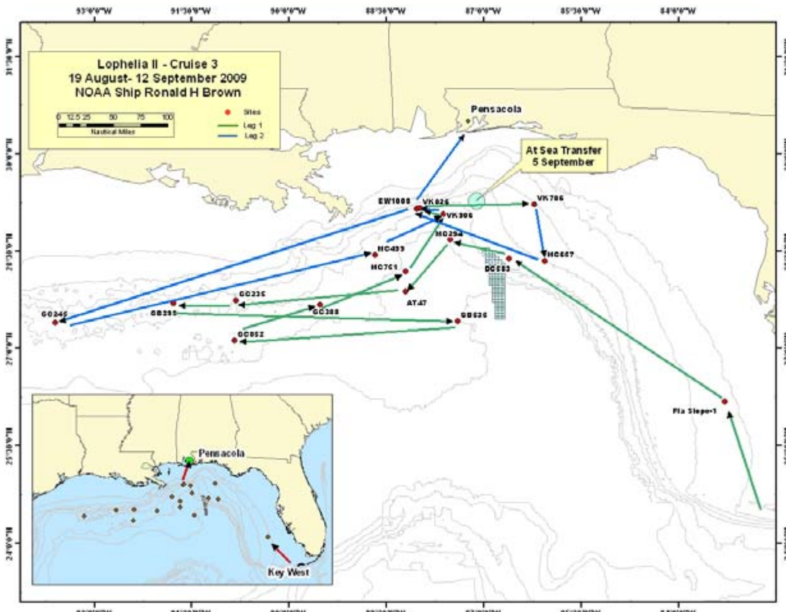
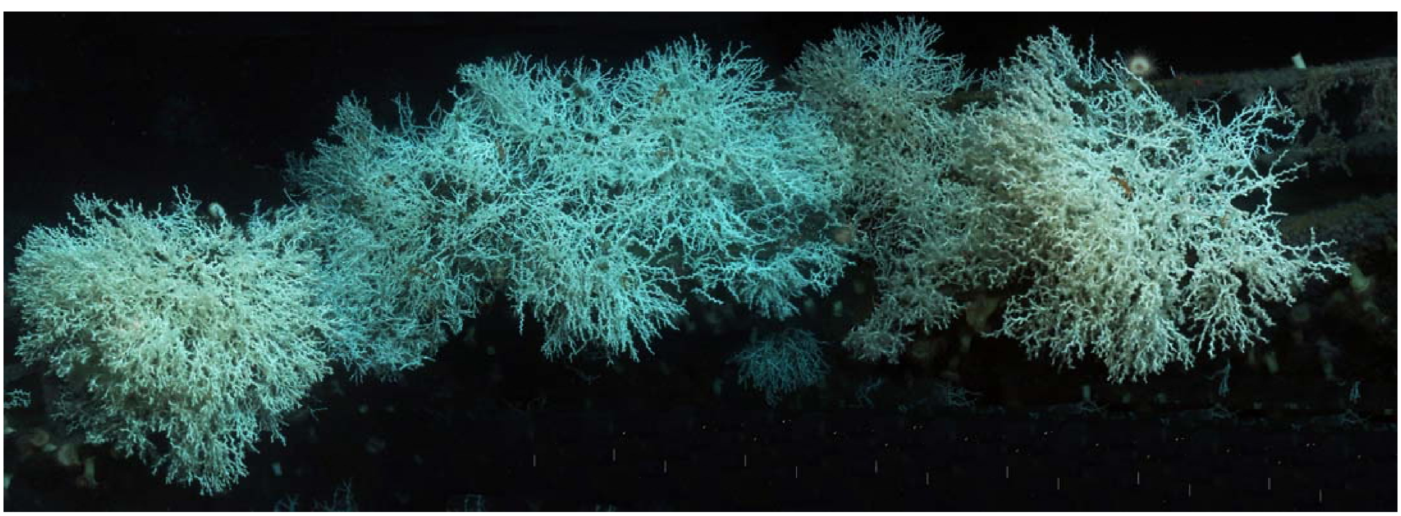
Scientific Services On A Global Basis
TDI-Brooks International, Inc.
1902 Pinon, College Station, TX 77845
Ph: (979) 693-3446 Fax: (979) 693-6389
Visit us on the Web at: www.tdi-bi.com

Deepwater Program: Exploration and Research of Northern Gulf of Mexico Deepwater Natural and Artificial Hard Bottom Habitats with Emphasis on Coral Communities: Reefs, Rigs and Wrecks "Lophelia II"

Cruise 3 Report – RONALD H. BROWN – JASONII
19 August – 12 September 2009





November 2009

Deepwater Program:Exploration and Research of Northern Gulf of Mexico Deepwater Natural and Artificial Hard Bottom Habitats with Emphasis on Coral Communities: Reefs, Rigs and Wrecks - "*Lophelia* II"

Cruise 3 Report

Authors

James M. Brooks
Charles Fisher
Erik Cordes
Iliana Baums
Bernie Bernard
Robert Church
Chris German
Elizabeth Goehring
Ian MacDonald
Harry Roberts
Tim Shank
Dan Warren
Susan Welsh
Gary Wolff

Prepared under MMS Contract
M08PC20038

TDI-Brooks International Inc.
1902 Pinon Drive
College Station, TX 77845

U.S. Department of the Interior
Minerals Management Service
Gulf of Mexico OCS Region

TABLE OF CONTENTS

List of Tables

List of Figures

CRUISE 3 REPORT

for

Deepwater Program: Exploration and Research of Northern Gulf of Mexico Deepwater Natural and Artificial Hard Bottom Habitats with Emphasis on Coral Communities: Reefs, Rigs and Wrecks
Lophelia II
(Contract No. M08PC20038)

1 INTRODUCTION

OVERVIEW

This document represents TDI-Brooks' Cruise Report for the *Lophelia* II Project Cruise 3 for contract number: **M08PC20038**, issued by the U.S.Department of the Interior, Minerals Management Service "**Deepwater Program: Exploration and Research of Northern Gulf of Mexico Deepwater Natural and Artificial Hard Bottom Habitats with Emphasis on Coral Communities: Reef, Rigs and Wrecks**. The cruise was completed on NOAA Ship *Ronald H. Brown* from 19 August – 12 September 2009. The cruise mobilized in Key West, Florida. One mid-cruise personnel transfer took place on 5 September. The cruise demobilized in Pensacola, Florida on 12 September 2009. This report provides detailed information regarding operational procedures, stations occupied, and sampling activity. Results reported were obtained by analysis of the sampling information and data during the cruise and immediately afterward. Results will possibly be revised. This report is a preliminary product of the contract.

REPORT CONTENT

This cruise report is comprised of seven sections and appendices.

The ***Introduction*** presents a brief overview of the program, including background and objectives.

Cruise Overview details the equipment and procedures employed during the cruise, participating organizations and personnel.

Operations – describes a brief overview of the sampling plan and descriptions of the equipment used to collect the samples during the cruise.

Education and Outreach – details methods of distributing the information collected during the cruise and incorporating into curricula for students.

Dive Plans provides a detailed description of activities planned for each site and dive. These are often modified during the cruise to accommodate changing conditions or information gathered.

Cruise Summary presents a chronological narrative for each day of the cruise. Noteworthy events are described and resolutions for any problems encountered. This narrative is supplemented by the Daily Progress Report (DPR) The DPR is sent to TDI-Brooks International corporate offices and other interested parties at the conclusion of each cruise day and is listed in the **Appendices**..

The ***Site Summaries*** section provides a geological and biological description of each site with supporting images. The characterization of the site is augmented with figures of the dive track and events that were performed or noted.

Background

Over the last half century, offshore exploration for hydrocarbons in the northern Gulf of Mexico has advanced from the bay and inner shelf to the continental slope-to-continental rise transition. Geophysical and geotechnical data collected in support of both exploration and production has been largely responsible for the foundation of our present understanding of slope geology. This database emphasizes the extremely complex geological framework of the northern Gulf's continental slope and the surprisingly important role that the expulsion of subsurface fluids and gases has on shaping surficial geology and biology of the modern seafloor. Regional topography of the slope consists of basins, knolls, ridges, and mounds derived from the dynamic adjustments of salt to the introduction of large volumes of sediment over long time scales. Superimposed on this underlying topography is a smaller class of mounds, flows, and hard grounds that are the products of the transport of fluidized sediment, mineral-rich formation fluids, and hydrocarbons to the present sediment-water interface. The geologic response to the expulsion process is related both to the products being transported and the rate at which they arrive at the seafloor. Mud volcanoes and mudflows are typical or rapid flux settings where fluidized sediment is involved. Slow flux settings are mineral-prone. Authigenic carbonate mounds, hard grounds, crusts, and nodules are common to settings where hydrocarbons are involved.

Recent manned submersible and ROV dives to the middle and lower continental slope confirm the existence of these hard substrates to the deepest parts of the slope. Direct observation and sampling of expulsion sites started in the mid-1980s on the upper slope. We now know from analysis of 3D-seismic data and submersible-ROV dives that numerous expulsion sites with hard substrates provide habitat for deep water corals exist over the slope's full depth range.

In the context of this study, deep hardground communities of the Gulf of Mexico comprise all of the biological communities inhabiting natural or artificial hard substrates, excluding the chemosynthetic seep communities. These communities consist of foundation species, those species that form large complex habitats at these sites, and their associated fauna ranging in size from large mobile fishes to microscopic meiofauna. The most prominent foundation species in these communities are the deep-water ("cold-water") corals. The terms "deep-water corals" or "cold-water corals" include relatives of the tropical reef-forming scleractinian corals, but also refer to a variety of other cnidarian taxa including antipatharians (black corals), gorgonians (including bamboo corals), alcyonaceans (soft corals), and stylasterine hydrocorals. Other taxa, including anemones and sponges are also significant contributors to the biogenic framework of these deep-water reef systems.

In the Gulf of Mexico, deep-water corals are commonly found on seep-related authigenic carbonates, but have also been observed on anthropogenic structures, ship wrecks and oil platforms in particular. The most common species of reef-forming deep-water coral in the Gulf of Mexico (GoM) is *Lophelia pertusa* (=*prolifera*). This species was first recovered in the late 1800s by the *U.S. Coast Survey Steamer Blake.*

Increasing industry activity in deepwater has resulted in the creation of numerous platforms in water depths exceeding 300 m. In areas where hard substrates are limiting, these platforms may significantly increase the potential range of corals and other hardground fauna. Growth of *Lophelia pertusa* has been noted on the Pompano platform in VK 989. In addition, the Joliet platform in GC 184 near Bush Hill and the Neptune platform near the large *L. pertusa* site in VK 826 are very likely to host coral populations. This study will focus on the exploration and characterization of these communities and examination of their potential connection to other coral populations and surrounding deep-water communities.

Objectives of the Project

A primary goal of this study is to obtain a robust predictive capability for the occurrence of rich cnidarian (primarily scleractinian coral) hard ground communities in the deep Gulf of Mexico. To achieve this long-term goal, this study will accomplish three interrelated and interdependent objectives:

1) Discover and describe new locations at greater than 300m depth in the GoM with extensive coral community development, particularly including *Lophelia pertusa*.

2) Gain a more comprehensive understanding of the fundamental processes that control the occurrence and distribution of *Lophelia* and other extensive coral communities at depths greater than 300 m in the GoM through both laboratory experiments and field data collection.

3) Document and understand the relations between coral communities on artificial and natural substrates with respect to community composition and function, phylogeographic and population genetics, and growth rates of the key cnidarian foundation fauna.

Upon meeting these three interrelated objectives we will have obtained an understanding of the biology and biogeography of *Lophelia* in the GoM that will result in a quantum increase on our ability to predict the occurrence of *Lophelia* at additional sites based on data such as bathymetry, current models, 3D seismic profiles, and known occurrence of source populations.

2 CRUISE OVERVIEW

The *Lophelia* II project involves exploration and research of the northern Gulf of Mexico deepwater natural and artificial hard bottom habitats with emphasis on coral communities with archeological studies of 4-6 shipwrecks. This cruise builds on information obtained from the first *Lophelia* II cruise in September 2008, and the second cruise in June 2009. Cruise 3 (this cruise) returned to known sites and the newly-discovered sites targeted by Cruise 1 and 2 for further exploration. An overview of the cruise is given in **Table 2-1**.

Table 2-1. Cruise Overview

NOAA Ship *Ronald H. Brown*
Cruise Number: RB-09-05
Project Deepwater Program: Exploration and Research of Northern Gulf of Mexico Deepwater Natural and Artificial Hard Bottom Habitats with Emphasis on Coral Communities: Reefs, Rigs and Wrecks; *Lophelia* II
Cruise dates: 19 August – 12 September 2009
Working Area: The Northern Gulf of Mexico continental slope
Itinerary: Depart: Key West, FL,- 19 August**;** Arrive: **Pensacola**, FL - 12 September
Endorsements: CAPT Michael S. Devany, Commanding Officer, Marine Operations Center, Atlantic**,** Norfolk, VA 23510-1145
Chief Scientists: Aug 19 to Sept 5 - Dr. Charles R. Fisher, Penn State University, Department of Biology**,** State College PA16802 Sept 5 to Sept 12 – Dr. Erik Cordes, Temple University Department of Biology, Philidelphia, PA

All of the equipment for this expedition was loaded and installed onboard *Ronald H. Brown* in Key West Florida during 15-19 August 2009.

This cruise employed the Remotely Operated Vehicle (ROV) *Jason II* (*Jason II* and *Jason*, are used through this report as equivalent) to explore new sites, make a variety of deployments and collections, and conduct a variety of studies on natural deep water coral reefs and deep water shipwrecks. This was a 25-day cruise with 21 ROV dives and an at-sea personnel transfer.

Jason II was used to: explore 10 new sites for the occurrence of deep water coral reefs; make collections of *Lophelia* and other corals for genetic and physiological studies, make collections of communities associated with *Lophelia* and other corals for ecological studies; collect quantitative digital imagery for characterization of sites and coral communities; collect spatially explicit physical near bottom oceanographic data; deploy cameras and microbial arrays; reposition larval traps and current meters; collect push cores; and conduct a series of linked archeological/ biological investigations on deep water shipwrecks. In addition to launching and recovering *Jason II*, elevators were deployed and recovered twice, four moorings (2 larval traps and 2 current meters) were deployed, and CTD casts were conducted.

JASON II ROV OPERATIONS:

(1) SM2K surveys of 1 site

(2) 10 X 150 m photo transects over most *Lophelia* sites

(3) Photo mosaics surveys of *Lophelia* communities including:
   (a) Natural Hard Bottoms
   (b) Deep Shipwrecks
(4) Community collections using customized sampling gear at most sites
(5) Collection of live corals and maintenance in cold room for transport back to laboratories from three different high-density coral sites.
(6) Numerous independent and spatially located collections of *Lophelia* and other corals for population genetic studies.
(7) Deployment of site markers and small markers for genetic collections
(8) Collection of push cores from both reef and shipwreck sites
(9) Collection of on board CTD data, including oxygen and pH.
(10) Assorted archeological imaging and limited collections of artifacts
(11) Deployment and/or positioning by *Jason II* of:
   (a) 2 Larval Traps
   (b) 2 Current meters
   (c) 1Time-Lapse Camera

NOAA SHIP RONALD H. BROWN OPERATIONS:

(1) Sporadic Multi-beam sampling
(2) Deploying and recovering elevators for collections over cruise
(3) Deployment of:
   (a) 2 Larval Traps
   (b) 2 Current meters
(4) NOAA Ocean Exploration & Research Signature Expedition
   (a) Near-real time web-coverage
   (b) NOAA Web Coordinator / Data Manager on board
(5) USGS onboard for meiofauna, crab genetics & coral genetics

PARTICIPATING ORGANIZATIONS

The following organizations (**Table 2-2**) were participants in Cruise 3.

Table 2-2. Cruise Participating Organizations

Penn State University (PSU)	Dept. of Biology, State College, PA 16802
Louisiana State University (LSU)	Geosciences Complex, Baton Rouge, LA 70803
Texas A&M University (TAMUCC)	Physical and Life Sciences Dept., Corpus Christi, TX 78412-5774
Temple University (TEMPLE)	Biology Department, 1900 N 12th St, Philadelphia PA 19122
Woods Hole Oceanographic Institution (WHOI)	National Deep Submergence Facility, Woods Hole Oceanographic Institution, Woods Hole, MA 02543-1050
US Geological Survey (USGS)	US Geological Survey, Florida Integrated Science Center, St. Petersburg,

TDI-Brooks International	1902 Pinon Dr., College Station, TX 77845
MMS	Gulf of Mexico OCS Region and Atlantic, New Orleans, LA 70123-2394
NOAA Office of Ocean Exploration and Research(NOAA OER)	NOAA Office of Ocean Exploration, 1315 East-West Highway, Silver Spring, MD 20910
C & C Technologies, Inc. (C & C)	730 E. Kaliste Saloom Rd., Lafayette, LA 70508
IFREMER, France	Technopolis 40, 155 rue Jean-Jacques Rousseau, 92138 ISSY-LES-MOULINEAUX
PAST Foundation (PAST)	1929 Kenny Road • Columbus, Ohio 43210
Droycon Bioconcepts, Inc (DBI)	315 Dewdney Ave., Regina, Saskatchewan, Canada, S4N 0E7
University of West Florida (UWF)	11000 University Pkwy., Pensacola, Florida 32514

PERSONNEL

The following persons (**Table 2-3**) were participants in Cruise 3.

Table 2-3. Cruise Participants

NAME	AFFILIATION	POSITION	EMAIL	LEG 1	LEG 2
Akel Kevis-Stirling	WHOI -*Jason*	*Jason* group	akel@kevis-stirling.com	x	x
Andrea Quattrini	Temple University	Grad student	andrea.quattrini@temple.edu	x	
Ben Tradd	WHOI -*Jason*	*Jason* group	btradd@whoi.edu	x	x
Bill Shedd	MMS	Agency Rep.	william.shedd@mms.gov	x	
Carole Decker	IFREMER France	Grad Student	carole.decker@ifremer.fr		x
Casey Agee	WHOI -*Jason*	*Jason* group	kcagee1@hotmail.com	x	x
Charles Larrabee	WHOI - *Jason*	*Jason* group	cwl@sonardyne.com	x	
Dannise Ruiz	Penn State University	Grad student	dvr116@psu.edu		x
Doug Weaver	TAMU-CC	Grad student	doug.weaver@tamucc.edu	x	
Amanda Demopolous	USGS	Scientist	amandad@usgs.gov	x	x
Cheryl Morrison	USGS	Scientist	cmorrison@usgs.gov	x	x
Chris German	WHOI	Scientist	cgerman@whoi.edu	x	
Chuck Fisher	Penn State University	Co-Chief Scientist	cfisher@psu.edu	x	
Dong Feng	LSU	Post Doc.	dongfeng@lsu.edu		x
Erik Cordes	Temple University	Co-Chief Scientist	ecordes@temple.edu	x	x
Harry Roberts	LSU	Scientist	hrober3@lsu.edu		x
Ian MacDonald	FSU	Scientist	imacdonald@fsu.edu	x	
Sheli Smith	Past Foundation	Outreach specialist	sheli@pastfoundation.org		x
Tim Shank	WHOI	Scientist	tshank@whoi.edu	x	
Gaelin Rosenwaks		Photographer	gaelin@mac.com		
Jack Irion	MMS	Agency Rep.	jack.irion@mms.gov		x
Jake Shidner	U West Florida	Grad Student	jshidner@gmail.com		x
James Pelowski	WHOI -*Jason*	*Jason* group	jpelowsk@ldeo.columbia.edu	x	x
Jay Lunden	Temple University	Grad student	jlunden@temple.edu	x	
Kate Songile	Temple University	UG student	tua17981@temple.edu		x
Kathryn Kelsey	teacher	Teacher	kakelsey@comcast.net	x	
Lara Miles	TDI Brooks	Technician	laramiles@tdi-bi.com	x	x
Liz Goehring	Penn State University	Outreach specialist	exg15@psu.edu	x	

NAME	AFFILIATION	POSITION	EMAIL	LEG 1	LEG 2
Liz Goehring	Penn State University	Outreach specialist	exg15@psu.edu	x	
Liz Podowski	Penn State University	Technician	elp145@psu.edu	x	
Lori Johnston	Droycon	Microbiologist	chris.hill@saskatel.net		x
Luke Byrnes	Temple University	UG student	tua14596@temple.edu		x
Matt Heintz	WHOI - *Jason*	Expedition Leader	mheintz@whoi.edu	x	x
Peter Etnoyer	TAMU-CC	Grad student	peter.etnoyer@tamucc.edu	x	x
Rob Church	C&C Technologies	Archeologist	rob.church@cctechnol.com		x
Robert Hess	WHOI -*Jason*	*Jason* group	rhess@whoi.edu	x	x
Robert Westrick	C&C Technologies	Archeologist	robert.westrick@cctechnol.com		x
Santiago Herrera	WHOI	Grad student	sherrera@whoi.edu	x	x
Scott Hansen	WHOI -*Jason*	*Jason* group	shansen@levelcomponents.com	x	x
Stephanie Lessard-Pilon	Penn State University	Grad student	sal275@psu.edu		x
Steve Jones	LSU	Technician	usndiver@lsu.edu	x	
Steve Murphy	WHOI - *Jason*	*Jason* group	sdmurphy@whoi.edu	x	x
Troy Kitch	NOAA OER	Data/web manager	Troy.Kitch@noaa.gov	x	x

3 OPERATIONS

SAMPLING

The primary data collected using the ROV included SM2000 multibeam, digital video and still photographic imagery, CTD with DO and pH sensors, geological samples, biological samples, archaeological material and push cores. Other data streams from the ROVs, such as vehicle attitude, acoustic data, and sonar imagery were recorded by networked computers in the control van. Navigational data for both the ship and ROV systems were also be recorded. While in transit to and from the site, and during times when the ROV is not deployed, Seabeam multibeam bathymetric data were collected.

