Chaetodon sedentarius* - reef butterflyfish, *Chromis enchrysurus* - yellowtail reeffish, *Chromis scotti* - purple reeffish, *Chromis* sp. - unid chromis, *Decapterus macarellus* - mackerel scad, *Diodon hystrix* - porcupinefish, *Gymnothorax moringa* - spotted moray, *Haemulon striatum* - striped grunt, *Halichoeres* sp. - unid wrasse, *Holacanthus bermudensis* - blue angelfish, *Holocentrus adscensionis* - squirrelfish, *Inermia vittata* - boga, *Inermia vittata* - boga/ *Schultzea beta* - school bass, *Liopropoma eukrines* - wrasse bass, *Lutjanus analis* - mutton snapper, *Neoniphon marianus* - longjaw squirrelfish, *Pterios volitans/miles* - lionfish, *Rhomboplites aurorubens* - vermilion snapper, *Schultzea beta* - school bass, *Sparisoma atomarium* - greenblotch parrotfish, *Stegastes partitus* - bicolor damselfish (few), *Synodus* sp. - lizardfish, sand tilefish mounds with excavated pits common.



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	205
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	4
Dive #:	ROV 11	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #10	Ship Position System:	DGPS
Date of Dive:	8/22/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, Glenn Taylor, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	64.5	Total Transect Length (km):	8.28
Maximum Bottom Depth (m):	68.5	Surface Current (kn):	0.6
On Bottom (Time- ESDT):	12:22	On Bottom (Lat/Long):	24°47.2747'N ; 83°40.3017'W
Off Bottom (Time- ESDT):	15:50	Off Bottom (Lat/Long):	24°47.9875'N ; 83°40.7194'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	50
		Current (kn):	



Figure 1: Halimeda



Figure 2: Halimeda

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 11; Florida, Pulley Ridge HAPC, random block #10; 24°47.3255'N, 83°40.3248'W, 66 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 10; ground-truth features of multibeam (Naar).

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20o with 15 cm parallel lasers; digital still camera pointed down 90o with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made; direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Completed 5 transects within block 11. Continued to the NW corner of box and moved north 75 m to repeat part of previous transect made by HBOI in 2011 with Kraken ROV which was a repeat of USGS SEABOSS transect in 2002. Plotted 3 waypoints over ~200 m where we had logged Agaricia and Montastraea in 2011 and repeated the same line with 30 sec quantitative photos and video. Also ground-truthed features of multibeam map (Naar); primarily the east slope and base of the eastern ridge of Pulley Ridge.

Site Description/Habitat/Biota:

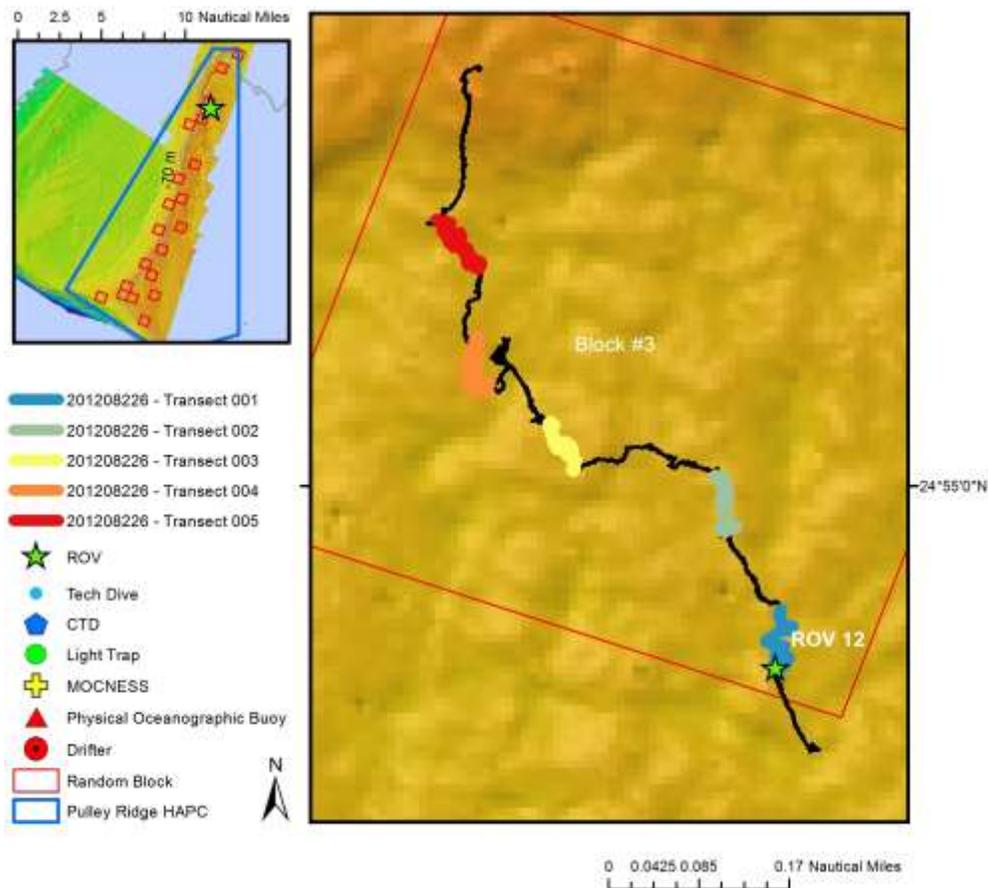
Habitat and Benthic Biota: The dive transected block 10 from the southeast to northwest; depth range- 64.5 to 68.5 m. Dive divided into three parts: Transect 1 parallel N along the base of the eastern ridge slope; depth ~68.5. The bottom had more sediment and rubble than the previous sites. Hard bottom with rock rubble and cobble, but not much solid coral plates or pavement, interspersed with 30-50% cover of sediment. Anadyomene was 10-20% cover, large bladed Rhodophyta and Halimeda was common. Sponges were present; no coral were observed. Sandtile fish mounds (1/2 to 1 m) with excavated pit were common with associated yellowtail reef fish, purple reef fish, and some lionfish. Transect 2 and interim transect went from the base of

the ridge slope (68.5 m), west upslope to the top of the east ridge (66.5). The remaining transects 3-5 were on top of the ridge region, mostly 65-66.5 m. This region was the typical consistent dead coral plate pavement, coral rubble, with dense cover of *Peyssonnelia*, crustose corallines, *Peyssonnelia*, and *Lobophora*. The central area had several patches of *Montastraea cavernosa* colonies; each patch often 5 m or so diameter with 5-10 separate colonies. *Agaricia* were patchy but not uncommon too. The third part of the dive was outside of block 10; 75 m north of the NW corner. This was a photo transect which repeated a segment of HBOI Kraken ROV dive in 2011 and USGS SEABOSS dive in 2002. Two waypoints that were logged as *Montastraea* and *Agaricia* sightings from the 2011 dive were repeated. This segment was 66.5 to 67.5 m deep, and had the same bottom habitat as the previous transects 3-5 of this dive. The bottom was primarily dead plate coral pavement with dense cover of *Anadyomene*, crustose coralline, some sponges, and patches of *Montastraea* and *Agaricia*. *Montastraea* was more common and some were seen right near the starting waypoint 1. The resolution of the navigation of the three ROV dives is probably on the order of 10-20 m, so a specific overlay of video is not possible.

Dominant Benthic Taxa: Coral- *Agaricia* (11 patches); *Montastraea* (15); Antipathidae- *Stichopathes*; Corallimorpharia, *Hydroida*;

Demospongiae- *Aplysina*, *Geodia*, *Ircinia campana*, *Niphates erecta*, *Polymastia*, *Xestospongia muta*; Sabellidae- Feather Duster worms; Echinoidea- *Centrostephanus*; Crinoidea- *Comatulida*; Ascidiacea- *Eudistoma*, *Didemnidae*; Chlorophyta- *Anadyomene menziesii*; *Codium*; *Halimeda*; Rhodophyta- Red Blade, *Peyssonnelia*, crustose coralline algae; Phaeophyta- *Dictyota*, *Lobophora*, *Sargassum*.