JASON / MEDEA

Jason/Medea is a remotely operated vehicle (ROV) system. It is a two-body ROV system, with *Medea* serving in a tether management role that decouples *Jason* from surface motion (**Figure 3-1**). *Jason* is connected to *Medea* by a neutrally buoyant tether that is 0.84" in diameter and approximately 35 meters long. Like the tow cable, it also uses three copper conductors and three single-mode optical fibers, but uses Spectra fibers to provide strength while reducing size and weight. The tether has a breaking strength of 41,000 lb. *Medea* weighs 1200 pounds in air and is maneuvered by controlling the surface ship's position within a dynamic positioning reference frame. Medea serves as a buffer between the ROV and the ship, and prevents the umbilical tether from tugging on the ROV as the ship rises and falls with sea state.

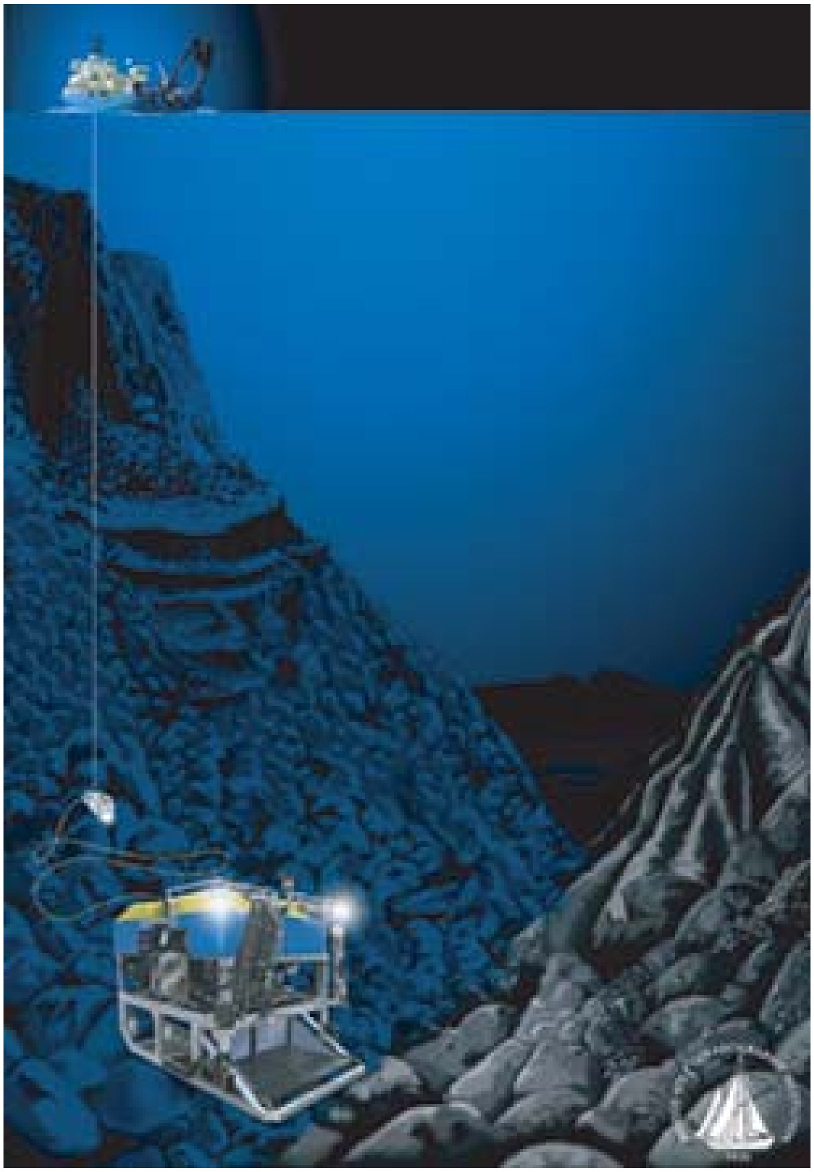


Figure 3-1. Illustration of *Jason*/Medea (WHOI).

Medea also reduces the total load on the umbilical, which is the primary limiting factor in the operation of an ROV that dives to these depths. Medea is equipped with down-looking cameras. Both *Medea* (**Figure 3-2**) and *Jason* (**Figure 3-3**) are designed to operate to a maximum depth of 6,500 meters (21,385 feet).

Figure 3-2. ***Medea*****, shown on deck (WHOI).**

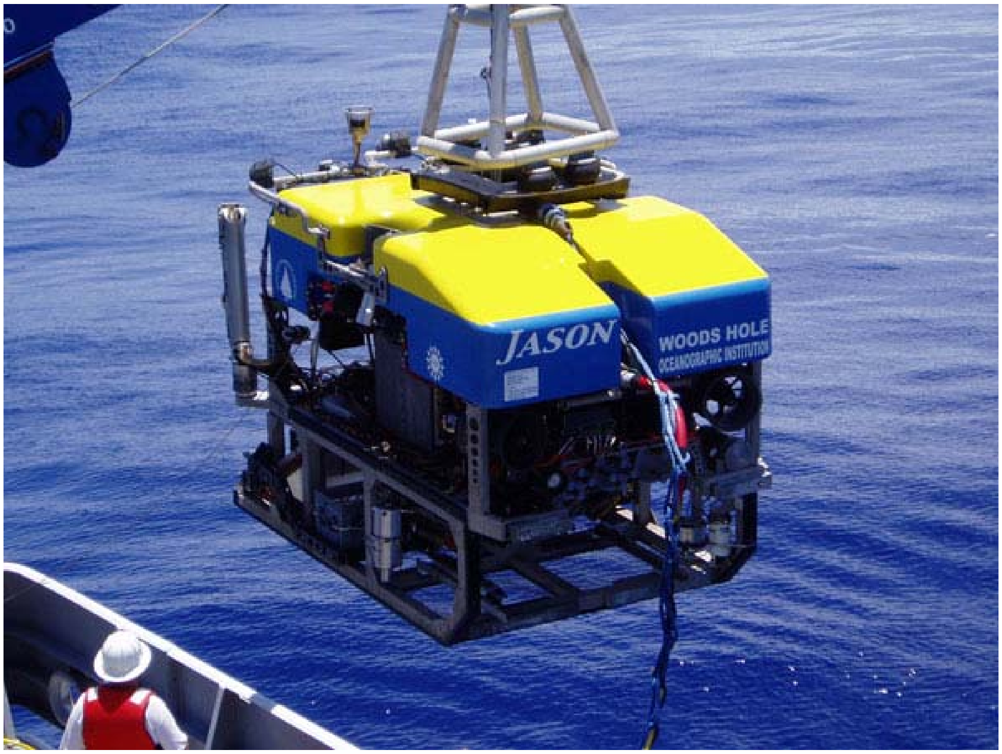


Figure 3-3. ***Jason*** **launch (WHOI).**

Movements of the support ship maneuver *Medea* utilizing dynamic positioning. *Jason* is propelled by six DC brushless electric thrusters that provide about 600 pounds thrust in the vertical, longitudinal and lateral directions. It weighs about 8,000 pounds in air but is neutrally buoyant at depth.

Both *Medea* and *Jason* are real time optical imaging platforms with high quality cameras and lighting. *Medea* is configured with a silicon intensified target (SIT) black & white camera for terrain identification and visual location of *Jason* when both are operating. *Jason's* basket with custom sampling gear (**Figure 3-4**). Starting from the upper left corner and proceeding clockwise are 3 coral pot samplers, milk-crate of rubber stoppers to subdivide the genetic samplers, still camera on a swivel mount to provide forward looking and down looking capability, 10 core quivers capable of holding 20 discrete samples of multiple species in each, slurp sampler, 10 push cores.

Figure 3-4. *Jason's* basket with custom sampling gear (see text).

Three people operate *Jason*. A **Pilot** "flies" the ROV. An **Engineer** monitors all the systems (electrical, mechanical, hydraulic, etc) and operates the winch which pays out / hauls in the fiber optic cable which is attached to *Medea.* A **Navigator** positions the research vessel so that *Medea* and *Jason* can operate in the desired area. A fourth person is responsible for organizing all the data collected.

4 EDUCATION AND OUTREACH CRUISE SUMMARY

As a NOAA Ocean Explorer "Signature Expedition," the *Lophelia II* cruise was featured on the NOAA Ocean Explorer website (http://oceanexplorer.noaa.gov/welcome.html) and promoted through NOAA OE channels (e.g., VIMS Scuttlebutt listserve). During the cruise, log entries, seafloor and shipboard imagery and seafloor video clips were posted to the NOAA OE site on almost a daily basis. Log entries were authored by various cruise participants as an opportunity to feature individual contributions to the overall research agenda. A Highlights "Best Of" Imagery and Video DVD was also created and provided to NOAA OE.

A total of 25 hours of high quality underwater video footage was collected in the DVCAM format from the *JASON* ROV, and 2 hours of broadcast quality footage showing on-deck activities associated with the expedition, including *JASON* launch and retrieval, CTD operations, laboratory work, and science meetings. All footage was digitized and imported to Final Cut Pro software for editing. The "Best of Video" footage associated from *Jason* ROV was edited and exported into nearly 100 short videos 1-2 minute long in the Quicktime format at 360 x 240 resolution. Samples are provided on the OER Website. Quicktime videos are intended for use in Powerpoint presentations by project PIs and collaborators, but they will also form parts of a 20 minute broadcast quality documentary video about the project.

During the first leg of the cruise, the education team developed a draft problem-based curriculum unit targeting high school level students in biology or environmental science. The draft unit features a Student Challenge to locate potential Gulf of Mexico oil-drilling sites (using fictitious maps) that would have minimal impact on *Lophelia* communities. The Challenge provides a context for the lessons presented in the unit and also serves as a performance assessment. Lesson topics include introduction to deep sea conditions; deep water coral biology; climate change effects on coral skeletons; importance of currents in movement of food, sediment and larvae; and food webs. Currently the unit includes six lessons in addition to the Student Challenge. Where possible, lessons will be written featuring available datasets, to engage students and develop data analysis skills. Identification of potential suitable datasets was initiated during the cruise.

During the second leg of the cruise, the archaeological team worked with a cohort of seven Ohio schools to incorporate aspects of the shipwreck research into the schools' project-based learning curriculum on ROV design and development. The archaeological team provided three powerpoint presentations to the teachers along with histories of the shipwrecks that the cruise planned to visit. The powerpoints focused on 1) ROV technologies put together by C&C Technologies, 2) Archaeological Sampling put together by PAST and 3) The Nexus of Natural and Cultural Resources put together as a joint team effort with Lori Johnson of Droycon Bioconcepts, Inc. Teachers and students prepared styrofoam cups in advance and then followed both the OE website and PAST website. In addition the teachers were able to communicate among themselves through their own project on the PAST Basecamp creating a cohort that could question, encourage and reflect. Shortly after the cruise ended, they already had a research and design project springing from the need for a low cost solution to the mechanical arms used on *Jason* II.

5 DIVE PLANS

The following section contains the dive plans for each site (**Table 5-1**) executed during the cruise (**Figure 5-1**). Dive maps showing *JASON*'s track are presented as individual figures at each site in a later section.

Table 5-1. Sites characterized listed in chronological order

Dive	Site	Dates	Times	Depth m	Lat-D	Long-D	Comments
J2-453	Fla Slope-1	8/20-8/21	2130-1600	450	26.184100	-83.292583	
J2-454	DC-583	8/22-8/23	1720-0745	2500	28.385493	-86.611932	Aborted but dive number unchanged
J2-456	MC-294	8/23-8/24	2140-0745	1360	28.674300	-87.518917	
J2-457	AT-047	8/24-8/25	1630-0730	863	27.879200	-88.212217	
J2-458	GC-235	25-Aug	1643-2230	530	27.737033	-90.812733	Aborted: Hydraulic Failure
J2-459	GB-299	8/26-8/27	0830-0740	410	27.692450	-91.777100	
J2-460	GB-535	8/27-8/28	1636-1216	600	27.422880	-87.402863	
J2-461	GC-852	29-Aug	0118-2020	1400	27.124667	-90.835833	
J2-462	GC-338	30-Aug	0851-2030	900	27.670000	-89.520320	Aborted: OcTan Failure
J2-463							Aborted: jelly
J2-464	MC-751	8/31-9/1	1324-1206	460	28.189667	-88.202167	
J2-465	VK-906	9/1-9/2	2031-2000	400	29.069000	-87.622833	
J2-466	VK-826	9/3-9/4	1119-0805	510	29.156933	-87.989333	
J2-467	VK-826						
J2-468	VK-786	9/5-9/6	2030-0810	612	29.218833	-86.223667	VK Wreck
J2-469	MC-657	9/6-9/7	1714-0800	2256	28.343167	-86.069500	7,000ft wreck
J2-470	EW1008	9/7-9/8	2025-0830	610	29.142000	-88.037833	EW Wreck
J2-471	GC245	9/8-9/9	1644-1210	627	27.389500	-93.600167	Green Lantern
J2-472	MC497	9/9-9/10	2108-0815	554	28.440333	-88.680000	Gulf Penn
J2-473	VK-906	9/10-9/11	1633-0815	490	29.065500	-87.618333	
J2-474	VK-826	11-Sep	1259-2312	510	29.156933	-87.989333	

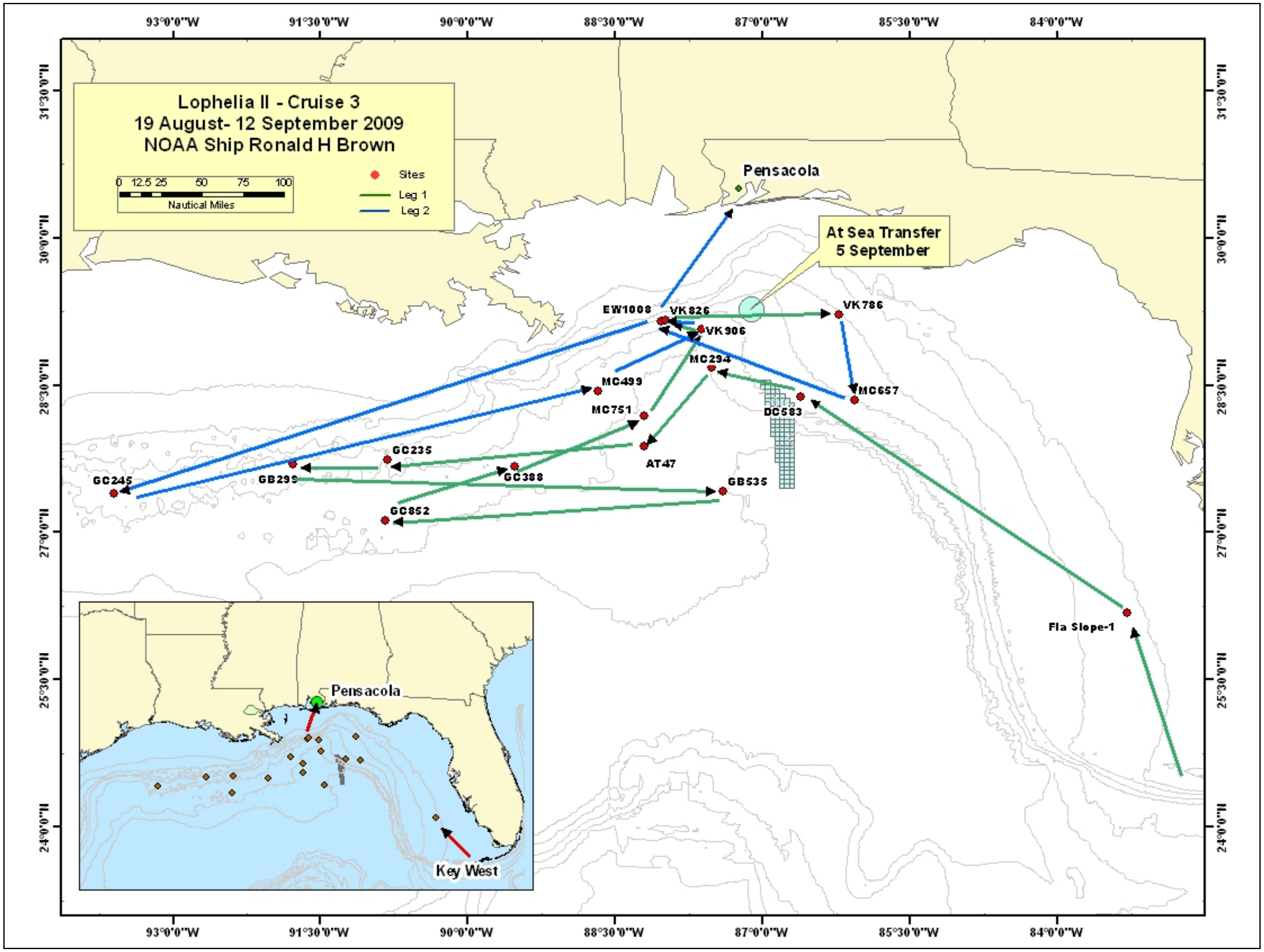


Figure 5- 1. *Lophelia* II Cruise 3 track of the RON BROWN

Dive Plans

1st JII lowering, 8/20/2009   JII 453 - West Florida Slope site

This should be about a 20 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, 1 Niskin
Scorpio mounted downlooking:
    Parallel lasers, strobe and HMI down
One biobox and 3 quivers on each swing arm
10 push cores
10 push core sleeves with associated markers in sleeves
2 milk crates for stoppers and markers
    16 large stoppers in milk crate 1
    16 small stoppers and 1 site marker, 3 mosaic markers in milk crate 2
cutter on Stbd manip
3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:
1) Dive on Elevator launch site (Erik/Chuck):
    26.184105° N, -84.707411° W
2) Run to NW to waypoint 1, which is on a Ridge. Look Around
3) **If *Lophelia* are present**, deploy site marker then head generally south towards way points 6 and 7 documenting coral abundance and "dropping" virtual targets.

If no *Lophelia* are present go to way points 2 through 5, searching for *Lophelia*: When you find them continue….