Fish- *Acanthurus* sp. - unid surgeonfish, *Bodianus pulchellus* - spotfin hogfish, *Canthigaster rostrata* - sharpnose puffer, *Centropyge argi* - cherubfish, *Chaetodon aculeatus* - longsnout butterflyfish, *Chaetodon sedentarius* - reef butterflyfish, *Chromis cyanea* - blue chromis, *Chromis enchrysurus* - yellowtail reeffish, *Chromis insolata* - sunshinefish, *Chromis scotti* - purple reeffish, *Epinephelus morio* - red grouper, *Equetus lanceolatus* - jackknife fish, *Gobiidae* - unid goby, *Gymnothorax moringa* - spotted moray, *Haemulon album* - margate, *Haemulon striatum* - striped grunt, *Halichoeres bathyphilus* - greenband wrasse, *Halichoeres* sp. - unid wrasse, *Holacanthus bermudensis* - blue angelfish, *Holacanthus tricolor* - rock beauty, *Holocentrus adscensionis* - squirrelfish, *Inermia vittata* - boga, *Liopropoma eukrines* - wrasse bass, *Lutjanus analis* - mutton snapper, *Malacanthus plumieri* - sand tilefish, *Monacanthus tuckeri* - slender filefish, *Neoniphon marianus* - longjaw squirrelfish, *Pseudupeneus maculatus* - spotted goatfish, *Pterios volitans/miles* - lionfish, *Serranus annularis* - orangeback seabass, *Serranus tortugarum* - chalk bass, *Sparisoma atomarium* - greenblotch parrotfish, *Sphyraena barracuda* - great barracuda, *Stegastes partitus* - bicolor damselfish (common).



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	180
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	3
Dive #:	ROV 12	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #03	Ship Position System:	DGPS
Date of Dive:	8/22/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, Glenn Taylor, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	66	Total Transect Length (km):	7.48
Maximum Bottom Depth (m):	71	Surface Current (kn):	0.2
On Bottom (Time- ESDT):	21:04	On Bottom (Lat/Long):	24°54.7551'N; 83°38.6122'W
Off Bottom (Time- ESDT):	0:09	Off Bottom (Lat/Long):	24°55.3914'N; 83°38.9260'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	
		Current (kn):	



Figure 1: coralline algae



Figure 2: Montastrea

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

ROV 12; Florida, Pulley Ridge HAPC, random block #03; 24°54.8280'N, 83°38.6473'W, 68.4 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 03; ground-truth features of multibeam (Naar).

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made. Direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Night dive- visibility of effective lights ~2-3 m. Difficult to differentiate live plate coral from Peyssonnelia unless directly over. Camera unable to focus in dark on auto focus and manual focus not good either. Lasers stopped working at photo 117-180.

Site Description/Habitat/Biota:

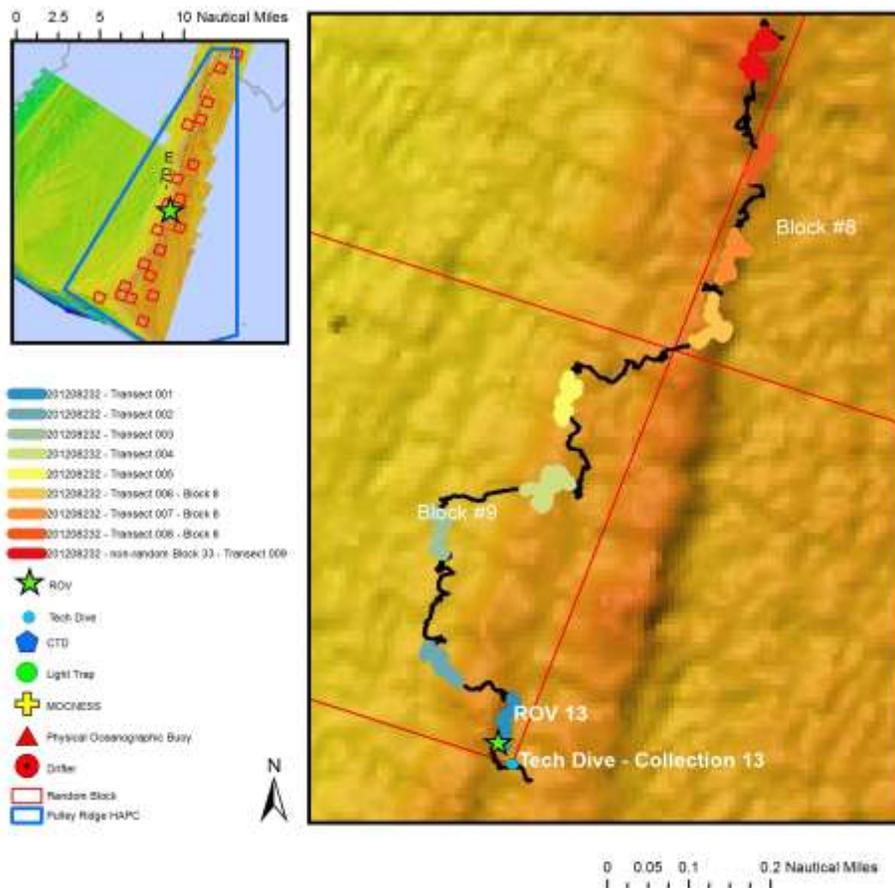
The dive transected block 03 from the southeast to northwest corner; depth range- 66 to 71 m. Most of the block was very consistent; 69-70 m; hard bottom, flat, and predominantly covered with dead plate coral, and rock rubble/cobble with sediment patches of 30-50% cover. There were no ledges or ridges except for one red grouper burrow and small sand tilefish mounds, mostly near the end of the transect. Following transect 5, we

ground-truthed the multibeam in the northwest corner, transecting north, upslope from 69.5 m to 66 m at the top of the feature over a linear distance of ~150 m. No change was obvious in the video, except for the lack of large red blade algae on top, and the presence of *Lobophora* on top.

Benthic Biota: Benthos of block 03 was dominated by *Anadyomene* (30% cover), coralline algae, *Peyssonnelia* and large blade *Rhodophyta* were common; macro demosponges were common and diverse but not abundant; *Xestospongia muta* were present but not common. No gorgonians were observed; *Antipathes* (fine mesh fans) were common. Only a few *Agaricia* and *Montastraea* were observed except for one large patch of *Agaricia* which showed up immediately upon ending transect 5. Dozens of small (5-10 cm) colonies occurred over ~30 m stretch.

Dominant Benthic Taxa: Coral- *Agaricia*; *Montastraea cavernosa*; Actinaria- *Condylactis gigantea*, Antipathidae- *Antipathes*, *Stichopathes*; Hydroida; Demospongiae- *Aplysina*, *Astrophorida*, *Axinellidae*, *Dictyoceratida*- *Ciocalyptra?*, *Geodia*, *Ircinia campana*, *Ircinia strobilina*, *Xestospongia muta*; Annelida- *Hermodice carunculata*; Mollusca- spiny oyster, squid; Echinodermata- *Gorgonocephalidae*; Crinoidea- *Comatulida*; Ophiuroidea; Holothuroidea- *Uapta lapta*; *Rhodophyta*- crustose coralline algae, *Peyssonnelia*, rose petal crustose coralline algae, large red blade; *Chlorophyta*- *Anadyomene menziesii*, *Codium*, *Halimeda*, *Verdigellas*; *Phaeophyta*- *Dictyota*, *Lobophora*, *Sargassum*; *Cyanophyta*.