3.5) contact Ian and select 250 x 250 m area to design random transects (this takes about an hour to design and communicate)
4) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each. Also do tests on lighting and altitude. (Liz)
4.5) Try out 1 mussel pot within each mosaic and deploy a second site marker in Pot scar. Lift above scar and collect down looking scorpio images. (Chuck,Liz)
5) Run transects (Ian)
6) Collect push cores near coral and away from coral (Amanda)
7) Collect spatially recorded genetic samples as appropriate (Erik/Cheryl)
7.5) Collect associates as appropriate during genetic sampling (Tim)
8) Collect some 30 minutes of video for quality/lighting exam (Peter/Gaelen)

2nd JII lowering, 8/22/2009 JII 454 - DC 583

This should be about a 12 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, coral cutter on arm, 1 Niskin
Scorpio mounted on tilt frame on front of basket:
Parallel lasers,1 strobe and HMI down
1 strobe and HMI forward
One biobox and 3 quivers on each swing arm
10 push cores
12 quivers with associated markers in sleeves
36 stoppers in two milk crates
1 site marker
3 Mosaic markers
3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:
1) Dive on Big Mound (Mound #1) (Erik/Chuck):
28°23.1066 N, 87°23.2812 Depth 2465m
2) Check out the top of his mound for hard outcrops and *Lophelia*
If abundant corals, then work here
If not then:
3) Come off the bottom and run to Waypoint 1 at top speed
4) Descend to sea floor at Way point 1, and continue transit to Way Point 2 which is a high ampl. Reflector on top of a valley coming up through an escarpment
Way point 2: 28°22.9806N, 87°22.8120W, Depth 2240m
5) On the way in, check out this escarpment and reflector for hard outcrops and *Lophelia*
If abundant corals, then work here (skip to #7)
If not then:
6) Run SE to waypoint 3, Which takes you along the top of an escarpment along a likely cretaceous outcrop. If things are interesting on the top of the escarpment, continue along it.
*** Had a bad daynight? No corals yet, but time remaining? Then head to way point 4 which is a hard reflector
7) **If *Lophelia* are present**, explore area dropping virtual targets (L1, L2, L3…) for *Lophelia* to get a feel for the size of the live coral area
7.5) If it is a good sized area, contact Ian and select 250 x 250 m area to design random transects (this takes about an hour to design and communicate)
8) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each. Also do tests on lighting and altitude. (Liz)
8.5) Try out 1 mussel pot within each mosaic and deploy a second site marker in Pot scar. Lift above scar and collect down looking scorpio images. (Chuck,Liz)
9) Run transects (Ian)

10) Collect push cores near coral and away from coral (Amanda)
11) Collect spatially recorded genetic samples as appropriate (Erik/Cheryl)
11.5) Collect associates as appropriate during genetic sampling (Tim)
12) Collect some 30 minutes of video for quality/lighting exam (Peter/Gaelen)

3rd JII lowering, 8/23/2009 JII 455-56 - MC 294

This should be about a 12 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, coral cutter on arm **2 Niskins**
Scorpio mounted on tilt frame on front of basket:
Parallel lasers,1 strobe and HMI down
1 strobe and HMI forward
One bioboxe and 3 quivers on each swing arm
10 push cores
12 quivers with associated markers in sleeves
36 stoppers in milk crate
1 site marker
3 Mosaic markers
3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:
1) Dive on Launch target X (Erik/Chuck):
28.674304°N, -88.481078°W Depth 1390m
2) Proceed to way point 1 chasing sonar targets and looking for *Lophelia* and other corals on the way up the slope
Way point 1: 28.677161N, -88.477786, Depth 1360m
3) Spend some time here chasing sonar targets
4) Still no coral gardens? Go to way point 2 which is the high point in this area
Way point 2: 28.682715N, -88.481587, 1340m
5) Check out all sides and the top of his mound for hard outcrops and abundant coral
If abundant corals, then work here
6) If still not good coral areas, plan on surfacing soon.
7) **If *Lophelia*/ high coral density are present**, explore area dropping virtual targets for *Lophelia* to get a feel for the size of the live coral area
7.5) If it is a good sized area, contact Ian and select 250 x 250 m area to design random transects (this takes about an hour to design and communicate)
8) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each. Also do tests on lighting and altitude. (Liz)
8.5) Try out 1 mussel pot within each mosaic and deploy a second site marker in Pot scar. Lift above scar and collect down looking scorpio images. (Chuck,Liz)
9) Run transects (Ian)

10) Collect push cores near coral and away from coral (Amanda)
11) Collect spatially recorded genetic samples as appropriate (Erik/Cheryl)
11.5) Collect associates as appropriate during genetic sampling (Tim)
12) Collect some 30 minutes of video for quality/lighting exam (Peter/Gaelen)

4th JII lowering, 8/24/2009 JII 457 - AT 047

This should be about a 16 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, coral cutter on arm 2 Niskins
Scorpio mounted on tilt frame on front of basket:
Parallel lasers,1 strobe and HMI down
1 strobe and HMI forward
One bioboxe and 3 quivers on each swing arm
10 push cores
12 quivers with associated markers in sleeves
36 stoppers in milk crate
1 site marker
3 Mosaic markers
3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:
1) Dive on Launch target X (Erik/Chuck): 27.879198N, -89.787775, 863 m
2) Proceed upslope towards way point 1 (wp1) chasing sonar targets and looking for *Lophelia* and other corals on the way up the slope
Way point 1: 27.880814N, -89.789545W, 839 m
2.5) Spend some time here chasing sonar targets. When you see something nice, test out the camera and lighting in down looking mode (Liz P)
3) Still no coral gardens? Proceed towards way point 2, chasing sonar targets, especially as you near WP2
Way point 2: 27.885176N, -89.792854 W, 862m
4) If you don't see anything compelling on the way to WP2 or as you arrive, then continue uphill to WP3 chasing targets in this area as it looks good on the map. WP 3 is a local topo high.
Way Point 3: 27.887082N, -89.792199W, 839 m
5) If still no good coral areas transit to WP5, through WP4, staying low enough to see the ground, but moving fast enough that you can't readily stop.
As you approach WP 5 (last 50 m) you should be climbing a slope and should chase sonar targets if you have some. Way Point 5: 27.894344N, -89.793511W, 820 m
6) If still nothing, there is one more good chance, the ridge that runs between WP 6 and 7. Check it out.:Way point 6: 27.894706 N, -89.790299 W, 814 m
Way Point 7: 27.891601 N, -89.786849 W, 839 m

7) **If *Lophelia*/ high coral density are present**, explore area dropping virtual targets for *Lophelia* to get a feel for the size of the live coral area
7.5) If it is a good sized area, contact Ian and select 250 x 250 m area to design random transects (this takes about an hour to design and communicate)
8) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each. Also do tests on lighting and altitude. (Liz)
8.5) Try out 1 mussel pot within each mosaic and deploy a second site marker in Pot scar. Lift above scar and collect down looking scorpio images. (Chuck,Liz)
9) Run transects (Ian)
10) Collect push cores near coral and away from coral (Amanda)
11) Collect spatially recorded genetic samples as appropriate (Erik/Cheryl)
11.5) Collect associates as appropriate during genetic sampling (Tim)
12) Collect some 30 minutes of video for quality/lighting exam (Peter/Gaelen)

5th JII lowering, 8/25/2009 JII 458 - GC 235

This should be about a 16 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, coral cutter on arm 2 Niskins
Scorpio mounted on tilt frame on front of basket:
Parallel lasers, 2 strobes and HMI down
2 strobe and assorted lights forward
One biobox and 3 quivers on port arm
One biobox, 1 quiver, and HMI for down looking camera on STBD arm
10 push cores
12 quivers with associated markers in sleeves on basket
36 stoppers in milk crate
1 site marker
3 Mosaic markers
3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:

Find corals and work on them. The lines below will cover the targeted area. Stop at any time to collect cnidarian specimens, samples of key species for genetics, and conduct planned studies on *Lophelia* communities (see 'If *Lophelia* are present" plans). Deploy virtual and physical markers with genetic collections.

Each of the waypoints are over the sides of the expected hard grounds and the target areas are expected to be between these waypoints so on this dive it's the journey, not the destination that counts.

1) Dive on Launch target X (Erik/Chuck): 27.737025N, -91.187273W, 530 m
2) Proceed upslope towards way point 3 (wp3) chasing sonar targets and looking for *Lophelia* and other corals on the way up the slope and across the hard ground

Way point 3: 27.746440N, -91.192922W, 520 m
2.5) Stop at about 27.743 N during this line and deploy site marker
2.6) Finish transit to way point 3.
3) Proceed towards way point 4, chasing sonar targets
Way point 4: 27.739577N, -91.194050W, 530 m
4) From way point 4 proceed to way points 5 and 6, chasing sonar targets.
Way Point 5: 27.742495N, -91.197560W, 530 m
Way Point 6: 27.743209N, -91.195400W, 525 m
5) From way point 6 transit back to the site marker for a check on the USBL and if still no good coral areas turn the *Jason* over to Matt for full time Engineering tests.

I) **If *Lophelia*/ high coral density are present**, continue to explore area dropping additional virtual targets for *Lophelia* to get a feel for the size of the live coral area
II) If it is a good sized area, contact Ian and select area (of appropriate size ranging from 100 x 100m to 250 x 250 m) to design random transects (this takes about an hour to design and communicate)
III) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each.
IV) Try out 1 mussel pot within each mosaic and move the marker into the pot scar. Lift above scar and collect down looking scorpio images. (Liz)
V) Collect push cores near coral and away from coral (Amanda)
VI) Run transects (Ian)
VII) Collect more spatially recorded genetic samples as appropriate (Erik/Cheryl)

7th JII lowering, 8/26/2009 JII 459 - GB 299

This should be about a 12 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, coral cutter on arm 2 Niskins
Scorpio mounted on tilt frame on front of basket:
Parallel lasers, 2 strobes and HMI down
2 strobe and assorted lights forward
One biobox and 3 quivers on port arm
One biobox, 1 quiver, and HMI for down looking camera on STBD arm
10 push cores
12 quivers with associated markers in sleeves on basket
36 stoppers in milk crate
1 site marker
3 Mosaic markers
3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:

Find corals and work on them. Chase sonar targets. Stop at any time to collect cnidarian specimens, samples of key species for genetics, and conduct planned studies on *Lophelia* communities (see 'If *Lophelia* are present" plans). Deploy virtual and physical markers with genetic collections.

1) Dive on Launch target X (Erik/Chuck): 27.692451 N, -92.215976 W, 410 m
2) Proceed upslope towards way point 1 (wp1) chasing sonar targets and looking for *Lophelia* and other corals on the way up the slope and across the hard ground. Continue past the way point if there is any sign of hard ground or a distinct ridge

Way point 1: 27.690897 N, -92.216398 W, 390 m

3) Proceed towards way point 2, chasing sonar targets along and down this ridge

Way point 2: 27.690093N, -92.219831W, 410 m

4) Proceed up this ridge towards way point 3. You are going over hard returns to the highest point in the area, which Harry chose as the most likely site for coral at this site. chase sonar targets. Explore around 3 if any sign of hard grounds
Way Point 3: 27.683890N,-92.223577W, 340 m
5) From way point 3 transit back down the slope across across to way point 4 then back up to way point 5, then SSE along the ridge if there is one.
Way Point 4: 27.687698 N, -92.228040 W
Way Point 5: 27.685611 N, -92.231207 W

I) **If *Lophelia*/ high coral density are present**, continue to explore area dropping additional virtual targets for *Lophelia* to get a feel for the size of the live coral area
II) If it is a good sized area, contact Ian and select area (of appropriate size ranging from 100 x 100m to 250 x 250 m) to design random transects (this takes about an hour to design and communicate)
III) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each.
IV) Try out 1 mussel pot within each mosaic and move the marker into the pot scar. Lift above scar and collect down looking scorpio images. (Liz)
V) Collect push cores near coral and away from coral (Amanda)
VI) Run transects (Ian)
VII) Collect more spatially recorded genetic samples as appropriate (Erik/Cheryl)

8th JII lowering, 8/27/2009 JII 460 - GB 535

This should be about a 16 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, coral cutter on arm 2 Niskins
Scorpio mounted on tilt frame on front of basket:

Parallel lasers, 2 strobes and HMI down
2 strobe and assorted lights forward

One biobox and 3 quivers on port arm
One biobox, 1 quiver, and HMI for down looking camera on STBD arm
10 push cores
12 quivers with associated markers in sleeves on basket
36 stoppers in milk crate

1 site marker
3 Mosaic markers
3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:

Find corals and work on them. Run transect lines during search phase and do not divert during 100m lines. Otherwise: Chase sonar targets. Stop at any time to collect cnidarian specimens, samples of key species for genetics, and conduct planned studies on *Lophelia* communities (see 'If *Lophelia* are present" plans). Deploy virtual and physical markers with genetic collections.

1) Dive on Launch target X (Erik/Chuck): 27.422880N, -93.597137W, 600 m
2) Proceed upslope towards way point 1 (wp1) chasing sonar targets and looking for *Lophelia* and other corals on the way up the slope and across the hard ground. Continue past the way point if there is any sign of hard ground or a distinct ridge

Way point 1: 27.423934N, -93.594506W, 550 m

3) Proceed towards way point 2, chasing sonar targets along and down this ridge

Way point 2: 27.425651N, -93.593700W, 570 m

4) Proceed up this ridge towards way point 3. You are heading towards a confirmed *Lophelia* sighting. Explore around 3 if any sign of hard grounds
Way Point 3: 27.426441N, -93.590222W, 540 m
5) From way point 3 you will be working your way up the ridge chasing sonar targets etc through way points 4,5 and 6.
Way Point 4: 27.427217N -93.586016W
Way Point 5: 27.429400N -93.580374W
Way Point 6: 27.430986N -93.577175W
6) Way point 7 is a small nob with low reflectivity as has been seen from coral mounds that scatter seismic energy: Way Point 7: 27.431809N -93.573180W

I) **If *Lophelia*/ high coral density are present**, continue to explore area dropping additional virtual targets for *Lophelia* to get a feel for the size of the live coral area
II) If it is a good sized area, contact Ian and select area (of appropriate size ranging from 100 x 100m to 250 x 250 m) to design random transects (this takes about an hour to design and communicate)
III) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each.
IV) Try out 1 mussel pot within each mosaic and move the marker into the pot scar. Lift above scar and collect down looking scorpio images. (Liz)
V) Collect push cores near coral and away from coral (Amanda)
VI) Run transects (Ian)
VII) Collect more spatially recorded genetic samples as appropriate (Erik/Cheryl)

9th JII lowering, 8/29/2009   JII 461 - GC 852

This should be about a 20 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, coral cutter on arm 2 Niskins
Scorpio mounted on tilt frame on front of basket:
    Parallel lasers, 2 strobes and HMI down
    2 strobe and assorted lights forward
One biobox and 3 quivers on port arm
One biobox, 1 quiver, and HMI for down looking camera on STBD arm
10 push cores
12 quivers with associated markers in sleeves on basket
36 stoppers in milk crate
1 site marker
3 Mosaic markers
3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:

Survey northern end of the site where we have not worked as much. Chase sonar targets. Stop at any time to collect cnidarian specimens, samples of key species for genetics or mussel pot if very lucky. If you discover the new Coral Paradise, stay and shoot a photomosaic or if it is a large area contact Ian to set up transect runs. Then head south to known area of hard coral presence for mosaics and community collections. Deploy virtual and physical markers with genetic collections.

1) Dive on Launch target X 27.124725° N, -91.164113° W (Erik/Chuck):
2) Proceed over topographic high towards way point 1 (wp1) chasing sonar targets and looking for corals on the way up the slope and across the hard ground.
    Way point 1: 27.121405° N, -91.163612 ° W
3) Proceed towards way point 2, chasing sonar targets along this ridge
    Way point 2: 27.121842° N, -91.165794 ° W
4) Proceed up and over 2 more local highs part way towards way point 3 and had over to Ian for photo transects.
    Way Point 3: 27.119446° N, -91.163796 ° W
4.5) during photo transects drop digital targets for coral hotspots for collections, possible mussel pots, and mosaics.
5) When done up here, continue along a little ridge to waypoint 4. Scan the area and spend a minute chasing targets. Consider this area for a current meter deployment and keep your eyes open for others near 5,6,7
    Way Point 4: 27.118329° N, -91.164656 ° W
6) Still nothing incredibly impressive? Begin the run down the ridgeline towards 5 and the old coral garden site. Chase targets and check edges and top of the ridge.
    Way Point 5: 27.114800° N, -91.164401 ° W

7) Pass over waypoint 5 in the middle of the ridge and evaluate for potential current meter deployment site. Continue on to waypoint 6 at the north end of the chemo/coral area.

Way Point 6: 27.111746° N, -91.164879 ° W

8) Scan around waypoint 6 for sonar targets and see what's here. If nothing too interesting, head to waypoint 7, the location of the hard coral mound.

Way Point 7: 27.110066° N, -91.166354 ° W

9) See if Ian's camera deployment is here. If so, drop a target here and let Chuck, Ian and Matt know. Evaluate recover options. Take a mussel pot in the coral rubble, if possible. If you can get small samples of live coral here, do this too.

10) Evaluate current and area for a mosaic. If looks doable and time allow, go for it. There should be a good diversity of gorgonians here, so take some paired images and genetics samples.

11) By 1600 turn the *Jason* over to Matt for engineering focused operations

Tell Matt that the steepest scarp is WSW from about 27.106°N, -91.1675 W

Another almost as steep is due E of Ian's camera (where we might need to end the dive)

12) At the end of the dive, you may need to go back to the hard coral area and get Ian's camera,

I) **If *Lophelia*/ high coral density are present**, continue to explore area dropping additional virtual targets for *Lophelia* to get a feel for the size of the live coral area

II) If it is a good sized area, contact Ian and select area (of appropriate size ranging from 100 x 100m to 250 x 250 m) to design random transects (this takes about an hour to design and communicate)

III) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each.

IV) Try out 1 mussel pot within each mosaic and move the marker into the pot scar. Lift above scar and collect down looking scorpio images. (Liz)

V) Collect push cores near coral and away from coral (Amanda)

VI) Run transects (Ian)

VII) Collect more spatially recorded genetic samples as appropriate (Erik/Cheryl)

10th JII lowering, 8/30/2009 JII 462 - GC338

This should be about a 16 hour dive

Basket/vehicle loading:

5 chamber slurp sampler, CTD, coral cutter on arm 2 Niskins

Scorpio mounted looking down on rear of basket:

Parallel lasers, 2 strobes and HMI down

Ian Camera forward port side of basket

One biobox and 3 quivers on port arm

One push core rack on Stbd swing arm

12 quivers with associated markers in sleeves on basket

36 stoppers in milk crate

1 site marker

3 Mosaic markers

3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:

Find corals and work on them. Stop at any time to collect cnidarian specimens, samples of key species for genetics, and conduct planned studies on *Lophelia* communities (see 'If *Lophelia* are present" plans). Deploy virtual and physical markers with genetic collections.

1) Dive on Launch target X (Erik/Chuck): 27.6700°N, 90.47968W, 900 m
2) Look around and chase sonar targets.

3) Proceed towards way point 1, chasing sonar targets

Way point 1: 27.67203N, -90.47437W, 850 m

4) Proceed up slope to local high. Plan rest of dive after looking at multibeam
5) If all else fails, there is another seismic target 2.4 km away. You can always come off the bottom and proceed at 1 knot and get there in about an hour.

Way Point 2: 27.64876N, -90.47948W, 950 m

I) **If *Lophelia*/ high coral density are present**, continue to explore area dropping additional virtual targets for *Lophelia* to get a feel for the size of the live coral area
II) If it is a good sized area, contact Ian and select area (of appropriate size ranging from 100 x 100m to 250 x 250 m) to design random transects (this takes about an hour to design and communicate)
III) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each.
IV) Try out 1 mussel pot within each mosaic and move the marker into the pot scar. Lift above scar and collect down looking scorpio images. (Liz)
V) Collect push cores near coral and away from coral (Amanda)
VI) Run transects (Ian)
VII) Collect more spatially recorded genetic samples as appropriate (Erik/Cheryl)

11th JII lowering, 8/31/2009 JII 463-464 MC 751

This should be about a 20 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, coral cutter on arm, 2 Niskins
Ian camera on front of basket
DSC in downlooking mode:

Parallel lasers and 2 strobes down

One biobox and 3 quivers on port arm
10 push cores on stbd arm
10 quivers with markers on basket
36 stoppers in milk crate
1 site marker
3 Mosaic markers
2 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:

Start south of known area. Run along ridge to known site and chase sonar targets between "L" waypoints. Confirm this is a good area for the transect.. When over center of good *Lophelia* area, complete community sampling (photo and physical). Stop at any time to collect cnidarian specimens, samples of key species for genetics When done here, move larval trap to area next to *Lophelia*. Then continue to "R" waypoints, chasing sonar and making opportunistic collections. Deploy virtual and physical markers with genetic collections.