Fish: *Calamus* sp. - unid porgy, *Chaetodon ocellatus* - spotfin butterflyfish, *Chaetodon sedentarius* - reef butterflyfish, *Chromis enchrysurus* - yellowtail reeffish, *Chromis scotti* - purple reeffish, *Decapterus macarellus* - mackerel scad, *Epinephelus morio* - red grouper, *Gymnothorax moringa* - spotted moray, *Haemulon striatum* - striped grunt, *Holocentrus adscensionis* - squirrelfish, *Inermia vittata* - boga/*Haemulon striatum* - striped grunt, *Monacanthus tuckeri* - slender filefish, *Neoniphon marianus* - longjaw squirrelfish, *Ophidiidae* - unid cusk-eels, *Pseudupeneus maculatus* - spotted goatfish, *Rhomboplites aurorubens* - vermilion snapper, *Schultzea beta* - school bass, *Seriola rivoliana* - almaco jack, *Serranus annularis* - orangeback seabass, *Sparisoma atomarium* - greenblotch parrotfish, *Stegastes partitus* - bicolor damselfish (1), unid scad; 1 red grouper burrow; few sand tile burrows at end; NO LIONFISH.
Human debris- pile of trawl cable.



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	266
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	4
Dive #:	ROV 13	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #09	Ship Position System:	DGPS
Date of Dive:	8/23/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, Glenn Taylor, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	60	Total Transect Length (km):	9.47
Maximum Bottom Depth (m):	70	Surface Current (kn):	0.4
On Bottom (Time- ESDT):	12:09	On Bottom (Lat/Long):	24°48.6411'N ; 83°40.9538'W
Off Bottom (Time- ESDT):	15:51	Off Bottom (Lat/Long):	24°49.5567'N ; 83°40.6401'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	50
		Current (kn):	



Figure 1: Scolelemites



Figure 2: Encrusted Xestospongia

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 13; Florida, Pulley Ridge HAPC, random block #09; 24°48.6878'N, 83°40.9875'W, 64.0 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block 09; conduct additional 100 m transects on top of the main ridge of Pulley Ridge along the west border of block 8; ground-truth features of multibeam (Naar).

W ridge- east valley 66.5, 65 top; 69 w slope

Max 70

Main ridge- 64, 60

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made; direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Completed 5 transects within block 09. Continued to the NE corner of box and continued into block 08 for an additional four 100-m quantitative photo transect. These were non-random selected but used to ground-truth the main ridge of the Pulley Ridge multibeam. Transects 6, 7 and 8 were within the western portion of block 8 on top of the main ridge; transect 9 was also on the main ridge but west of block 8.

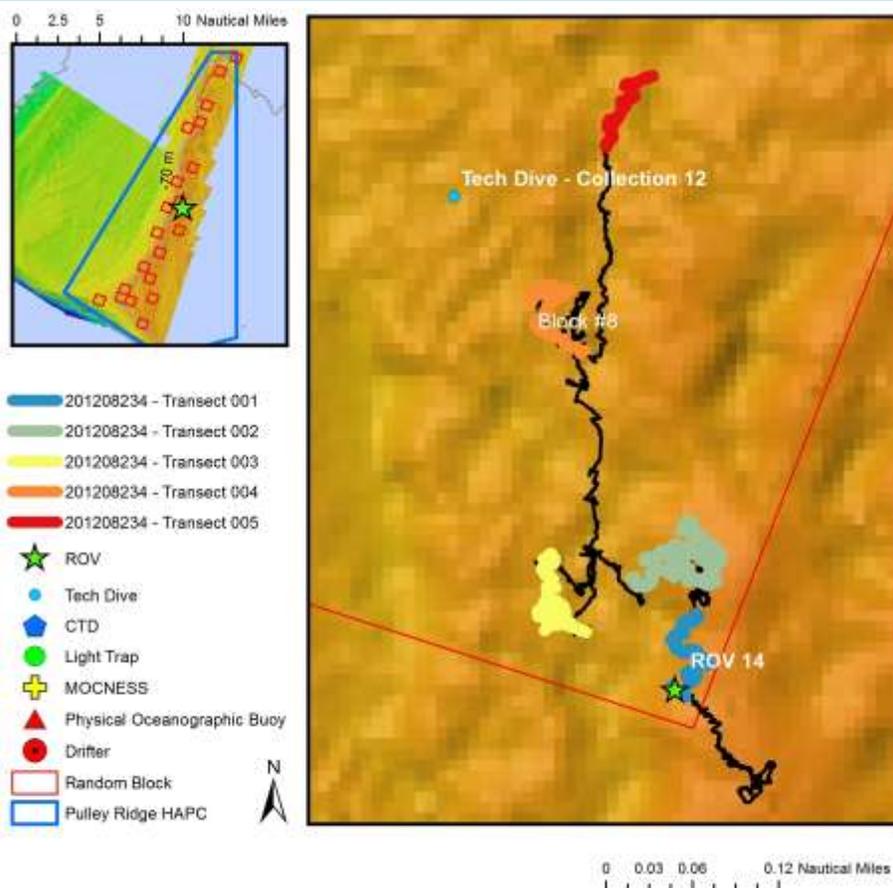
Site Description/Habitat/Biota:

Habitat and Biota: The first part of the dive conducted 5 random transects from the SE to NE in block 09. These also ground-truthed a minor ridge just west of the main ridge of Pulley. The valley between the main ridge and the west ridge was ~66.5 m; the top of the west ridge was 65 m and dropped to at least 70 m at the west base. The bottom was fairly consistent; there was no apparent difference in biota or habitat over these transects

crossing the ridge. The bottom was 100% hard bottom, flat, and predominantly covered with dead plate coral and some coral rubble. There were no ledges or ridges except for occasional red grouper pits and small rubble mounds (sandtile burrows), which have exposed excavated rock burrows in the bottom. Other than the algae, biota was fairly sparse, few sponges, few *Xestospongia muta*, few *Antipathes*, few *Halimeda*, few coral; but large red blade algae were present at depths >69 m. There were several red grouper and sandtile mounds, most with lionfish. Transects 6-9 were non-random and outside block 09; these paralleled the top of the main ridge of Pulley Ridge heading North. The depth ranged from 64-60 m; shallowing to the north. The top of the ridge for transects 6-8 was flat (63-64 m) hard bottom, covered with dead coralline plate pavement and rubble, dominant biota was *Anadyomene*, crustose coralline and *Peyssonnelia*; sponges were not common nor diverse. Only one coral (*Montastraea*) was observed even with the extensive available exposed rock pavement. Sand tilefish rubble mounds and red grouper burrows were common; most had lionfish. Transect 9 was slightly shallower (60.5 to 62.5m) but parts were quite different in habitat and biota. Part was nearly all coral/rock rubble, with very little rock pavement or coral plates; *Anadyomene* was very sparse (<10% cover), and *Isididae* bamboo coral were common to abundant.

Dominant Benthic Taxa: Coral- *Agaricia* (2), *Montastraea cavernosa* (5); Actiniaria- *Condylactis gigantea*; Antipathidae- *Antipathes*, *Stichopathes*; Hydroida; Gorgonacea- *Thesea?*; *Isididae* (bamboo coral); Demospongiae- *Agelas*, *Aplysina*, *Callyspongia vaginalis*, *Geodia*, *Ircinia campana*, *Niphates erecta*, *Polymastia*, *Xestospongia muta*; Annelida- *Sabellidae*; Arthropods- *Panulirus argus*, *Stenorhynchus seticornis*; Bryozoa; Chlorophyta- *Anadyomene menziesii*, *Halimeda*, *Verdigellas*; Rhodophyta- crustose coralline algae, *Peyssonnelia*, large red blade (> 1 m); Phaeophyta- *Dictyota*, *Lobophora*.