1) Dive on Launch target 28.189694, 89.797754, 463m (Erik/Chuck):
2) Proceed along ridge towards way point 1 (wp1) chasing sonar targets and looking for corals on the way.
 Way point 1: 28.191160, 89.799641, 459m
3) Head up-slope towards way point 2, chasing sonar targets. Find the edge of *Lophelia*, which is not well defined here. Look around a bit.
 Way point loph2: 28.192985, 89.798139, 443m
4) You should be in the high-density *Lophelia* area, and the next two waypoints are also in the known coral area. These are for guidance, but you can chase targets in the area between 2 and 3 and look around. If the map is on target, Ian's transect data is loaded and he can start, if not, pick a center point for transects, (alert **IAN**). Then take some pics with Ian's camera (after he sets it up), and take a photomosaic in the vicinity (**LIZ**), and a mussel pot while Ian gets ready.
 Way Point loph3: 28.194140, 89.797940, 439m
 Way Point loph4: 28.194997, 89.799915, 440m
5) Run transects over this area (**IAN**)
6) If transects have revealed another good area of *Lophelia*, go there and repeat pics, mosaic, coral pot iteration.
7)Take lots more samples for genetics.
8) After you've exhausted the known area, go get the larval trap and move it among the *Lophelia*.
9) After you've moved the larval trap, if you have time left, go to ridge waypoints, chasing sonar targets as you work through them.
 Way Point ridge1: 28.197990, 89.806347, 445m
 Way Point ridge2: 28.202014, 89.802994, 440m
 Way Point ridge3: 28.199058, 89.800759, 434m
10) At any point along the way, take genetic samples of Callogorgia, *Lophelia*, and Leiopathes, and sample for diversity. If/when you come across another heavy *Lophelia* area, take another photomosaic and coral pot if available. When sampling capacity is full, run through the rest of the waypoints and come home.

I) **If *Lophelia*/ high coral density are present**, continue to explore area dropping additional virtual targets for *Lophelia* to get a feel for the size of the live coral area
II) If it is a good sized area, contact Ian and select area (of appropriate size ranging from 100 x 100m to 250 x 250 m) to design random transects (this takes about an hour to design and communicate)

III) Meanwhile, Pick 3 areas of about 7 x 7 m within transect zone and mosaic each, deploying scale markers in each.
IV) Try out 1 mussel pot within each mosaic and move the marker into the pot scar. Lift above scar and collect down looking scorpio images. (Liz)
V) Collect push cores near coral and away from coral (Amanda)
VI) Run transects (Ian)
VII) Collect more spatially recorded genetic samples as appropriate (Erik/Cheryl)

12th JII lowering, 9/1/2009 JII 465 - VK 906

This should be about a 24 hour dive

Basket/vehicle loading:
5 chamber slurp sampler, CTD, coral cutter on arm, 2 Niskins
Ian camera on front of basket
DSC in downlooking mode:
Parallel lasers and 2 strobes down
One biobox and 3 quivers on port arm
10 push cores on stbd arm
10 quivers with markers on basket
Shank biobox on basket
36 stoppers in milk crate
1 site marker, 3 Mosaic markers, 2 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:
Start south on some unexplored "minimounts". If successful here, go to next mini mount. Run generally N exploring and to known site if needed. Chase sonar targets when appropriate. Stop at any time to collect cnidarian specimens, samples of key species for genetics. If get into a *Lophelia* mound or high density area consider mosaics and mussel pots. Use Ian-cam for at least an hour or two to test out new lens and get some nice shots. Slurp shrimp/crabs before we take off the slurp sampler. Deploy virtual and physical markers with genetic collections.

1) Dive on Launch target: 29.06903 N, -88.37711 W, 400m go to this mini-seamount and check it out (Erik/Chuck):
2a**) If this one is nice**, transit to way point 1 at flank speed. No need to look at the bottom.
Way point 1: 29.07401 N, -88.37982 W, 400 m
After working this mini-mount, come off bottom and fly to way point 2 at 1.0 knot.
2b) If this one is boring, come off bottom and fly to way point 2 at 1.0 knot.
Way point 2: 29.08444 N, -88.38212 W 390 m
3) From way point 2, Head up-slope towards way point 3, chasing sonar targets
Way point 3: 29.08583 N, -88.38256 W 370 m
4) If you have not gotten into the sweet spot yet, transit to way point 4 at moderate speed (0.4 knots) keeping in sight of the bottom and chasing sonar targets

Way Point 4: 29.08587 N, -88.38915 W   380m

This is a known *Lophelia* area. Check it out and chase sonar targets.

5a) If things have been going especially bad with respect to *Lophelia*, go to waypoint 5, another known area: Way Point 5: 29.08453 N, -88.39611 W

5b) If things are going well and time is left, head north to waypoints 6 and 7, and consider points north..

Way Point 6: 29.08940 N, -88.38831 W, Way Point 7: 29.09057 N, -88.38879 W

Way Point 8: 29.09358 N, -88.39038 W, Way Point 9: 29.09927N, -88.3898 W

13th JII lowering, 9/3/2009   JII 466 - VK 826

This should be about a 24 hour dive

Basket/vehicle loading:

CTD, coral cutter on arm.

2 Niskins

Ian camera on front of basket

DSC in downlooking mode:

Parallel lasers and 2 strobes down

One biobox and 3 quivers on port arm

10 push cores on stbd arm

10 quivers with markers on basket

2 Shank bioboxes on basket

36 stoppers in milk crate

3 Mosaic markers, 3 mussel pots

Slurp chambers: Orange is flow through for cleaning system, large mesh

Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:

Start south on the SE corner of the sentry photo survey in *Lophelia* and black coral. Work here for 8-12 hours: collect genetic samples, do 3 mosaics and 3 mussel pots and full set of push cores. Then deploy Ians camera and reposition the sediment trap mooring. Then to north to a new area and explore there and another area to the NW. If find a new area then conduct transects and make more collections.

1) Dive on Launch target: **X 29.156937°N, -88.015686°W** Work around here and to the north towards way point 1: **29.158574N, -88.014699°, °W**

Collect samples for population genetics and phylogenetics. (leave 4-5 quivers empty)

Make 3 mosaics and take 3 mussel pots

Take full set of push cores

2) Go to **29.16070°N, -88.01853°W** and see if this is a good spot for the sediment trap mooring

We want lots of *Lophelia*, hopefully with tubeworms near by

3) Go to the Elevator and deploy Ians time lapse camera

4) Spend 1-1.5 hours taking nice pictures with Ians Macro camera

5) Go get the sediment trap (**29.159083°N, -88.018862°W)** and move it to chosen spot

6) Collect live animals for aquaria: *Lophelia* to the bio box, small leiopathes to Tims box.

7) Take off for way point 2. Once you get close explore (chase sonar targets) and collect genetic samples and determine if this is a good spot for transects. If so, wake Ian

Way point 2: **29. 163470N, -88.014832 W**

8) Take off for way point 3. Once you get close explore (chase sonar targets) and collect genetic samples and determine if this is a good spot for transects. If so, wake Ian

Way point 3: **29.163944 N, -88.01063 W**

14th JII lowering, 9/4/2009 JII 467 - VK 826

This should be about a 16 hour dive

Basket/vehicle loading:
CTD
5 chamber slurp, 2 Niskins
Ian camera on front of basket
DSC in downlooking mode:
Parallel lasers and 2 strobes down
One biobox and 3 quivers on port arm
10 push cores on stbd arm
10 quivers with markers on basket
1 Shank biobox on basket
36 stoppers in milk crate
2 Mosaic markers, 1 mussel pot

Slurp chambers: Orange is flow through for cleaning system, large mesh
Blue and Black with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:

Start off end of the East peninsula in 510 m depth and work north to local bathy high. If find Leiopathes or Callogorgia, sample along with 4-6 *Lophelia*. Do a photo mosaic, mussel pot of live *Lophelia* and push cores Go to 530 m off the S end of the main area and work up from there to 480m. Collect the deepest *Lophelia* Stop half way and run Ian transect set. Spend one hour now using Ian's camera. Continue running N all the way to the current mooring and video.

1) Dive on Launch target: **29.15694°N, -88.01068 °W** Work around here and to the north towards way point **4: 29.15888°N , -88.01068W**

Collect samples for population genetics and phylogenetics. You only need 4-5 *Lophelia* from here, but could take 6-8 Leiopathes and lots of Callogorgia.

If this is a nice area, then make a mosaic and take a mussel pot, with a set of push cores.

2) Go to **Way point 5: 29.154231, -88.01470 °W** If you are still in *Lophelia*, head to the south until it stops. Go directly north, Collect samples for population genetics and phylogenetics. You only need 4 *Lophelia* from near the southern most extension of the *Lophelia*, but could take 6-8 Leiopathes and lots of Callogorgia.
3) Stop near 29.156°N and turn over to Ian for transects then 1 hour of pretty pictures.
4) Collect live animals for aquaria: *Lophelia* to the bio box, small leiopathes to Tims box.
5) Continue to the Way point 1: 29.15857°N , -88.01470°W (from last dive)

then pass by **Way point 6: 29.15677°N, -88.01486°W** on the way to the current meter deployment which should be near Way point 2: 29. 163470° N, -88.01483°W
6) If rich on time, head over to **Way point 7: 29.15696°N, -88.02032°W** at warp speed

15th Jason lowering, 9/5/2009 – J2-468, VK786, VK wreck

Basket/vehicle loading:
CTD (no pH sensor)
5 chamber slurp
Ian camera on front of basket
DSC in downlooking mode:
Parallel lasers and 2 strobes down
One biobox and 3 quivers on each swing arm
10 push cores
2 biochambers on basket
stoppers in milk crate
1 mussel pot container

Slurp chambers: Orange is flow through for cleaning system, large mesh
Black and Blue with 1 mm mesh, Green and Red 300 micron mesh

Dive Plan:

1) Site Specific Briefing. Held in conjunction with NOAA safety meeting (Chief Scientist and Principle Archaeologist)

2) Deploy ROV, locate wreck site

3) Reconnaissance survey to assess wreck site conditions

4) Conduct photomosaic of entire wreck site

5) Run biological transects to document sea life near and away (300m) from wreck

6) Push Core recovery

7) Microbial Platform Deployment

8) Close-up investigations and imagery

9) Artifact Recovery

10) Recover ROV.

16th Jason lowering, 9/6/2009 - J2-469, MC657, 7000' wreck

This should be a 16 hour dive

Basket/vehicle loading:
CTD (no pH sensor)
5 chamber slurp
Ian camera on front of basket
DSC in downlooking mode:
Parallel lasers and 2 strobes down
One biobox and 3 quivers on each swing arm
10 push cores
2 biochambers on basket
stoppers in milk crate
1 mussel pot container

Slurp chambers: Orange is flow through for cleaning system, large mesh
Black and Blue with 1 mm mesh, Green and Red 300 micron mesh

Dive plan:
names of people responsible for each task are in **bold**.
If they are not present, please wake them up
all times are approximate – tasks will immediately follow one another

1) Dive on Launch target, find the wreck using sonar
(**Rob Church, Erik Cordes)** on bottom ~1700, on site ~1730

2) Perform reconnaissance of entire wreck site, conducting a preliminary survey of all archaeological and biological targets (**Rob Church, Sheli Smith)** 1730-1930
NOTE: carefully log everything in virtual van at this point!

3) Conduct photomosaic of entire wreck from 5m altitude (**Sheli Smith**) 1930-2130

4) Run transects (**Peter Etnoyer**) 2130-2230
Move 100 m away at a heading perpendicular to wreck's orientation
conduct 3 50 m lines at 5 m altitude, 0.3 kts, 10 sec interval

5) Take push cores (**Amanda Demopoulos**) 2230-2330
4 cores off site immediately following transects
return to site, take 4 more cores

6) Microbial platform deployment (**Lori Johnson**) 2330-0000

7) Close-up investigation
Take lots of photos of both archaeologically and biologically interesting subjects

Biology (**Stephanie Lessard-Pilon, Cheryl Morrison)** 0000-0200
close-up photos to document sizes of corals on structure
sampling of targeted species of hard corals, black corals, gorgonians
Archaeology (**Sheli Smith, Rob Church**) 0200-0500
close-up photography and identification of significant artifacts
switch Best-of video to Medea camera and film *Jason* working

8) Artifacts recovery (**Jake Schnider, Sheli Smith**) 0500-0700

9) Recover *Jason* at 0800 (**Erik Cordes)**

17th Jason lowering, 9/7/2009 - J2-470, EW1008, Ewing Banks Wreck

This should be a 12 hour dive

Basket/vehicle loading:
CTD (no pH sensor)
5 chamber slurp
Ian camera on front of basket
deep-sea dust pan
garden shears
DSC in downlooking mode:
Parallel lasers and 2 strobes down
One biobox and 3 quivers on each swing arm
10 push cores
2 biochambers on basket
stoppers in milk crate
1 mussel pot container

Slurp chambers: Orange is flow through for cleaning system, large mesh
Black with 1 mm mesh, Green and Red 300 micron mesh, Blue with 63 micron mesh

Dive plan:
names of people responsible for each task are in **bold**.
If they are not present, please wake them up
all times are approximate – tasks will immediately follow one another

1) Dive on Launch target, find the wreck using sonar
(**Rob Church, Erik Cordes)** on bottom ~2030, on site ~2100

2) Perform reconnaissance of entire wreck site, conducting a preliminary survey of all archaeological and biological targets (**Rob Church, Sheli Smith)** 2100-2200
NOTE: carefully log everything in virtual van at this point!

3) Run transects (**Peter Etnoyer**) 2200-2300
conduct 3 transect lines over the wreck, 3 lines 100 m away

50 m lines at 5 m altitude, 0.3 kts, 10 sec interval

4) Take push cores (**Amanda Demopoulos**) 2300-0000
4 cores off site immediately following transects
return to site, take 4 more cores

5) Microbial platform deployment (**Lori Johnson**) 0000-0030

6) Close-up investigation
Take lots of photos of both archaeologically and biologically interesting subjects
Biology (**Stephanie Lessard-Pilon, Cheryl Morrison)** 0030-0300
close-up photos to document sizes of corals on structure
sampling of targeted species of hard corals, black corals, gorgonians
Archaeology (**Sheli Smith, Rob Church**) 0300-0500
close-up photography and identification of significant artifacts
rusticle collections (**Sheli Smith**)

8) Artifacts recovery (**Jake Schnider, Sheli Smith**) 0500-0730

9) Recover *Jason* at 0800 (**Erik Cordes)**

18th Jason lowering, 9/8/2009 - J2-471, GC245, Green Lantern wreck

This should be a 20 hour dive

Basket/vehicle loading:
CTD (no pH sensor)
5 chamber slurp
Ian camera on front of basket
deep-sea dust pan
garden shears/knife
DSC in downlooking mode:
Parallel lasers and 2 strobes down
One biobox and 3 quivers on each swing arm
10 push cores
2 biochambers on basket
stoppers in milk crate
1 mussel pot container

Slurp chambers: Orange is flow through for cleaning system, large mesh
Black with 1 mm mesh, Green and Red 300 micron mesh, Blue with 63 micron mesh

Dive plan:
names of people responsible for each task are in **bold**.
If they are not present, please wake them up
all times are approximate – tasks will immediately follow one another

1) Dive on Launch target, find the wreck using sonar
(**Rob Church, Erik Cordes)** on bottom ~1645, on site ~1700

2) Perform reconnaissance of entire wreck site, conducting a preliminary survey of all archaeological and biological targets (**Rob Church, Sheli Smith)** 1700-1900
determine if lantern recovery is possible (**Rob, Sheli, Jack)**
make a call on elevator launch and alert the bridge (**Erik Cordes**)

3) Conduct photomosaic of entire wreck from 5m altitude (**Sheli Smith**) 1900-2100

4) Run transects (**Peter Etnoyer**) 2100-2200
conduct 3 transect lines 100 m east of the wreck at same heading as mosaic
50 m lines at 5 m altitude, 0.3 kts, 10 sec interval

5) If the decision has been made to launch elevator, continue away from wreck and launch at a safe distance.

6) Take push cores (**Amanda Demopoulos**)
4 cores off site while waiting for elevator, or immediately following transects

7a) If there is an elevator:
get elevator and place it near wreck site

7b) If there is not an elevator:
return to site empty handed

8) take 3 on-site push cores (**Amanda Demopoulos)**
also slurp with fine mesh if something looks good

9) Microbial platform deployment (**Lori Johnson**)

10) Close-up investigation
Take lots of photos of both archaeologically and biologically interesting subjects
- Biology (**Stephanie Lessard-Pilon, Cheryl Morrison)**
  - close-up photos to document sizes of corals on structure
  - sampling of targeted species of hard corals, black corals, gorgonians
- Archaeology (**Sheli Smith, Rob Church**)
  - close-up photography and identification of significant artifacts
  - rusticle collections (**Lori Johnson**)

11) Artifacts recovery (**Jake Schnider, Sheli Smith**) 0800
give Matt a shot at the Ship's Bell
attempt collection of lantern if elevator present (**Sheli Smith, Jack Irion**)

12a) If there is an elevator:
begin recovery at 1030: come up off bottom, send release code, wait for acknowledgement, follow it to surface, recover elevator, recover Medea and *Jason*

12b) If there is no elevator, leave bottom by 1115

13) Recover *Jason* at 1200

19th Jason lowering, 9/9/2009 - J2-472, MC 497, Gulfpenn wreck

This should be a 12 hour dive

Basket/vehicle loading:
CTD
5 chamber slurp
Ian camera on front of basket
deep-sea dust pan
DSC in downlooking mode:
Parallel lasers and 2 strobes down
One biobox and 3 quivers on port swing arm
10 push cores on stbd swing arm
10 quivers on basket
2 biochambers on basket
stoppers in milk crate
1 mussel pot container w/ mussel pot

Slurp chambers: Orange is flow through for cleaning system, large mesh
Black with 1 mm mesh, Green and Red 300 micron mesh, Blue with 63 micron mesh

Dive plan:
names of people responsible for each task are in **bold**.
If they are not present, please wake them up
all times are approximate – tasks will immediately follow one another

1) Dive on Launch target, find the wreck using sonar
(**Rob Church, Erik Cordes)** on bottom ~2030, on site ~2100

2) Perform reconnaissance of entire wreck site, conducting a preliminary survey of all archaeological and biological targets (**Rob, Sheli, Erik, Cheryl)** 2100-2200

3) Run transects (**Peter Etnoyer**) 2200-2300
conduct 3 transect lines on wreck, 3 lines off wreck
50 m lines at 5 m altitude, 0.3 kts, 10 sec interval

4) Take push cores (**Amanda Demopoulos**) 2300-2400
3 cores off site after transects
return to site and take 3 on-site push cores
also slurp with fine mesh if something looks good

5) Microbial platform deployment/retrieval (**Lori Johnson**) 0000-0030

6) Rusticle collection (**Lori Johnson**) 0030-0130

7) temperature probe retrieval (**Stephanie Lessard-Pilon**)
do this at some point when you find it…

8) Close-up investigation (**0200-0700**)
Take lots of photos of both archaeologically and biologically interesting subjects
Biology (**Stephanie Lessard-Pilon, Cheryl Morrison)**
close-up photos to document sizes of corals on structure
sampling of targeted species of hard corals, black corals, gorgonians
If there is an appropriate target, take a mussel pot (**Erik Cordes**)

9) Leave bottom around 0730 and recover *Jason* at 0800

20th Jason lowering, 9/10/2009 - J2-473, VK 906

This should be a 16 hour dive

Basket/vehicle loading:
CTD
SM2K
single chamber slurp
Ian camera on front of basket
deep-sea dust pan
DSC in downlooking mode:
Parallel lasers and 2 strobes down
One biobox and 3 quivers on port swing arm
10 push cores on stbd swing arm
10 quivers on basket
2 biochambers on basket
stoppers in milk crate
1 mussel pot container w/ mussel pot

Slurp chambers: Orange is flow through for cleaning system, large mesh
Black with 1 mm mesh, Green and Red 300 micron mesh, Blue with 63 micron mesh

Dive plan:
names of people responsible for each task are in **bold**.
If they are not present, please wake them up
all times are approximate – tasks will immediately follow one another

1) Dive on Launch target (**Erik)** on bottom ~1630
29:03.930N 88:22.899W ~490 m depth

2) Examine immediate area, search for sonar targets (**Erik and Harry**) 1630-1730

3) Head east and scan the bottom of the trench and take a set of push cores when you find something interesting down here (**Harry and Amanda**) 1730-1830
fire a Niskin somewhere down here…

4) When you are south of the top of the mound, head uphill to Roberts' Reef noting when the coral starts (**Harry and Erik**) Deploy a temperature probe around here.

5) Watch out for markers and avoiding them, pick a spot to mosaic and coral pot
(**Steph and Erik**) 1900-2100
also fire a Niskin and deploy a temperature probe in the coral pot scar

6) Still avoiding markers, make a series of genetics collections (**Cheryl**) 2100-2400
NOTE: save a few quivers for later…

7) When done with genetics collections, set up for SM2K survey so that you end on the NE corner of the survey area 0000-0400

8) When survey is complete, wake **Erik** up and head for the small mound to the NE of Roberts' Reef

9) Survey this mound and finish filling your quivers (**Erik, Cheryl**)
0400-0730

10) If this area sucks, head over to the mound to the NW and finish filling quivers
at one of these two spots, deploy the third temperature probe

21st Jason lowering, 9/11/2009 - J2-474, VK 826

This should be a 12 hour dive

Basket/vehicle loading:
CTD
SM2K
single chamber slurp
Ian camera on front of basket
deep-sea dust pan
DSC in downlooking mode:
Parallel lasers and 2 strobes down
One biobox and 3 quivers on port swing arm
10 push cores on stbd swing arm
10 quivers on basket
2 biochambers on basket
stoppers in milk crate
1 mussel pot container w/ mussel pot

Slurp chambers: Orange is flow through for cleaning system, large mesh

Black with 1 mm mesh, Green and Red 300 micron mesh, Blue with 63 micron mesh

Dive plan:

names of people responsible for each task are in **bold**.

If they are not present, please wake them up

all times are approximate – tasks will immediately follow one another

1) Dive on Launch target (**Erik)** on bottom ~1230
29:09.25N, 88:01.37W ~490 m depth

2) Examine immediate area, search for sonar targets heading NE (**Erik and Harry**) 1230-1300

3) Begin to sample Callogorgia and other targeted coral species
(**Luke, Peter, Cheryl**) 1300-1500
also grab a few tubeworms
and a rock for Harry while down here
deploy a temperature probe down here
and fire a Niskin when over *Lophelia*

4) Take some push cores in bacterial mat, if possible (**Amanda**) 1500-1600

5) When done here, head towards Leiopathes area
29:09.428, 88:00.877

6) Along the way, when you see a lot of *Lophelia*, fill the bioboxes 1700-1800
drop a temperature probe and fire a niskin

7) sample Leiopathes to your heart's content (**Dannise, Cheryl**) 1800-2100
deploy the third temperature probe here

8) If there's still time, head over to Beryx Reef and see if the fish are still there…
2100-2300

9) come home and head to port

Shipwreck Investigation Plan

Every effort will be taken to not cause any damage or excessive disturbance to the wreck sites. The ROV should not at any time come in direct physical contact with the shipwrecks except when collecting planned archaeological and biological samples. The ROV will not be allowed to land on or next to the wreck sites.

The following (T**able 5-2)** is a of projected dive time by task for Sites 1-4. Site 5 (*Gulfpenn*) will be a shorter dive with mostly biological objectives.

Table 5-2. Projected dive time by task.

No.	Tasks	Time (hours)	Running Time Total
1	ROV Deployment	1	1
2	Reconnaissance	2	3
3	Bio Transect	1	4
4	Photo Mosaic	2.5	6.5
5	Close-up Investigation	2	8.5
	Biology	(~1)	8.5
	Archaeology	(~1)	8.5
6	Microbial Platform Deployment	.5	9
7	Core Samples	2	11
8	Coral Samples Recovery	2	13
9	Artifacts Recovery	2	15
10	ROV Recovery	1	16
	Total Time	16	

A site-specific briefing will precede each dive. The briefing can be conducted during transit to the site and in conjunction with the NOAA safety meeting.

(1) After the ROV is deployed,

(2) the first task is to conduct a reconnaissance of the main wreckage. The purpose of the reconnaissance is to assess the current conditions of the wreck site and aid the science team in deciding where to collect samples and place the microbial experiments. The reconnaissance procedure will be to slowly move down one side of the hull (out board of the gunwale) to inspect the outer hull (where applicable) and the material on the seafloor near, but outside of the hull. Then the ROV will reverse course and move back down the gunwale to view the inner hull and contents in board (at some sites it may be necessary to only make one pass along the side). The same procedure will be conducted on both sides of the vessel. Time also will be spent thoroughly inspecting the bow and stern areas.

(3) We will conduct a biology transect survey to document the sea life near and away (300m) from the wreck site. The survey will run along two sets of predetermined survey lines consisting of three parallel transects, 50 meters long, and spaced 10 meters apart (line spacing will depend on conditions at each site). One set will be run over the long axis of the wreck at an altitude that allows good visual documentation of the wreck. The second set will be run in the same pattern 300 meters away from the wreck.

(4) We will conduct a photo mosaic of the main hull structure. The survey procedure will be determined by the WHOI *Jason II* crew in consultation with the chief scientist, principle archaeologist, and MMS representative.

(5) Close inspections of biological and archaeological areas of interest will follow the photo mosaic operation. The close inspections may include detailed photography and documentation of specific corals or other areas of biological interest (i. e. rusticle formations, etc.), and specific areas of archaeological interest (i. e. specific artifacts or areas of hull construction, etc.). The archaeologists and biologists may conduct this operation in conjunction with each other or split the time depending on the varying interests at each site.

(6) At the end or during the close inspections microbiology platforms will be placed at each site. These are long-term experiments to analyze the microbial activity and rate of hull deterioration at each site. The microbial platforms will likely be taken down with the ROV. They will be placed at locations designated by microbiologist Lori Johnston with consultation from the principal archaeologist and chief scientist.

(7) We will take four sediment cores from locations selected during the reconnaissance and biology transects surveys. Two cores will be taken near the wreck site and two cores will be taken away (300 meters) from the wreck. The cores might be taken together as pairs for collection consistency and to expedite this task.

(8) Limited coral samples may be recovered at the site at the discretion and upon instructions of the chief scientist and in consultations with the MMS onboard representative.

(9) Limited diagnostic artifacts may be recovered at each site upon instructions of the principal archaeologist and in consultation with the MMS Archaeologist. At a minimum, rigging and copper sheathing, or planking samples will be collected from each wreck site. Other limited artifacts will be collected as warranted.

Coral and artifact recovery will be the last task before recovering the ROV to minimize damage to the samples.

Wreck Site Investigation Order:

1) Viosca Knoll Wreck (VK 786)
2) 7,000-foot Wreck (MC 657)
3) Ewing Banks Wreck (EW 1008)
4) Green Lantern Wreck (GC 245)
5) *Gulfpenn* (MC 497)

Brief Site Information:

1) Viosca Knoll Wreck - (VK 786)
Suspected early nineteenth century sailing vessel

Depth = 612 meters

Site Priority:

<u>Archaeology</u>

Photo Mosaic

Stern Area

- Ring and shaft
- Unknown Feature (4 pairs of container like objects)
- Damaged Area

Bow structure

Forward rigging

Outlining artifacts

- Patent Stove
- Ships Lantern

<u>Biology</u>

Lophelia at bow and forward port side and on Patent Stove

2) 7,000-foot Wreck - (MC 657)

Possible mid to late nineteenth century sailing vessel

Depth = 2,256 meters

Site Priority:

<u>Archaeology</u>

Windlass

Stern Area and Steering Machinery

Bow structure

Rigging – (port side)

Bowsprit and bowsprit area (possible dolphin striker)

<u>Biology</u>

Not known is corals are present

3) Ewing Banks Wreck - (EW 1008)

Possible late nineteenth century sailing vessel

Depth = 621 meters

<u>Archaeology</u>

Bow structure

Midship starboard side framing detail near possible metacouple

Starboard side details of copper sheathing, including lengths and fastener patterns

Stern Area

Central Structure (possible keelson or deck structure)

Possible Material Recovery

- Forward port side
- Ballast midship
- Stern Area material

<u>Biology</u>

Lophelia on bow (stem) and after along starboard gunwale (of fallen onto seafloor)

4) Green Lantern Wreck - (GC 245)

Mid nineteenth century sailing vessel

Depth = 915 meters

Site Priority:

Archaeology

Photo Mosaic

Forward rigging (mast location) port side

Starboard side material

Lanterns (aft)

Fork (forward of midship)

Bell (near midship)

Bow structure

Framing

Sheathing size and nailing patterns

Biology

Not known if *Lophelia* is present, but possibility of soft corals

5) *Gulfpenn* – (MC 497)

World War II Era Tanker

Depth = 554 meters

Site Priority:

Archaeology

Investigate 2004 Microbiology Platform (30 min.)

Biology

Lophelia documentation and collection

6 CRUISE SUMMARY

The following is a summary of the cruise activities and results. The sites are discussed in the chronological order visited. In some cases, later dives were made at the same site (**Table 5-1**).

8/19/09: Key West

Leave Key West at 15:30

8/20/09 - Florida Slope

Short delay to start of USBL calibration activities to prepare elevator**.**

Elevator launch at 1400
Gathered range and bearing data for USBL until 1930
Dry run and then:

Arrive on Station at 0900. JII dive 453 launch at 2020 for a 20 hour dive:
One mussel pot was lost during launch due to leak in containment bucket and therefore failure to fill with water before launch. There was a hard ground in TDI Brooks CTD so we cut power to the CTD. The scorpio camera was very problematic, so no mosaic or transects were accomplished.

We proceeded to bottom under launch site for a brief search for mussel pot. No success recovering the lost pot, but did see some *Lophelia* in this area ("L1" DVL target), near way point 6. Tested the coral cutter for a successful *Leiopathes* collection between way point 6 and 1. Proceeded to way point 1 and 2 with occasional sightings of isolated and small colonies of *Lophelia* and *Leiopathes* on isolated carbonate outcrops and boulders. Target 2 had isolated *Lophelia* colonies, and most notable were three small colonies within close proximity of each other with several *Stylaster* visible in the area. We then proceeded through way points 3 and 4. Target 3 was a small mound with *Stylaster* and sea stars, crinoids, and fish. Target 4 was a ridge with similar biological communities to target 3. In between targets 2, 3, and 4, was mostly mottled mud and several different species of benthic fishes.

The ridge at way point 5 was well defined with carbonate boulders and a large outcropping forming the ridge. Lots of *Stylaster*, sponges and assorted small gorgonians along this ridge. We proceeded to another ridge about 250m to the east of way point 5. Collected a *Leiopathes* on the way to the ridge and another after arrival. This was another well defined carbonate outcrop forming a ridge several meters high. Lots of sponges and scattered small cnidarian colonies although the carbonates were unexpectedly sparsely colonized. We then headed back (from "L2 DVL target) to the WSW to another mini-ridge and found more *Leiopathes*. We then came off the bottom to the WSW (Hdg ~200) to return 1,100m to a *Lophelia* colony we saw ("L1") very early in the dive. Once we were within 40m of "L1", we returned to the bottom and observed numerous (~6 to 8) small colonies of *Lophelia* and arrived at the distinctive and earlier observed colony at "L1". We collected this small colony (musselpot) and then moved about 15 m to another much older and larger mixed aggregation of dead and live *Lophelia*. We sampled and left our site marker (dive 453 bucketlid) at 16:25GMT here. Over the last 4 hours of the dive, additional *Lophelia, Leiopathes* colonies, as well as bamboo and *Callogorgia* corals were sampled, with all locations were noted and most marked (syntactic markers 6, 7 and 10 were deployed at these collection sites). *Anthomastus*, *catsharks*, and numerous fish species were observed as well as coral-associated crinoids, ophiuroids, galatheoids, barnacles, and an egg mass, were observed during the dive. Cycling power (leaving it off for ~1 hour) apparently enabled the Scorpio camera long enough (10 minutes) to conduct a brief calibration attempt at different depths and lighting conditions. The cutter mounted on the port arm worked very well although it does take an experienced pilot to operate.

Collections included: Two carbonate samples, one Niskin of bottom water, one slurp sample of a galatheid off of a *Leiopathes*, 6 samples of *Leiopathes* for population genetics, 6 samples of *Lophelia* for genetics, 2 samples of *Callogorgia* for genetics, one sample of *Stylaster*, one high-quality "mussel pot" *Lophelia* community collection and one marginal mussel pot collection, and 3 other collections of large subsamples of *Lophelia*, gorgonians, and bamboo coral along with associated fauna. We deployed a site marker and 3 collection markers (6, 7, and 10).

8/21/09 – Florida Slope

Jason recovered at 1630
Elevator recovered at 1700
Began transit to DC 583 at 1715

8/22/09 - DC583

Arrive on station JII dive 454 on DC583 at 1300 for a 19 hour dive at 0900 and immediately began to gather multibeam data across the site. The two mile line was completed in about 30 minutes and the data transferred to the *Jason* group.

Jason was launched at 1200, but lost the fiber optic link to the vehicle on the surface so was recovered for a quick repair
We dove on the E side of a mound at 28°23.11'N, 87°23.28'W. The exposed rock sides looked like pillow basalt or asphalt and 2 rock samples were taken. However after removal of the rocks from the sea floor they more resembled carbonates. The top of the mound was heavily sedimented and relatively flat, except for two 6-8 m diameter pockmarks at the crest of the mound. On the edges on exposed rocks, octocorals were moderately abundant. What appeared to be 5 different species were sampled as the vehicle slowly worked its way around the upper edge of the mound. On the Southern side of the mound numerous aggregations of tubeworms were spotted and one aggregation hosting zoanthids at the distal end of the tubes, shrimp, and amphipods, was slurped and the tubeworms sampled into the biobox. The ship lost its DP system at this point and *Jason* was forced to move away from the mound. When we returned to this same spot, additional tubeworms were sampled and a series of push cores were obtained. Further around the side of this mound a large clump of Bathymodiolid mussels were encountered on a vertical cliff wall and at the base. After some attempts at sampling the mussels on the wall, the mussel bed at the base was sampled using a mussel pot and two additional push cores were taken.

After completing a full survey of the perimeter of the mound, we went to the top of the mound and then transited to the east approximately 600m to the base of the escarpment and way point 1 (JII digital target 3) at 0.5 kt and 2-3 m off the bottom. There were a few instances where the ship lost its DP during this transit, and a more complete survey of the bottom was completed. There were occasional holothurians and a few isolated rattails and a tripod fish observed on the plain sediments during the transit.

From WP 1 near the base of the west-facing scarp, we proceeded upslope towards WP 2. The bottom of the escarpment contained slumping sediments that were stained with small white flow-like features.
The exposed lower scarp facies were devoid of sediment or corals. Small fault steps were evident and covered with mottled sediment. Surrounded by sediment, carbonate? boulders frequently had cracks as did some of in the scarp faces in which small colonies of tubeworms (2394 to 2325m), some with small white galatheids, shrimp, and zoanthids were seen.

A synaphobranchid eel was observed near one tubeworm colony. The scarp consisted of massive angular blocks with shelves of sediment.The first corals- *Lepidisis* bamboos were observed at 2282m on the scarp wall, now a shear face. Other bamboos (*Keratoisis*) were also present (most abundant at 0430-0435 GMT). At 2258m, two chrysogorgids were observed with associated shrimp (sampled *Iridogorgia* nearby as well). At 2252m, sampled a *Keratoisis* surrounded by other bamboos, and chrysogorgids. At this point corals were observed every ~5m of ascending altitude. At 2238m, began seeing *Paramuricea* with *Asteroschema* a single ophiuroids, more *Iridogorgia*, and then many Paramuricids with ophiuroids. The angular blocks comprising the scarp were becoming rounded terraces at 2211m, with small *Lepidisis* on the margins. The number of paramuricids with ophiuroids increased in number all the way to a sedimented local high on the escarpment which was reached at 0605 GMT (sampled paramuricid there).

We continued eastward around the top looking at bamboo corals on hard bottom, and then up a sedimented slope with outcrops sparsely hosting bamboo corals (all on east and south facing substrate and oriented in that direction). Noted several swimming holothurians near the top of the scarp and on top of mottled sediment. At 0630 GMT, came over lip of sendimented linear blocks (2215m), and then full mottled sediment over rounded terraces, no fauna other than two holothurian species. Ship moving very slowly to the east at this point. Traversed over “limestone-looking” bottom pitted with holes and evidence of scree slopes. Very interesting topography- with no sessile fauna (three nematocarcinid shrimp observed).

This terrain continued to the east for ~75-100m, until seeing a rim at 2209m that contained corals- abundant paramuricids. Dropped down 5 meters and found many bamboos (*Keratoisis*, *Lepidisis*, and other small whips) on an east-facing wall several meters tall and at least 30 meters long- at least ~1 coral per m2. Noted a “Narella-looking” primnoid amongst the bamboos, and sampled it at 0722 GMT. Paramuricids also here. Deployed syntactic Marker 6 on top of the wall. We dropped DVL target “Bamboo Wall”, as this was the greatest concentration of corals observed on the dive.

Continued southeast picking up step scarps between sedimented benches. These scarps hosted more bamboo corals, with venus fly-trap anemones, a few crinoids, ophiuroids and barnacles were observed on dead *Keratoisis*.

Continuing southeast we passed over hard bottom outcrops and scarps, seeing occasional *Lepidisis* and a single rat tail. We worked our way south along the ridge. Several squalls moving through the area pulled the ship off of it's DP and much of the last 6 hours of the dive was spent in the water column. Towards the top of the ridge and also around the base was heavily sedimented. Coral coverage on the exposed sides of rocks was generally sparse with large areas devoid of colonial cnidarians. A single collection of and branching Antipatharian was made during the last minutes on the sea floor and stored under an unused mussel pot because all bioboxes were full. *Jason* then ascended to about 1100m for a magnetometer calibration spin.

No site marker was left at this site although a small colony marker, "6" was left on the Bamboo Wall. The strobes for the forward looking camera failed during the dive.

8/23/09 – MC294

Recover *Jason* at 0810

0930 conduct a CTD cast
1030 recover and secure CTD and USBL
1100 begin transit to MC 294
1600 pass over MC 294 dive site collecting multibeam until 1 mile past site
1630 on station, but dive delay due to problem with Media

JII dive 455 on MC 294 at 1730, planned for a 16 hour dive
We dove on a point of high reflectivity at the bottom of a slope at 28°40.46'N, 87°28.86'W. We reached the bottom and there was an issue with the USBL system that the *Jason* group began to work on. While this was happening, the sub was called up for a medivac of one of our personnel to New Orleans for evaluation and treatment of a worsening condition.

1830 *Jason* called up for a medical evacuation
1920 *Jason* on deck
2000 Helicopter evac of Gaelin

JII dive 456 on MC 294 at 2045 for a 11 hr dive
We dove on the same point as dive 455 at 28°40.46'N, 87°28.86'W. The USBL system was still non-functional and remained out of use for the entire dive. When we arrived at the seafloor, the bottom appeared featureless. We began to transit up the slope to the first waypoint. There was very little on the slope except for fish and crustacean observations , and a few patches of reduced sediments. We arrived at the first waypoint and there was no evidence of hard grounds, so we turned to the northwest and began to transit to the second waypoint. The frequency of seep sediments (stained or with bacterial mats) increased and there were a few low-relief areas with carbonate pavement and a few small tubeworms in cracks on the edges. There was one area that was a bit more extensive and contained scattered tubeworms, dead mussel shells, and a very small patch of live mussels.

We arrived at waypoint two at the local topographic high and did a survey for sonar targets in the area. There were no targets observed during a survey of the area, so we proceeded to run a parallel transit to the southeast towards another area of high reflectivity on the same ridge line. There were a few isolated patches of bacterial mats and stained sediments, but no other features.

After arriving at the area of high reflectively we turned to the southwest and moved towards another topographic high with some high reflectivity on the southern edge of the ridge. Again, there were no remarkable sonar targets or exposed carbonates on this area of high reflectivity. We continued to the south along the ridgeline over the areas of high reflectivity until we descended to a depth of 1410m. There were slightly higher abundances of fishes along this area of the ridge, and an occasional sighting of stained sediments. We then turned to the north towards another high reflectivity area on the 3D seismic and did a test of the down looking camera rig and associated lights and strobes. We discovered that the down-looking HMI is not illuminating the field of view but strobe placement was fine. We then ran a test of the transect preparation and execution protocol and ran a series of photo transects to test out our methodology and also to compare mobile fauna density between area with and without corals.

A single pogonophoran with attached hydrozoans and 2 niskin water samples were collected during this dive.