Fish: *Apogon maculatus* - flamefish, *Aulostomus maculatus* - trumpetfish, *Bodianus pulchellus* - spotfin hogfish, *Canthigaster rostrata* - sharpnose puffer, *Centropyge argi* - cherubfish, *Cephalopholis cruentata* - graysby, *Chaetodon aculeatus* - longsnout butterflyfish, *Chaetodon sedentarius* - reef butterflyfish, *Chromis enchrysurus* - yellowtail reeffish, *Chromis insolata* - sunshinefish, *Chromis scotti* - purple reeffish, *Chromis* sp. - unid chromis, *Diodon hystrix* - porcupinefish, *Epinephelus morio* - red grouper, *Gobiidae* - unid goby, *Gobiosoma xanthiprora* - yellowprow goby, *Haemulon album* - margate, *Halichoeres garnoti* - yellowheaded wrasse, *Holacanthus bermudensis* - blue angelfish, *Holacanthus tricolor* - rock beauty, *Holocentrus adscensionis* - squirrelfish, *Inermia vittata* - boga, *Liopropoma eukrines* - wrasse bass, *Lutjanus analis* - mutton snapper, *Lutjanus jocu* - dog snapper, *Malacanthus plumieri* - sand tilefish, *Mycteroperca bonaci* - black grouper, *Mycteroperca interstitailis* - yellowmouth grouper, *Mycteroperca phenax* - scamp, *Myripristis jacobus* - blackbar soldier, *Neoniphon marianus* - longjaw squirrelfish, *Pristigenys alta* - short bigeye, *Pterios volitans/miles* - lionfish, *Rypticus saponaceus* - greater soapfish, *Seriola dumerili* - greater amberjack, *Seriola rivoliana* - almaco jack, *Serranus annularis* - orangeback seabass, *Serranus tortugarum* - chalk bass, *Sparisoma atomarium* - greenblotch parrotfish, *Stegastes partitus* - bicolor damselfish (few), *Synodus synodus* - red lizardfish, *Thalassoma bifasciatum* - blueheaded wrasse (1; FIRST ON CRUISE!!); red grouper burrows were common (20, some with grouper and lionfish), and sand tilefish mounds were common (25+, some with sand tiles entering hole; lionfish sometimes present).



Dive Overview:

Project:	University of Miami Pulley Ridg	Sensors Used:	Depth (m), GPS
Principal Investator:	Robert Cowen	Digital Photos:	186
PI Contact Info:	Room S221 Grosvenor South 4600 Rickenbacker Causeway Miami FL 33149	Hard Drive:	1
Purpose:	5 year grant on Pulley Ridge - year 1	HDCam:	0
Expedition Website:	None	DVD:	3
Dive #:	ROV 14	Specimens:	
Vessel:	R/V Walton Smith - Cruise No. WS1213	ROV Navigation Data:	TracPointII
Location:	Florida, Pulley Ridge HAPC, random block #08	Ship Position System:	DGPS
Date of Dive:	8/23/2012	Sonar Data:	2010_pulley_10m1
Data Management:	Access Database, Excel Spreadsheet	Scientific Observers:	Dennis Hanisak, Glenn Taylor, John Reed, Kevin Rademacher, Lance Horne, Stephanie Farrington
Date Compiled:	11/9/2012	Report Analyst:	John Reed, Stephanie Farrington

Dive Data:

Minimum Bottom Depth (m):	63	Total Transect Length (km):	8.29
Maximum Bottom Depth (m):	67	Surface Current (kn):	1.2
On Bottom (Time- ESDT):	20:43	On Bottom (Lat/Long):	24°48.9465'N; 83°40.1706'W
Off Bottom (Time- ESDT):	23:45	Off Bottom (Lat/Long):	24°49.4465'N; 83°40.2391'W
Physical (bottom); Temp (°C):		Salinity:	
		Visibility (ft):	
		Current (kn):	



Figure 1: Xestospongia



Figure 2: Xestospongia and Agaracia

Notes (Objectives, Site Description, Habitat, Fauna):Site/Objectives:

UNCW Super Phantom - ROV 14; Florida, Pulley Ridge HAPC, random block #08; 24°49.0157'N, 83°40.2255'W, 63 m. Conduct ROV video/photo survey; conduct five - 100 m random transects within block #08.