8/24/09 - AT047

0800 recover *Jason*
0830 begin transit to AT047
1600 Arrive on station

JII dive 457 on AT047 at 1630 for a 15.5 hour dive
There was a minor glitch during launch when *Jason* initially failed to motor away from the ship and *Jason* was lifted out of the water and thruster function was visually confirmed. *Jason* was lowered again into the water and no further problems with the thrusters were evident. *Jason* arrived on the bottom about 1730 local time near the intended launch location ("x") and began the transit to waypoint 1. We immediately encountered extensive beds of exposed and unconsolidated vesicomyid shells and stopped to pick up one live clam to verify species (*Calyptogena ponderosa*). This was one of the very few obviously live clams seen during the dive, although disarticulated vesicomyid shells covered much of the sea bed seen during the dive. Moving upslope towards waypoint 1, the shell beds density increased and coral rubble joined the disarticulated shells. About 10 minutes into the dive we encountered a small linear patch of live mussels and decided to take a mussel pot in this bed in order to get a chemosynthetic endpoint for the coral trophic studies and identify the species of mussel and associated fauna present at this depth. A push core was used to scoop up bacterial mat. There were numerous *Paramuricea* gorgonians with large *Asteroschema* ophiuroids on them visible in the immediate vicinity (within 10 -15m) of the live mussels and we sampled two color morphs of these with associated ophioroids into the port biobox. Both were attached to disarticulated vesicomyid shells. As we continued upslope to way point 1 we passed over a lot of dead coral rubble and immediately encountered a large mound of dead coral, with live coral on the top and edges, and at least 4 golden crabs (Chaceon) moving through the coral framework. The was among the largest structures formed by *Madrepora* that we have yet observed in the Gulf. We took a small sample for genetic analyses, dropped two markers (#1 colony marker and "A" mosaic marker) and mosaicked the mound and immediately surrounding area. A mussel pot was taken in an area of the mound with dead coral only and the mosaic marker was moved into the

"pot scar" and documented with the down looking digital camera. Three push cores were taken immediately adjacent to the mound and three away to test for a reef effect on the sediment fauna.

After sampling the *Madrepora* mound, we continued up to the top of the local topographic high. We stayed along a ridge composed largely of dead coral and coral rubble as we moved to the north. The dead clam shells also continued to the top of the feature, where they increased in density. Colonies of *Paramuricea* with associated ophiuroids and a few live mussels were also noted. A small *Swiftia* gorgonian colony was observed and collected near the top of the feature. There were few sonar targets at the top of the feature, so we moved off to the west to survey the opposite side of the feature. The clam beds continued over on this side, but the frequency of gorgonians decreased and there were no scleractinians observed.

After we surveyed the western edge, we moved north to the next topographic high. We transited up the steepest part of this feature, and moved northeast then northwest, crossing the area of highest reflectivity on the mound. Although the clam shells continued, very few areas of exposed carbonates were noted. We moved north over the mound, and then turned to the west. Although the depth dropped off slightly, we did not notice the apparently steep drop off on the multibeam bathymetry. We turned to the north to come over the steepest part of the bathymetry, but there was still no exposed hardground. The clam shells continued.

On the next topographic high, there were a number of small mounds and a long, linear ridge of sediment. It was approximately 10-15 m long and 2 m high. These features may have been covering small accumulations of gas hydrate. There were dense clam shell beds and a few clumps of live mussels in this area. There were also a few exposed carbonates, but no corals observed. Under an overhang of one of the exposed carbonate pavements, there were numerous brachiopods and a small carbonate sample with a few of the brachiopods was collected.

We continued by moving east northeast over the next topographic high, there were a number of small sedimented mounds and depressions. Dead shell beds were present throughout this area, and the concentration of shells was highest at the summit of the topographic high. Hard bottom was not observed. Continuing to the east in to a valley before the next high we encountered darker smooth sedimented areas which may have been covering small accumulations of gas hydrate. Associated with these areas were small gastropods- their distribution was centered (if not limited to) those darker, hydrate-associated areas. Dead clam-shell beds continued upslope to the next high to the east. Atop this high were a few clumps of live mussels, and small exposed carbonate ledges that hosted brachiopod shells, below which were often darker sediment containing gastropods. After passing the top of this topographic high, we turned south and ran along what appeared on the map to be a scarp or ridge wall. Proceeding down to the southwest, we traversed over additional ridges with the same result- we observed no "hard bottom", no scarp features, and no corals. Clams were observed almost throughout our surveyed area.

We continued to the south and ran over two additional ridges immediately to the E and at the same depth of the location where the initial corals were sited. There was no exposed carbonate in this area and no sonar targets. We transited to the base of the slope to the E of the initial find and transited up to the mosaick/collection site but did not encounter any additional corals other than a few gorgonians within about 20 meters of the collection site. We then transited down slope, SSE away from the collection site and again ran into areas devoid of coral or other hard ground fauna within a few minutes.

Based on the multiple transits into and away from the area with live and dead coral, the abundance of dead coral on the slopes below the live coral and the absence of additional sonar targets in the region, it appears that this is an isolated relatively small but perhaps very long lived *Madrepora* colony.

After the dive it was noted that a hose on the CTD was inadvertently left on so no oxygen data was collected during the dive. Further investigation/QC check of CTD data revealed what appears to be a consistent offset of pH data as data is centered around 7.5 to 7.6. It was noted that the probe arrived to the ship dry (storage buffer around the probe had evaporated) and the decision was made to continue using the pH probe and adjust the reading with a post cruise calibration.

8/25/09 - GC235

Recover *Jason* at 0815
0830 begin transit to GC 235
1500 Pass over GC235 dive site collecting multibeam until 1 mile past site

JII dive 458 on GC235 at 1600 for a planned16 hour dive
We dove on 27.737025N, -91.187273W, an area to the southeast of a very distinct and well-defined area of high reflectivity. We proceeded to an area near the center of the reflectivity and deployed a site marker. The ROV was positioned facing the marker heading due north to get a good fix in order test the drift of the Doppler navigation system and the accuracy of the USBL as part of the *Jason* group's engineering dive. When this was complete, we continued to the northwest towards waypoint 3. When this point was reached, we turned to the southwest to cross the area of interest again towards waypoint 4. All of these transits were over plain, mottled sediments with no sign of colonization besides a few observations of fishes, occasional frenulate siboglinids (pogonophoran tubeworms), and a few crabs. The survey of the area of high reflectivity did not reveal any exposed hardgrounds.

When we reached the southwestern corner of the area, near waypoint 4, we observed a series of targets on the sonar. The first, and largest target was a series of large boulders colonized by tubeworms. This was a large and impressive aggregation of tubeworms, many covered in Acesta clams. We completed a perimeter survey of the boulders and stopped to take a series of still photos. When this was complete, we moved to a few other sonar targets in the area. These were colonized by a few tubeworms, small colonies of *Callogorgia* spp. and solitary corals. We made 6 collections on 3 different carbonates of *Callogorgia* and associated ophiuroids. As we were completing the final collections, there was a drop in hydraulic pressure related to a leak somewhere in the system. After discussing our options and the potential for securing hydraulics and continuing the engineering work, the decision was made to recover the vehicle. We left bottom after approximately 5 hours of bottom time.

Although we did not get a chance to visit all of our way points and potential targets, we had accomplished approximately 70% of the planned transits and gone over the areas of highest reflectivity and greatest elevation. As a result the decision was made to move on to the next site, rather than commit a second dive and surface interval to this site.

2150 *Jason* hydraulic failure and recovery

2230 *Jason* on deck, 2315 CTD cast

8/26/09 – GB299

0015 Begin transit to GB 299

JII dive 459 on GB299 at 0800 for a 24 hour dive

There were two main areas of interest. The first was a ridge on the north area of the survey that came up from 410m to about 370 m and had areas of high reflectivity from 400m up. We dove on the base of this ridge and landed in an area of soft sediment. As we worked our way to the south, up the first slope we quickly came to an area with a relatively high diversity of octocorals, antipatharians, sponges, basket stars, crinoids and ophioroids on what appeared to be very small carbonate rubble scattered on sediment, with a few small (<1m sized) boulders. We settled in here and collected at least 6 different species of gorgonian and antipatharian, most of which were associated with specific ophiuroids. We then continued up slope towards our first way point, and stopped to sample *Callogorgia* several times for population genetic studies. We passed our first way point to the apparent top of this local ridge, and turned west to traverse across and down slope to the area of way point 2. The low relief hard grounds were visible near the top of the ridge but disappeared near way point 2, near the bottom of this ridge.

We came about and headed back up slope heading south over the ridge and into the large area of high reflectivity to the south. Our way point three was located on the local topographic high and there are extensive areas of high reflectivity to the N of the high point. While traversing the high reflectivity area we encountered almost continuous small colonies of gorgonians on carbonate rubble and we stopped to sample numerous additional colonies of *Callogorgia* for population genetics studies and also passed over a small *Lophelia* colony and a small aggregation of tubeworms. We dropped digital targets here with the intent of returning to collect after surveying the rest of the site in the remaining time. When we passed into the area of high reflectivity towards way point 3, there were abundant hardgrounds on the seafloor and numerous colonies of *Callogorgia*. When we got to waypoint 3, we passed over this target and continued on to find the edge of the carbonate pavements. As the low-lying pavements began to become lass abundant, there was a large target on the sonar. This turned out to be a series of small boulders with 5-6 antipatharian colonies. We sampled a few of these using the cutting tool on the manipulator. We then turned north to pass over the high reflectivity again, then turned to the north west to continue on to waypoint 4. This entire area was covered with numerous *Callogorgia* colonies.

We left way point 4 and transited back to the N to about 360 m depth then turned east and traversed back into areas with moderate densities of *Callogorgia* colonies. We gathered images for a 7 x 7 photomosaic of these *Callogorgia* grounds, ran ten 150m randomized phototransects within a 250 x 250m box centered on this mosaic, and then gathered images for another photomosaic (5m altitude) in a high density *Callogorgia* area noted during the transects. Push cores were taken of the sediment within and outside of the *Callogorgia* field prior to the mosaicking (depth 358m), and then four *Callogorgia* samples with associated ophiuroids were taken from the mosaicked field, and Marker 16 deployed. We then transited south and fired the niskin over mottled sediment before leaving the bottom for an on time recovery 8 am recovery.

8/27/09 - GB535

0730 Launch small boat for camera ops: shooting *Jason* recovery
0800 recover *Jason*
0830 Begin transit to GB 535
JII dive 460 on GB535 at 1600 for a 20 hour dive

The dive began at 600m depth on the base of a long linear ridge about 500 m west of where there had been a *Lophelia* sighting in 2003 on the same ridge. We transited up the ridge and encountered scattered carbonate rubble near the crest of the ridge in 540 – 550 m depth. Common orange whip corals (the antipatherian *Stichopathes* sp), and colonies of three octocorals, *Narella* sp. *Nicella* sp., and *Scleracis* sp. were scattered on the exposed carbonate and samples of each were collected for morphological and molecular identification. Sponges were also abundant on exposed carbonates.

We transited along the ridge crest from west to east, following sonar targets. There were numerous small outcrops with sponges, whip corals, and the gorgonians already sampled. There were also a few isolated patches of *Lophelia* and we stopped to sample them. We ran linear 100 m transects at random points during our transit along the ridge crest. As we approached waypoint #4, we located 2 large sonar targets. They came within sight and appeared to be carbonate boulders. The ship had difficulty maintaining its DP at this point, and we were dragged off to the west to the base of the ridge. At the base, we noticed accumulations of dead *Lophelia* skeleton. Once we were able to climb back up the side of the ridge, the coral rubble continued all the way to the top where the two large sonar targets were revealed to be mounds of coral rubble with dead standing coral and 1-2 m diameter live *Lophelia* colonies. We surveyed the mounds and began to acquire two photomosaics, one forward-looking centered on the largest live *Lophelia* colony and one down-looking centered in *Lophelia* rubble where the mussel pot was taken. When these were complete, we took samples for *Lophelia* genetics, including a suction sample around the sedimented base of *Lophelia* that were sampled. In the sediment immediately adjacent to the *Lophelia* mound (adjacent as well to the suction sample), a series of on-reef push cores were taken followed by a series of off-reef cores in sediment 10s of meters north of the sampled *Lophelia* mound**.** We traversed 100m via a downlooking imaging transect line to the NE noting sonar targets. Following the transect run, we turned on reverse coarse ~20 meters parallel to the previous transect line to investigate sonar targets noticed during the run. We found elongate boulders hosting 4 *Lophelia* colonies (on the northern side), black corals, whips, galathieds and sponges. We sampled an “unknown” Antipatharian and mosaicked these *Lophelia* boulders. Following this, we obtained *Lophelia* samples from the colonies present. We then followed sonar targets and found another boulder with abundant live and dead *Lophelia*. We took another mussel pot community sample in the dead coral framework and took 2 additional *Lophelia* samples for population genetics.

After discovery of the boulders hosting *Lophelia* N of the original transect two more were planned to cover the area over the mounds and the area just up-slope of the mounds to determine the distribution of *Lophelia* on this section of the ridge. After the transects, we proceeded towards waypoint 6 and noticed sonar targets up-slope over the top of the obvious ridge. These were low-lying carbonates with tubeworms colonizing them. As we approached the ridge crest again, the seep-related features ended and another mound of *Lophelia* was encountered. We stopped to take a mussel pot sample at this location, and a few samples for genetics. We also used the slurp to sample galatheids on this mound. After this round of sampling, it was nearly noon, and the dive was ended.

8/28/09 - GC852

Recover *Jason* at 1200
1230 begin transit to GC 852
JII dive 461 on GC852 at 2400 for a 20 hour dive

We visited this site previously in 2006 and 2007, but there were large areas of the site where we did not have observations. We launched on a northern part of the site that we had not previously surveyed. When we were on the bottom, we proceeded to the south to survey a series of 3 areas of high relief. There was an area of high reflectivity over part of this area, but the main substrate type was mottled mud. As we proceeded south to the main ridge, we passed over the eastern flank. This was composed of very steep sediment-covered slopes with an occasional holes possibly caused by gas blowouts. We turned to the west and came up to the top of the northern end of the ridge. There were no hardgrounds apparent on any part of this area.

To further characterize this part of the site, a series of 10 random down-looking imaging transects were conducted over the northern most extent of the topographic high where corals were observed on a *Jason* dive in 2007. The laser dots were not present in the field of view below 5 m altitude, so the transects were run at random altitudes above 5 m. From this altitude the digital picture frame recorded a swath of approximately 3 m width, the bottom was not visible in the video camera and the sonar did not see the sea floor within 30 m of the vehicle. Only sedimented sea floor was recorded in the transects reflecting the low density of coral cover on large spatial scales at this site. To further investigate this area we approached the sea floor, transited towards the local topographic high and followed sonar targets to a ridge hosting 10 – 12 large colonies of bamboo coral and associated fauna. We imaged and sampled the bamboo coral colonies and then began the exploration of the ridge crest and flanks between this area and the coral gardens discovered in 2006.

As we left the northern end, we quickly came out of the hardground area and into mottled mud substrate once again. We passed over the central part of the ridge connecting the northern and southern parts of the site. We determined where the hardgrounds began again during the transit south, and chose a location near waypoint 6 for the placement of the current meter mooring to be deployed following the dive.

We then proceeded to the coral garden area discovered in 2006. Here we sampled bamboo corals, paramuricid corals (with anemones), *Bathypathes* antipatharians, the gorgonia *Swiftia*, and associated shrimp, galatheids as well as a purple carpet of soft alcyonarian corals near the southern edge of this reef. We then moved around the periphery of the site to a mound of living and dead *Madrepora* and found the time-lapse camera deployed in 2007, that failed to return when called back up in 2008. We decided to send the camera to the surface and separated the base weight plate from the camera/battery system to release the camera/battery/float component, which subsequently was recovered on the surface. While drifting to the east with the ship to recover the camera, we discovered a seep area with dead mussel/clam shells. We collected push core samples (3) of backgound sediment ~70m east of the dead shell bed area. We traversed back to the west, located the shell bed area and collected the remaining 7 core samples from sediment surface hosting white microbial coating. We then moved back north to the coral garden area to conduct a repeat mosaic of what was mosaicked in 2007. We completed two nested down-looking mosaics above *Madrepora* at the newly deployed Marker 2. We finished the science portion of the dive with a collection of genetic samples of *Madrepora* and *E. rostrata*. We then turned the dive over to the *Jason* group for 2 hours of focused engineering operations to continue to fulfill our obligation to provide one day of engineering time for the *Jason* group.

8/29/09 - GC 852

Recover *Jason* at 2000 and begin current meter mooring operation
2130: Current meter deployed at GC 852
2230: Begin transit to GC 338

8/30/09 - GC 338

Arrive at GC 338 at 0330
0400Multibeam over GC338
0600 GPS tests (ship and Akel)
JII dive 462 on GC338 at 0800 for a planned 16 hour dive

We dove on a seisimic high reflectivity point identified over a year ago as a target for this project. We collected multibeam data from the ship prior to the dive, processed it, and used it as an underlay for navigating the dive. The first target was located several hundred meters to the S of the east end of a ridge-peninsula that trended W to E. Only sediment was found in this area. We were transiting NE between the launch area to another target off the E end of the ridge also identified from MMS 3-D seismic data when small sonar targets were seen upslope to the N of our line. We began to chase these targets that were associated with *Calyptogena ponderosa* shells and increasing amounts of carbonate as we worked up slope. The sonar targets increased in reflectivity as we continued upslope as did the amount of carbonate associated with the targets. Several octocorals were associated with the carbonate rubble and small boulders on this slope and we sampled *Callogorgia*, *Chrysogorgia*, *Bathypathes*, *Paramuricea* and an unknown purple gorgonian. *Callogorgia* with associated ophiuroids were relatively abundant in this area and four samples were taken for population genetic analyses. We climbed up the toe of the ridge and turned to the northwest along the summit. This area was primarily plain, mottled sediments. When we made it up to the crest of the ridge, the habitat remained absent of corals or any signs of sonar targets in the area. After exploring the topographic highs in the region and the top edges on both the N and S of the ridge, we turned back to the east towards the second target. When we are about 300m short of the target the USBL and Doppler navigation began to act up and auto XY piloting became very erratic. After about an hour of engineering trouble shooting it was determined that the octans was dysfunctional and the decision was made to surface and address the navigation and steering issues.

2000 recover *Jason* early due to mechanical trouble
2100 begin transit to MC 751

8/31/09 - MC751

Begin Mooring release tests at 0600
0800 deploy sediment trap mooring
JII dive 463 on MC751 at 1200 for a planned 20 hour dive

Dive 463 was launched just after 1200 hrs following the repair of the octans and the navigation issues. Upon launch, a jellyfish hit the down-looking still camera and completely obscured the lens. The decision was made to recover the vehicle and clean the camera rather than lose it for the dive.

Jason Recovered at 1230 for lens cleaning

JII dive 464 on MC751 at 1300 for a 23 hour dive

Dive 464 was launched on a target along a ridge south of the area surveyed in Sept 2008 on the *Nancy Foster* cruise. We ran to the NW along the ridge, searching for sonar targets. There were very few exposed carbonates along the ridge, and no corals observed, so we turned to the NE towards the known area of *Lophelia* abundance. Once we began upslope towards this area, a number of carbonate boulders and outcrops were encountered with inter-mixed *Callogorgia* (with ophiuroids associates), tubeworms (with acesta clam associates), venus fly-trap anemones, and *Lophelia*. Before the dive, a point near the center of an area where *Lophelia* had been sited during the *Nancy Foster* cruise was chosen as a center point for a 150 by 150 m box and the way points for ten 100m transects were randomly generated. After confirming sufficient abundance of *Lophelia* to justify the transects, we ran the transects over the area to determine the extent of the carbonates and *Lophelia* abundance. When the transects were complete, we settled down for a series of photographs using the macro-camera that was mounted on the ROV.

During the transects, several potential areas for photomosaics were noted. The first mosaic was made over an area of interspersed *Lophelia* and tubeworms on the same carbonate platform adjacent to another carbonate platform colonized by a diversity of octocorals and *Lophelia*. When these mosaics were complete, a mussel pot sample was taken of an area within the mosaic where the coral was observed growing directly on the tubeworms. A series of pushcores was also taken in sediment adjacent to the mosaic area. The second mosaic was of another carbonate outcrop that was primarily colonized by *Lophelia*. Following the mosaic, a mussel pot sample was taken within the area covered by the mosaic, and push cores were taken immediately outside the area on adjacent sediment.