ROV Setup/Dive Events:

Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Video time ESDT. Dive Notes depth recorded as total depth (ROV altitude + ROV depth in meters). COG is ROV heading. Events, habitat and fauna are recorded by Reed and Farrington directly into Access database. Fish data recorded by Kevin Rademacher in separate Access database to be added to benthic database. Video camera (standard digital) angled ~20° with 15 cm parallel lasers; digital still camera pointed down 90° with 10 cm parallel lasers for quantitative photo transects. Each 100 m transect conducted at ~0.25 kn, for 15-20 minutes until passed through 100 m circle overlaid on navigation screen; quantitative still images taken every ~30 sec. Off transects between the photo transects were 10-15 minutes; heading determined by flip of coin, depending in part on wind/current. Five 100 m quantitative photo transects were made. Direction of transects were based on flip of coin, and ship's maneuverability due to wind/current. Night dive- visibility of effective lights ~2-3 m. Difficult to differentiate live plate coral from Peyssonnelia unless directly over. Camera unable to focus in dark on auto focus and manual focus not good either. Great difficulty maneuvering the ship in a straight line, several squalls, winds variable 10 to 25 kn, current 1.2 kn in opposing directions. Some transects almost circular.

Site Description/Habitat/Biota:

The dive transected block 08 from the southeast to near center; depth range- 63 to 67 m. Most of the transect was very consistent; 65-66 m; hard bottom, flat, and predominantly covered with dead plate coral, and rock rubble with sediment patches of 10-30% cover. There were no ledges or ridges except for red grouper burrows

and small sand tilefish mounds, which were predominantly in the SE region of the block.

Benthic Biota: The benthos was fairly consistent dominated by *Anadyomene* (30-50% cover), *Peyssonnelia* and crustose coralline covering all exposed rock. Sponges were diverse and more dense in the southeastern portion and somewhat sparse in the central area. *Agaricia* and *Montastraea cavernosa* were very patchy; very sparse in the central area, but some of the southern transects had large patches of many meters. Some *Montastraea* were clearly on what was once large single colonies of 1- 1.5 m diameter, but now are either dying back or regrowing as isolated patches on the original large colony.

Dominant Benthic Taxa: Coral- *Agaricia* (31 patches), *Montastraea cavernosa* (13 patches); Cnidaria- Gorgonacea; Actiniaria- *Condylactis gigantea*; Antipathidae- *Stichopathes*; Demospongiae- *Agelas*, *Aplysina*, *Callyspongia vaginalis*, *Cribrochalina vasculum*, *Geodia*, *Ircinia*, *Ircinia campana*, *Niphates erecta*, *Polymastia*, *Pseudoceratina crassa*, *Xestospongia muta*; Mollusca- squid; Arthropoda- *Panulirus argus*, *Stenorhynchus seticornis*; Crinoidea- *Comatulida*; Ascidiacea- *Eudistoma*; Chlorophyta- *Anadyomene menziesii*, *Halimeda* (very sparse); Rhodophyta- crustose coralline algae; *Peyssonnelia*; Phaeophyta- *Dictyota*, *Lobophora*.

Fish: *Acanthostracion polygonia* - honeycomb cowfish, *Apogon pseudomaculatus* - twospot cardinalfish, *Apogon* sp. - cardinalfish, *Balistes vetula* - queen triggerfish, *Chaetodon sedentarius* - reef butterflyfish, *Chromis enchrysurus* - yellowtail reeffish, *Chromis* sp. - unid chromis, *Decapterus macarellus* - mackerel scad, *Diodon hystrix* - porcupinefish, *Epinephelus morio* - red grouper, *Gymnothorax moringa* - spotted moray, *Haemulon striatum* - striped grunt, *Holocentrus* sp. - unid squirrelfish, *Holocentridae* - unid squirrelfish, *Holocentrus adscensionis* - squirrelfish, *Holocentrus rufus* - longspine squirrelfish, *Inermia vittata* - boga, *Lutjanus analis* - mutton snapper, *Neoniphon marianus* - longjaw squirrelfish, *Ophidiidae* - unid cusk-eels, *Pseudupeneus maculatus* - spotted goatfish, *Pterios volitans/miles* - lionfish, *Rhomboplites aurorubens* - vermilion snapper, *S. tortugarum* or *S. beta*, *S. tortugarum* or *S. beta*, *Schultzea beta* - school bass, *Serranus tortugarum* - chalk bass, *Sparisoma atomarium* - greenblotch parrotfish.