After the photographic and physical community sampling, sampling for genetics was conducted. The areas imaged for the photomosaics were avoided for genetic collections so we could re-image them the following year. There were numerous other targets in the area, and over the next few hours about a dozen samples each of *Callogorgia* and *Lophelia*, and the ophiuriod commensal with *Callogorgia* were collected for population genetic analyses, and at least 4 other species of corals for phylogenetic studies, including a distinct *Paramuricea* morph that previously observed, bamboo corals, and a *Paragorgia* coral (the 2nd observation of *Paragorgia* in the Gulf of Mexico) were imaged and sampled. Syntactic seafloor markers were deployed adjacent to collections to enable re-visitations next year. At least 3 species of fish were observed including Conger Eels and Scorpion Fish throughout the site.

Towards the end of the dive, we began to explore the ridge line to the north of this area. There were a few carbonate outcrops and boulders as we began the transit to the north. We stopped at two of these to obtain a few more genetic samples of *Lophelia* and *Callogorgia* away from the main sampling area. As we continued to the north, the frequency of carbonate substrata decreased. As we approached Waypoint R3, there were few carbonates, and it was almost entirely mottled sediments further to the north. The dive was ended just before 1200 near the small topographic high just to the NE of waypoint R3.

9/1/09 - VK906

Jason recovered at 1200
1230 Begin transit to VK 906
2000 Arrive VK 906
JII dive 465 on VK906 at 2000 for a 24 hour dive

We began this dive at a "mini sea mount" identified as an area of high reflectivity on MMS seismic maps. It is the S most of several that rise up to above 400m depth in the southern area of the VK 906 site mapped by the *Nancy Foster* in 2008. This little hill and others in the area had never been visited before by ROV or submarine. We landed to the east of this hill on the sea floor at about 420 m depth, and even before we approached the slope up to the hill the sea floor was impressive due to the density of glass sponges, anemones, and assorted crinoids and sea stars. We transited towards the mound and as soon as we started up the slope the density of life increased, small pieces of dead and live *Lophelia* were scattered on the sea floor, and Red *Leiopathes* began to appear. We named the mound "Robert's Reef." As we continued upslope the density of both *Lophelia* and Red *Leiopathes* increased. By the time we crested the top of the hill coral cover was extremely high, dominated by live and dead *Lophelia*, and although red *Leiopathes* were still present, the dominant black coral on the top of the mound was a white *Leiopathes*. After confirming the high density of corals on this mound we ran 10 predetermined 100m random photo transects that covered the entire mound.

We then proceeded to choose two of the *Lophelia* mounds to photomosaic, mussel pot and push core. After completing these tasks we began to make collections of *Lophelia* and *Leiopathes* for population genetic analyses. Over 20 independent, spatially explicit samples of each coral were obtained from various places on the flanks and top of this hill. We worked our way to the south west quadrant of the mound during this sampling effort and then proceeded to another small mound in deeper water about 250 meters to the SW of Roberts Reef. Colonial corals were very rare on this deeper mound, although sea anemones were abundant on the flanks and top. We did find two very small fragments of live *Lophelia* and sampled these.

We returned to Roberts Reef to make our live coral collections for later lab work and accomplished this on one corner of a single mound in about 20 minutes. We then spent 2 hours taking photographs with the macro camera, to test and use the 20 mm lens that was new for this dive. The camera captured beautiful landscape and intermediate scale images of the *Lophelia* and associated fauna at the site.

After completing the intense imaging session we transited north about 300 meters to another smaller hill with similar relief and depth to Roberts reef. As we began to climb up the side of the mound, we encountered an area with a few anemones and isolated, small pieces of *Lophelia*. Like Roberts, the coral cover increased as we climbed up the side of the mound, and it was covered with *Leiopathes* and *Lophelia* near the summit. We collected additional discrete samples of both for the population genetic analyses.

We then continued to the north to the next mound on the way to waypoint 2. This mound differed in that the relief was much lower and there was little evidence of exposed carbonates. The sides of the mound were less steep and exhibited increased abundance of anemones, but few colonial cnidarians. There was no clear peak of the mound, and we continued on to waypoint 2 at the S end of the main 862/906 mound.

As we began to climb up the S edge of the mound, we again encountered increased abundance of anemones and the substrate appeared to be coral rubble. This was similar to the habitat observed on the W edge of this mound at the end of the ROV dive during the September *Nancy Foster* cruise. However, there were primarily just anemones on this side of the S face of the mound, and no *Lophelia* was observed in the area between waypoint 2 and 3. After we reached waypoint 3, we moved to the W and observed a few antipatharians and a few small patches of *Lophelia* similar to the previous observations in this area. At this point, we ran out of time but had verified that the S end of the mound was composed of carbonate and coral rubble and contained isolated live *Lophelia*.

9/2/09 - VK826

Jason recovered at 2015
2025 begin transit to VK826
2215 Arrive VK826
2230 *Jason* Elevator deployed with USBL beacon and Ian time lapse camera
2400 Overnight ship operations to (re) calibrate the USBL

9/3/09 - VK826

0500 Setup to Deploy sediment trap mooring at VK826
0730 Sediment trap deployed
0800 Short delay for technical problems with *Jason*
JII dive 466 on VK826 at 0830 for a 23.5 hr dive

We landed south of the launch point on the slope below the more well studied area of VK826 that was the focus of the *Lophelia* I project. On this S slope, there were abundant large *Lophelia* mounds, but they were surrounded by sediment, and appeared not to be on carbonate. Many of the mounds are quite large and although some host abundant live *Lophelia*, most of the mass of the mounds are dead coral framework. We had navigation problems and spent a large part of the first hour of the bottom time trying to reconcile the Doppler with the USBL fixes. During this time we went over a deep (1 meter) long trough which appeared to be an anchor scar. We got a bit lost trying to get under Medea and obtain good navigation fixes and were never able to find this particular portion of the scar again. However, we did locate another apparent stretch of this linear anchor scar on the sea floor which we followed for about 60 meters and dropped 4 virtual targets along its length to document its heading and exact location. During this time we remained over extensive *Lophelia* areas with interspersed red-colored *Leiopathes*. After the scar reconnaissance, we headed south to about 29.1565° and set down to start sampling. We sampled paired samples of *Lophelia* and *Leiopathes* along a transect line starting at this depth heading north (upslope) for population genetic analyses. We took a total of 14 samples of each during this 4 hour endeavor. After passing the original launch depth we angled to the NW and areas we have worked before, stopping twice to make photo mosaics over *Lophelia* framework mounds and take mussel pots and push cores associated with these photomosaics. We then transited to the elevator and removed the time-lapse camera from the elevator and deployed it nearby the elevator landing location looking at a mixed mound of live and dead *Lophelia*. A ball marker was deployed for scale in the view of the camera. The camera is programmed to take one picture every 3 hours for one year and will be recovered next year.

We then transited to the sediment trap mooring location. It had landed approximately 0.5 meters away from a large live *Lophelia* aggregation, on sediment! However, our goal was to place it nearer the top of the mound among *Lophelia* and other corals but out of potential current “shadows” on the slope. We scouted out another location up slope and moved the mooring about 150 meters N to that location on the W edge of the crest near an area that we had sampled in 2005.

After finishing placement of the long term deployments, we headed to Waypoint 2, about 500 m to the NE of our deployments. We began up a steep slope covered in *Lophelia* until we got the crest of the mound. The top of the mound contained large areas of bare carbonate, as well as some bacterial mats and a few beds of clam shell hash. As we entered an area of rough topography on the Sentry multibeam to the NE of the crest, we began to encounter live *Lophelia* once again, but the coral cover was patchy as we continued to the NE and there were scattered tubeworms in cracks in the carbonates. In the immediate vicinity of waypoint 2 was an area of dense *Lophelia*. We decided to continue to the E across the trough to the isolated ridge line near waypoint 3.

The trough on the way to waypoint 3 consisted of mainly sediments, with the occasional tubeworm and more clam shell hash. During our transit across the trough, we turned to the N to begin the survey of the eastern knoll. We noticed a large circular target on the sonar, and turned towards it. As we turned, the target appeared to turn with us, then changed shape into 4 distinct targets and finally disappeared. We were puzzled, and continued on to the NE towards the crest of the ridge. As we approached the ridge, a huge school of *Beryx splendens* began circling the submersible. There were so many fish that they were swimming under the vehicle and causing the Doppler navigation to jump all around the area. The signature of this school on the sonar matched what we had observed before and we decided that this was the previous "mystery target." We attempted some images of the school on the hand-held camera in the holster on the vehicle, then continued on our way to waypoint 2. The school appeared to follow us over to the ridge, or there were numerous schools of fish in this area from the trough up the side of the ridge. The base of the ridge was composed of coral rubble and a few carbonate outcrops, and the *Lophelia* continued all the way to the top of the ridge. The entire ridge crest was covered in *Lophelia* thickets and vast schools of fish, so many that it was often difficult to see the substrate. We decided that this reef structure should be called Beryx Reef for the incredible numbers of fish that continued to circle the ROV for approximately 6 hours. We began a photomosaic here, but ran out of pictures half way through the imaging. We had also planned to take a series of photo transects in this area, but could not since there was no more room on the down-looking still camera. We fired one of the niskin bottles, made a coral pot collection here, and took 4 pushcores. We then took a long series of images with the hand-held camera.

We remained on this ridge because we were near an oil rig and the bridge requested that we not venture within 1 mile of the rig structure. We continued to collect samples for genetics and began transiting to the S and down slope, collecting along the way. We made approximately 10 *Lophelia* and 1 Callogorgia genetic samples. In some aggregations ophiuroids were present and these were collected for phylogenetic analyses. Plenty of *Lophelia* along this ridge and we stopped to make our collection of live *Lophelia* for transport back to out laboratories. We then transited south out of the *Lophelia* to look for areas with either Callogorgia or Leiopathes, continued over mud for 100m, turned W for 40 m, and came about N to return to the *Lophelia* site for an hour of high quality image collection to end the dive. We imaged a couple of areas with large *Lophelia* mounds, schools of fish, and assorted *Lophelia* associates.

9/4/09 - VK826

Recover *Jason* 0800
0830 Initiate Current Meter deployment at VK 826
0945 Current meter deployed
1100 Recover *Jason* elevator
1230 WHOI floats released
1255 Recover sediment trap mooring float package
JII dive 467 on VK826 at 1600 for a 16 hour dive

We dived on the Southern end of the peninsula on the East side of our Sentry data in about 520m depth to explore the edge of the depth distribution of *Lophelia* in this area. This is also as far to the east (close to the rig) as the captain was comfortable for this station. We transited up the ridge towards waypoint 4, and made several *Lophelia* collections along with collections of a red octocoral. We made a photomosaic of a large *Lophelia* mound on this peninsula with associated mussel pot and push cores. Before leaving this area we spent about 45 minutes collecting associates of *Lophelia* using the slurp sampler. We then began our transit to Way point 5, which was chosen to be past the Southern most and deepest area where we expected to find *Lophelia* below the main area of this site. We passed over scattered anemones, sponges, and glass sponges as well as small fragments and colonies of *Lophelia* during most of this transit. When we neared way point 5 (about 30 meters up slope to the N of the way point) we encountered a small colony of a white octocoral with Ophiuroid and shrimp associates next to a small red *Leiopathes* and settled in to sample. We were pulled off by the ship, but re-found the colony about 20 minutes later. We slurped the octocoral for shrimp and the surrounding area for Galatheids, then sampled the octocoral and ophiuroid and *Leiopathes*. We started up slope and made a few more Leiopathes collections before beginning the photo transects at about 500m depth. We ran 10, 100m random phototransects in a 250 x 250 m block centered about 150 m north of where we started. After the phototransects we found an area with numerous *Leiopathes* and settled in for high resolution photography and collections. We began with the first white colony of *Leiopathes* we had seen at this site this cruise. Over the next 1.5 hours we discovered that there were four quite distinct color morphs (or species???) of *Leiopathes* in this area and made several collections of each color morph for phylogenetic/population genetic analyses and carefully marked the collection sites so we could return for additional individuals if these color morphs differ genetically. During this time we documented many of these colonies with both best of video and digital images. We then began to transit towards the deep-water areas to the S of the western portion of the main area. We ran out of time and stopped image a catshark before heading to the North to document the current meter deployment.

9/5/09 – Crew Transfer - Acadiana

Recover *Jason* at 0800 and steam to meet the *Acadiana*

9/5/09 – VK786 - VK Wreck

Reconnaissance flyover:

Toured aft portside of hull on outside. Noted copper sheathing nailing pattern. Nails 5 cm apart. Sheets only overlaid only .5inch. Sheets long but not as wide as prescribed. Lots of evidence of patching. No visible evidence of copper stamp. Copper badly deteriorated on port stern exposing hull planking. Evidence of treenails. Washered pins on clamp in stern. Length 14in. Outer plank 3-4inches thick. Probably the clamp below the wale. Sternpost knocked to port, but leaning toward starboard. In debris field is an iron ring (4in thick) over 2 ft in diameter. Long bar attached at knuckle.

Came around stern and lingered around sternpost and bronze piece along with rigging and back forward along the starboard side. Came inside hull and toured on the inside down hull.

Summary

There were 19 transect lines run for the wreck mosaic; starting at the port side working towards the starboard at an altitude of approximately 6 meters. A stoneware jar was successfully recovered from the starboard stern section of the wreck. A sample of the copper sheathing was sampled from the site of the anchor/mooring rip in the port stern section of the wreck. A stove was also observed with the firebox door was still intact and the stove feet were clearly visible. A large section of the hull was covered with rigging; possibly a wire rope with a right hand lay.

Viosca Knolls Wreck Mosaic Run: 1/60 F2.6

Running between 6-6.4 m altitude
Portside Start

Line 1	47 m long	Frames ? – 1200
1 m shift to starboard		
Line 2	47 m long	Frames 1200 – 1164 (GMT 03:02
1 m shift to starboard		
Line 3	47 m long	Frames 1154 – 1120
1 m shift to starboard		
Line 4	47 m long	Frames 1117- 1079
1 m shift to starboard		
Line 5	47 m long	Frames 1077-1040
1 m shift to starboard		
Line 6	50 m long	Frames 1037-994 (up to 7.5 m altitude)
1 m shift to starboard		
Line 7	47 m long	Frames 991-955 (down again to 6.4)
1 m shift to starboard		
Line 8	50 m long	Frames 952-981
1 m shift to starboard		
Line 9	50 m long	Frames 887-840 (edge of hull starboard side)
1 m shift to starboard		
Line 10	50 m long	Frames 838-794 (last full long line)
1 m shift to starboard		
Running between 6-6.4 m altitude, then up to 7.4 then down again to 6.4		
Line 11	30 m long	Frames 792-765 (rigging)
1 m shift to starboard		
Line 12	30 m long	Frames 764-737 (rigging)
1 m shift to starboard		
Line 13	30 m long	Frames 735-712
1 m shift to starboard		
Line 14	30 m long	Frames 710-686
1 m shift to starboard		
Line 15	30 m long	Frames 685-661
1 m shift to starboard		
Line 16	30 m long	Frames 658-631
1 m shift to starboard		
Line 17	21 m long	Frames 630-614
1 m shift to starboard		
Line 18	10 m long	Frames 609-601
1 m shift to starboard		
Line 19	10 m long	Frames 599-591 (last line)

Detail and Recovery:

GMT 10:00
Slurp Clean the can (water filter salt glazed stoneware jar)
Location: Starboard Stern quarter near side of hull
Through Orange Flush
Rolling Best of vid
Artifact recovery in Bucket

Slurp clean on 8 pack in box
Location: Starboard Stern quarter adjacent to water filter jar
Rolling Best of vid
Orange Flush
*Most likely sludge left in bottom of disintegrated can. Sludge is black with rust edge

Copper Sample
Location; Outside hull at site of anchor/mooring rip Port stern quarter
GMT: 10:30
Port side bio box

Micro Bio Recovery
Location: Port stern quarter inside hull
GMT: 10:43
Rolling Best of vid
Note; Hull at this location 3" planking, drift has washer

Ran out to stove and rigging pile
145 m SSW of bow to rigging
77 m SW of bow to stove

Stove
Top –no evidence of seams
Firebox door still intact
Feet obvious

Rigging
Rigging lying on large section of hull
Wire rope, right hand lay, whipped in twined and tarred

On Map of wreck
Locations marked map
micro biological deployment location –GREEN
Artifact retrieval location – RED

9/6/09 – MC657 - 7000 FT WRECK

Reconnaissance

Arrive GMT 21:25
Best of Vid 21:30 Running aft on Starboard side
22:08 at mast rigging
22:10 at ring and boom yoke
22:05 at leaning anchor and flange

Ran outside hull from bow down starboard side around stern and up port side. The beak and head rigging for the bowsprit are still evident. The beak on the starboard side still has evidence of the wale, the beak knees, the hawse hole and the bitts riding at the top of the hull. It appears that both masts fell forward toward the portside. Mast caps and standing rigging lay out with some evidence of the mast wood. Lots of small artifacts probably personal belongings lie just inboard of the starboard bower anchor. The windlass barrel and the knees have flipped over forward, possibly during the mast failure event. Behind the windlass on the starboard side against the hull are the remnants of the water tank, the base to a ceramic storage jar and possibly the galley stove. On top of the stove is a lantern and a folded piece of textile. The textile has been folded twice. On close inspection the fabric looked like wool not duck.

Moving aft the mast ring and boom yoke lie amidships most likely near where the main mast was stepped. Just aft of the yoke is a large fragment of concreted deck with an anchor lying on it. The deck appears to have had a iron plate most likely the placement of the tops to the bilge pumps. The anchor does not have a stock which suggests that this vessel was a working boat (per Dana on the bridge of the *Ron Brown*). The pump tubes, rising up from the bilge, hold aloft the deck fragment and anchor.

Summary

There were 12 photo-transect lines for the wreck mosaic. They ran from starboard to port at an altitude of approximately 5.0m and a bearing of 21’. Several elements of the ship were still recognizable and some intact. Several pictures were taken of the stempost and beak, as well as, the windlass, anchor and wheel. Clearly visible on a compass on the wreck was “8888” and “BOS” which could stand for Boston. The compass was recovered with the recovery being captured on DVCAM video for “best of video” footage.

7000 ft Wreck Mosaic

Begin 21:30
Running from starboard to port
Altitude 5.0+ m
Camera 1/60 F2.6
Lined up on bow with a bearing of 21˚ for the mosaic

Line	Time	Altitude	Length	Frames
Line 1 Running aft	2238 start	5.5 m	25 m	1269-1246
Shift 1 m to starboard	To insure that we caught all of starboard side			
Line 2	2248	5.5 m	25m	1241-1222
Shift 2 m to port				
Line 3	2258 end	5.5 m	25 m	1216-1198
Shift 1 m to port				
Line 4	2258 begin	5.1 m	25 m	1196-1176
Shift 1 m to port	On run stem post dead center			
Line 5	23.04-2308	5.3 m	25 m	1173-1150
1 m to port				
Line 6	2312 end	5.6 m	25 m	1147-1131
1 m to port				
Line 7	2318 end	5.6 m	25 m	1127-1106
1 m to port	On run rigging appears at 10 m			
Line 8	2323 end	5.4 m	25 m	1105-1084
1 m to port	This was last full line up portside			
Line 9	2327 end	5.8 m	15 m	1081-1068
1 m to port	Only rigging on run			
Line 10	2331 end	5.3 m	4+ m	1066-1047
1 m to port				
Line 11	2333 end	5.3 m		1044-1035
1 m to port				
Line 12	2336	5.4 m		1032-1024
Last line				

Collection
Rustic at bow
GMT: 507
Stored in quiver 15

Aquapix photos: Stempost and Beak
GMT 541

Windlass
From port – stern and starboard
Anchor

Boom yoke and mast ring

GMT: 625
From starboard, bow and port

Anchor at pump
GMT 635

Wheel
GMT 638
From bow

Flange with possible cap
GMT: 648

Binnacle compass
GMT: 652

Wheel
GMT 654
From bow, port and stern (with rigging)

Compass
GMT 710
From starboard

Pump
GMT 717
From starboard

Recovery in stern of drape thought to be sail
GMT 736
Turned out to be a garbage bag

Best of vid in stern
GMT 759

Slurp clear on bung
GMT 806

Slurp clear on compass
GMT 821
Gimble ring
Edge of compass etched with ‘8888’ on rim
Compass intact card still in place
Clear view of ‘BOS [Boston]

Best vid Recovery of compass

GMT 902-925
Placed in bucket

Recovery of microbiology short-term experiment off of shelf next to wheel
GMT 926

Slurp clean top of suspected stove to expose lantern
GMT 935

Note: Washer on drift
GMT 1011

Note: Hawsehole
GMT 1021

Best vid of Hawsehole
GMT 1023
Focus on wale, beak knee and bitts

Recover sample of hull to front bio chamber
GMT 1033

Recover copper sheathing of transom
GMT 1051

Cruise ends

9/7/09 - EW1008 - Ewing Banks Wreck

2355 JII in the water
0033 Approaching wreck
0042 Visual on Wreck
    at stern port side

    Calibrating Nav – repositioning underlay image
0054 Start Recon - along side starboard side
    [Around bow and back down port side]
0204 Running up the center from stern to bow
0221 Setting up for bio transects
0225 imaging [with video] ceramics near stern
0228 Bio Transects

[Sleep]

0600 cores complete

Setting Micro bio platforms
0625 Start bio close-ups and collection
0855 Arch close-ups and collection
filming stern
0954 collecting net [at stern]
[Problems with starboard manip. claw sticking closed because of rubber fingers]
0937 moving to ceramics in stern
Cleaning ceramics
[cup fragment and base]
[all ceramics appear to be broken]
1017 ceramic in bio box
1028 photo of “dead wood” and ceiling planking
1044 colleted ballast stone from starboard side of keelson
1110 Rusticle collection from bow on stem
1125 Rusticle dropped
2nd attempt... dropped
[3rd attempt with manip. Claw – almost successful, impressive pick up, but falls apart before reaching bio box.]
1201 piece of Rusticle put in port bio tub
1202 securing camera
dropping weights while preparing to come up
1204 off bottom
1207 weights dropped NE of bow – away from wreck
1236 JII on deck
Transit to Green Lantern

9/8/09 – GC245 - Green Lantern Wreck

Reconnaissance: 2059-2230

Flew up the starboard side of the hull but the vessel is small enough that lots could be seen. From the starboard side it is clear that the port side has opened up and laid out pulling the deck beams with it. The ceiling shelf is still intact. There is also evidence of diagonal iron strapping on the portside. Standing rigging has fallen out on starboard side. Lots of chain, possible chain plate and anchor are lying over the starboard edge of the hull. Copper fragments outside along the hull on starboard side. There are three bobstays attached to the stempost. There are both square and hex bolts. The lead loading marks 'Y' and 'VI' are still intact on the stempost. Sliding down the starboard side the deck beam array is clearly evident. Easily found the fork, port lantern, porthole pane of glass, numerous sheaves, starboard lantern and ceramics. Swinging around the stern the transom parts are lying to either side of the sternpost along with the boom slide. The sternpost is gone but the rudderpost remains. The pin tel and gudgeon at the 'V' loading mark are still intact. There is evidence at the top of the rudder post of the tiller cap. There are massive amounts ofworm casings lying on top of the ceiling planking along the portside. Inside the hull on the portside is a mast spreader ring. The mast lies at a similar angle as the 7000 ft wreck out to the portside bow. The demasting episode appears to have at minimum expedited the collapse outward of the hull and tripped the windlass. The windlass knees are rolled upside down and lie perpendicular to their original location on the deck. The patent chain windlass is lying off the portside bow. The starboard side gears of the windlass have broken off but are still concreted to the windlass barrel.

Acapstan lies outside the hull on the portside in the stern. After flying around the wreck flew up centerline toward the bow.

Mosaic:

Note: Changed process in response to comments from biologists. In retrospect this was not a good decision on my part. Changed from ¾ wide to ½ wide angle at 5 m altitude.

Started at bow on portside to capture mast rigging moved in 1 m increments to starboard side of hull.

Shot *1/60* F.3.6 ½ wide angle

Bearing 340^{o}

Time [GMT]	Line	Length [m]	Altitude [m]	Frames
2234-2245	1 going aft	15m	5.5	1253-1234
2252-2257	2	15	5.0	1231-1209
2258-2303	3	15	5.1	1206-1188
2305-2310	4	15	4.9	1183-1163
2310-2324	5 first long run, very clean no artifacts	40	5.0	1162-1108
2325-2339	6	40	4.9	1103-1057
2340-2355	7	40	4.9	1046-993
2357-011	8	40	4.9	981-930
012-025	9 going aft	40	4.9	926-874
026-039	10 close to centerline	40	4.9	872-821
040-054	11	40	4.9	817-766
054-108	12	40	5.3	764-713
110-123	13 concern about coverage changed to ¾ wide lens f2.6	40	5.3	707-654
124-137	14 going forward last line edge of debris field mid frame	40	5.2	650-596

Dive Plan: Start in bow

1. Stem port to starboard Best of
2. Windlass on portside
3. Draft marks on bow
4. Hose
5. Mastring
6. Fork
7. Ceiling planking from starboard looking toward portside
8. Port Lantern photo
9. Plate photo
10. Capstan photo
11. Stern with rudder and gudgeon photo
12. Rudderpost
13. Draft mark on starboard side of sternpost
14. Starboard lantern and surrounding area
15. Bell and porthole glass
16. Clean and photo port lantern
17. Recover sheave [starboard foamed bio box]
18. Recover plate [goes in box with sheave]
19. Clean and photo starboard lantern
20. Recover fork [porch bio tube]
21. Recover bell [port tray bio box]
22. Recover lantern [bucket on porch]

Image and Artifact Collection:

Time [GMT]	Description
757	Aquapix bobstay fittings
807	Aquapix windlass
810	Best of windlass
818	Aquapix windlass knees
824	Best of hose and windlass knees [brow camera]
	Aquapix windlass knees and hose
830	Best of ring
836	Best of bucket, fork and micro experiment
837	Panorama taken at middle of ship [starts with pagoda at bearing 195° spins back around rotating toward the stern]
850	Aquapix port lantern [taken by Bob]
854	Best of stern frames
900	Best of on plate
904	Aquapix sternmost floor that is notched for sternpost and notched on forward side as well
	Aquapix capstan
909	Aquapix gudgeon
911	Best of Gudgeon
	Aquapix stern and rudder post
913	Aquapix stern on
915	Aquapix draft mark 'V'
919	Aquapix Starboard Lantern
921	Best of lantern

923	Aquapix lantern with white crab [Bob]
927	Note: Port lantern base has raised letters 'OMP'
	Aquapix port lantern base
933	Setting beast back in cradle
937	Best of pilot camera frame with lodge knee
939	Aquapix bell
1012	Rusticle recovery on stempost [Ben at helm][in bio chamber front on porch]
1024	Best of stem [brow cam]
1028	Best of starboard chainplate concretion and possible anchor
1043	Stow push core
1105	Micro experiment recovery
1124	Fork Recovery [Bob] [bio chamber front porch]
1151	Sheave Recovery off starboard stern quarter [Bob & Matt][stowed in port side tray bio box]
	Best of from Medea
1204	Plate Recovery inside starboard stern [Matt] [in starboard tray bio box with sheave
	Best of plate recovery
1242	Recovery of bell [Matt] [Picked up bell and backed off wrecksite 10 m came across two blocks in the standing rigging, slid forward toward the bow and set down]
-1255	Best of video of bell recovery
1259-1425	Recovery of Lantern [door came first. Picked up lantern and backed off wreck 10m off wreck to same location where set down for bell] [Changed grip on lantern could see pane of clear glass for back window. Rotated lantern for bucket and cracked glass lens slid loose. Placed lantern chimney down in bucket and secured with bungee cord. Found lens fragments and left them on floor of porch for ride up.
1440	Recovered what was believed to be chimney cap and placed in front porch bio chamber with fork [turned out to be a copper box]
1457	Slurp on port lantern to see tag on rear door.
	Best of on lantern
	Aquapix went down
	Forgot where copper sample located to disregarded collection
1527	Jason headed up

9/9/09 - MC497 - *GULFPENN*

We launched the sub to the SW of the wreck and began a slow approach to the port bow. We quickly found the wreck on sonar due to its large size. We arrived at the port side and came up to the rail of the wreck, approximately 8 m above the seafloor. The rail in this area was covered with anemones and a few small colonies of *Lophelia* were also present. We proceeded to the bow, which was covered in live *Lophelia*. We paused at the bow with the basket of *Jason* positioned right over the end of the bow to reset the navigation underlay. We then continued around to the starboard side, noting where the largest colonies of *Lophelia* were present. On the starboard bow, we noticed the temperature logger that was placed there the previous year on the archaeology leg of the *Nancy Foster* cruise. We carefully approached the wreck and reached over the rail and collected the logger (upon recovery, it was discovered that the logger had suffered serious degradation sue to electrolysis and had flooded). We continued our initial survey towards the stern along the starboard rail. At the main superstructure, we proceeded over the middle of the wreck to take some down-looking pictures of the telegraph that was used to communicate between the bridge and the engine room. We continued down the starboard side where there appeared to be more *Lophelia* colonization than there had been in previous years.

Near the aft deckhouse, we located the previous microbial experiment that had been deployed here. It had fallen over on its side, so we picked it up and stood it against one of the structures on the deck. We then returned to the rail and began running the transects along the starboard rail. We maintained a 4 m altitude with the rail in the photographs to document the potential reef effect of the wreck structure. Completed the transects on the wreck and then transited 100 m off the wreck to complete the off-site comparison. A set of push cores were taken out here away from the wreck.

We returned to the wreck along the bottom. As we approached the bow of the wreck, we noticed that there was abundant *Lophelia* on the seafloor at the base of the wreck. Apparently the coral is growing so quickly that it is breaking off of the structure, falling to the seafloor, and continuing to grow on the soft substrate at the base of the wreck. We returned to the rail of the wreck and deployed the new microbial experiments in this area. We spent the next few hours carefully documenting the size of some of the largest colonies of *Lophelia* on the wreck and making targeted collections for genetics. The positions of all collections and photographs were documented on the wreck plans provided by the archaeology team.

Following the genetics collections, we returned to the seafloor on the starboard side beneath the main superstructure where there was abundant *Lophelia* growing, both on the seafloor here and on the superstructure above. A coral pot sample was obtained here and a series of push cores taken in the immediate vicinity. *Jason* left bottom shortly after the completion of the core samples.

9/9/09 - VK709

We launched *Jason* to the SW of Roberts Reef and reached the seafloor at the bottom of the depression to the south of the mound. The immediate area consisted of soft sediments and a few anemones. We began to transit to the east, with a few diversions as the ship lost DP as the seas and winds built up a bit. Most of the area at the bottom of the trench was soft sediment, but we ran into some areas of higher relief corresponding to areas of high reflectivity in the 3D seismic data. We sampled some *Lophelia* and antipatharians from some of these hard substrata, and broke off a few pieces to determine their composition. We collected some samples of the substrate and also carefully imaged it. The boulders and outcrops appeared to be consolidations of coral skeleton and did not appear to be made of authigenic carbonate. After a survey of this area, we turned to the N towards the mound.

As we came up the S flank of the mound, the substrate transitioned from soft sediment to rubble, believed to be composed of *Lophelia* skeleton fragments. There were also numerous anemones and small Leiopathes of at least 3 different colors as we climbed up the side of the mound. We stopped to sample near the crest, just before we reached the reef structure. As we passed the 400 m depth contour, the abundance of *Lophelia* increased dramatically. We continued to the N over areas of high *Lophelia* abundance interspersed with various antipatharians, anemones, crinoids, and basket stars. Near the crest of the mound, we deployed a temperature probe. We also noticed a fairly large school of Barrelfish near the crest of the mound. We continued the survey around the mound to the W flank. This area dropped off steeply and contained a high abundance of live *Lophelia*, antipatharians, and at least 3-4 species of anemones. We deployed the second temperature probe here on this slope. We then continued to the E back around the mound and completing our survey of the perimeter.

When we were on the E slope of the mound, the cover of live *Lophelia* seemed the highest of any area of the mound. It was also the side of the mound facing the current. We deployed the third temperature probe in this area. We then completed two, nearly adjoining photomosaics and took a coral pot sample in one of the mosaics. A series of pushcores were obtained right near the coral that was sampled. Over the next few hours, numerous genetic samples of antipatharians and *Lophelia* were obtained. When that was completed, a SM2K survey of the entire mound was completed. This took approximately 4 hours and covered an area of approximately 250 X 250 m.

Following the SM2K survey, we transited over to the small mound to the NE of Roberts' Reef, which was not previously surveyed on the last dive at this site. This was a low-relief mound that also appeared to consist of coral rubble colonized by anemones, antipatharians, and a few small colonies of *Lophelia*. At the end of the dive, we collected one of these small colonies of *Lophelia* and placed it in the biobox to be returned alive to Temple and Penn State.

9/10/09 - VK826

This is the last dive of the cruise. It followed a 4-hour turn-around by the *Jason* group, something they are trying for the first time. This allowed us to squeeze in two dives at two different sites in the last 32 hours.

We launched *Jason* over the area to the SW of the main site which was known to contain high densities of Callogorgia. We did not obtain sufficient samples of this species during the previous two dives on this site. As soon as we reached the bottom, we noticed large authigenic carbonate blocks with an abundance of Callogorgia and immediately began sampling. There were also a lot of tubeworms in cracks in the carbonates around here and we sampled a few of these into the biobox. We transited to the NE towards the main site, collecting Callogorgia and carbonate samples along the way. The substrate here appeared to be cemented shell hash composed primarily of vesicomyid shells, and possibly a few mussel shells. We deployed a temperature probe in this area as a deeper reference for this site since there are temperature loggers on both of the moorings, and we will deploy two more temperature loggers in other areas of the site. At the site of the most reduced sediments and highest tubeworm abundance, we obtained a set of pushcores.

We continued to the NE over Callogorgia and antipatharians and continued sampling. We arrived at the edge of the *Lophelia* at the site and made a collection and deployed the second temperature probe. As we continued through the high density coral, we observed a very large shark. We followed the shark over continuous stretches of coral until it finally swam off faster than we could pursue. We were right near the long-term camera deployment, so we investigated it and it seemed to be in good working order, although we did not see a flash while we were there. We moved away from the vicinity of the camera and made some collections of live *Lophelia* to return to the lab. We were also right near the sediment trap mooring, so we investigated that as well.

We began to head to the east towards crest of the mound and the area of antipatharian abundance. We sampled antipatharians and *Lophelia* as we continued to the E. Near the crest of the mound, we turned to the N towards the current meter mooring. We continued to sample antipatharians along this transit. Harry Roberts then got to see the LSU current meter mooring in the NE corner of the main site. Following this investigation, we moved over to the ridge at the E edge of the site, dubbed “Beryx Reef” on the previous dive. When we began the transit across the trough between the mound and the ridge, we began to see the schools of Beryx splendens once again. Unlike the transit across the northern end of the trough, the bottom on the southern end of the trough was covered in dead vesicomyid shells, solitary tubeworms, and occasional carbonate rubble. As soon as we began climbing up the ridge, the numbers of Beryx increased as did the coverage of *Lophelia* on the bottom. At the top of the ridge, we turned to the north, collected a few more antipatharians, and deployed the third temperature probe. We then began recovery about an hour early to give the *Jason* group more time to begin their demob, the science party extra time to process samples, and let the ship begin their transit into port.

7 SITE SUMMARIES

The following section describes site characteristics biological observations and geological settings of the dive site locations visited during the cruise (see **Figure 5-1**). Dive maps showing *JASON*'s track and sampling locations, as well as representative photographs, are presented as individual figures at each site. The 22 dive sites are discussed in the chronological order visited, although later dives could have been made at the same site (see **Table 5-1**).

West Florida Slope Site Summary

Geological Summary

This site was chosen because the bathymetry patterns (hummocky bottom and numerous ridges) between about 375 and 500 m depth. No 3D-seismic data were available for this area. The bathymetric features of the area resembled those of another area 15 km to the north where *Lophelia* occurrence had been confirmed during JSL dives in 2003. The multibeam bathymetry of this area and our site was obtained in October 2008 using the *Nancy Foster* and provided by Steve Ross for this project. A dive track was chosen that allowed examination of numerous small features at depths between 450 and 425m and also along ridges at depths between 425 and 400m.

This site had numerous areas of hardgrounds ranging from boulders, pavements, linear ridges, to long, regional scarps formed by outcropping of resistant sedimentary beds, all likely to be exposures of Lower Tertiary carbonates upslope of the Florida Escarpment. At or near the edge of the slope, the top of Cretaceous seismic reflector outcrops everywhere along the extent of the Escarpment, and this site is upslope of this occurrence. Two rocks were sampled from this site and onshore analysis will determine their exact geologic age and composition.

The first rock was sampled in an area of numerous, highly fractured boulders along a N-S trending ridge downslope of the easternmost scarp at ~450 meters BSL. The fractures ran at right angles to each other and were filled with a very dark mineral (**Figure 7-1**). This sample (80 mm by 200 mm by 160 mm) was bounded on three sides by the fracture fill, which was thinner (10 mm) and denser than the rest of the rock, which was a granular, well indurated brown carbonate-rich sediment. Numerous small, sessile animals populated the sediment portion of the sample, while the fracture fill was completely devoid of life. The overall sample appeared to be a three sided bowl with cemented sediment “in” the bowl.

The second sample was attached to the base of a large coral sample and was smaller than the first (65 mm by 82 mm by 45 mm, **Figure 7-2**). It was an oval, brown, well indurated, granular sedimentary rock with holes(borings?) covering most of it. It was sampled on top of the easternmost scarp at this site at ~380 meters BSL.

Figure 7-1. Rock sampled with right-angle fractures.

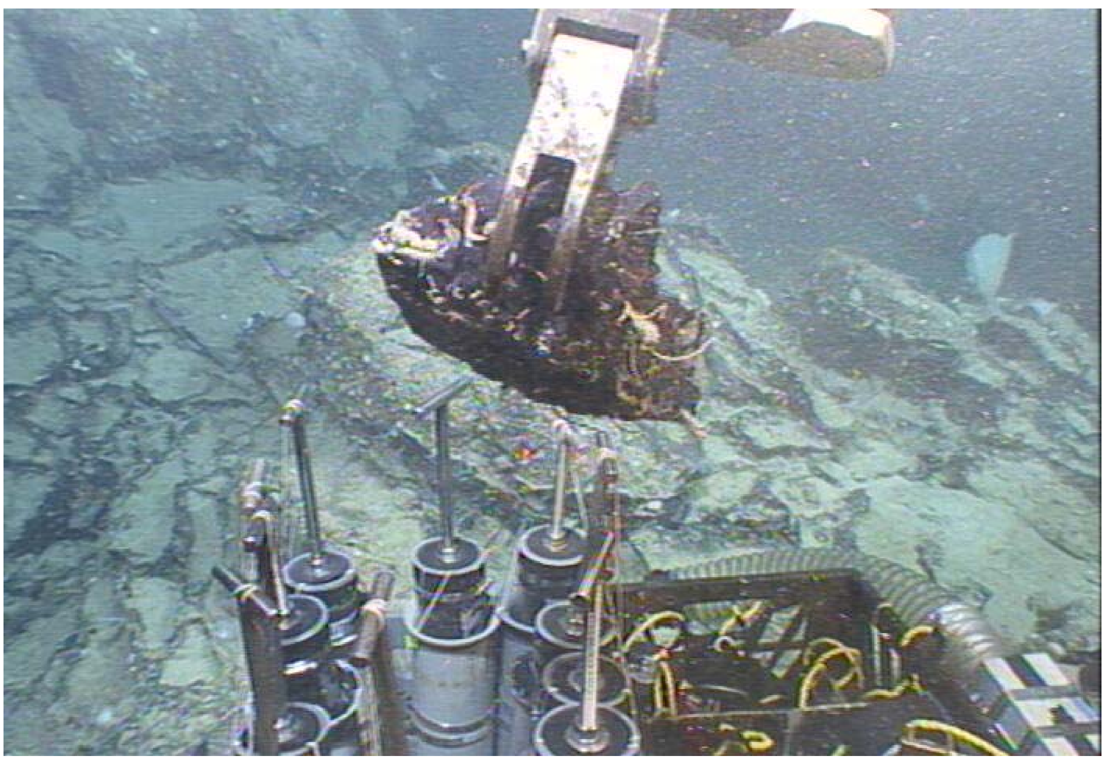


Figure 7-2. Second rock sample collected.

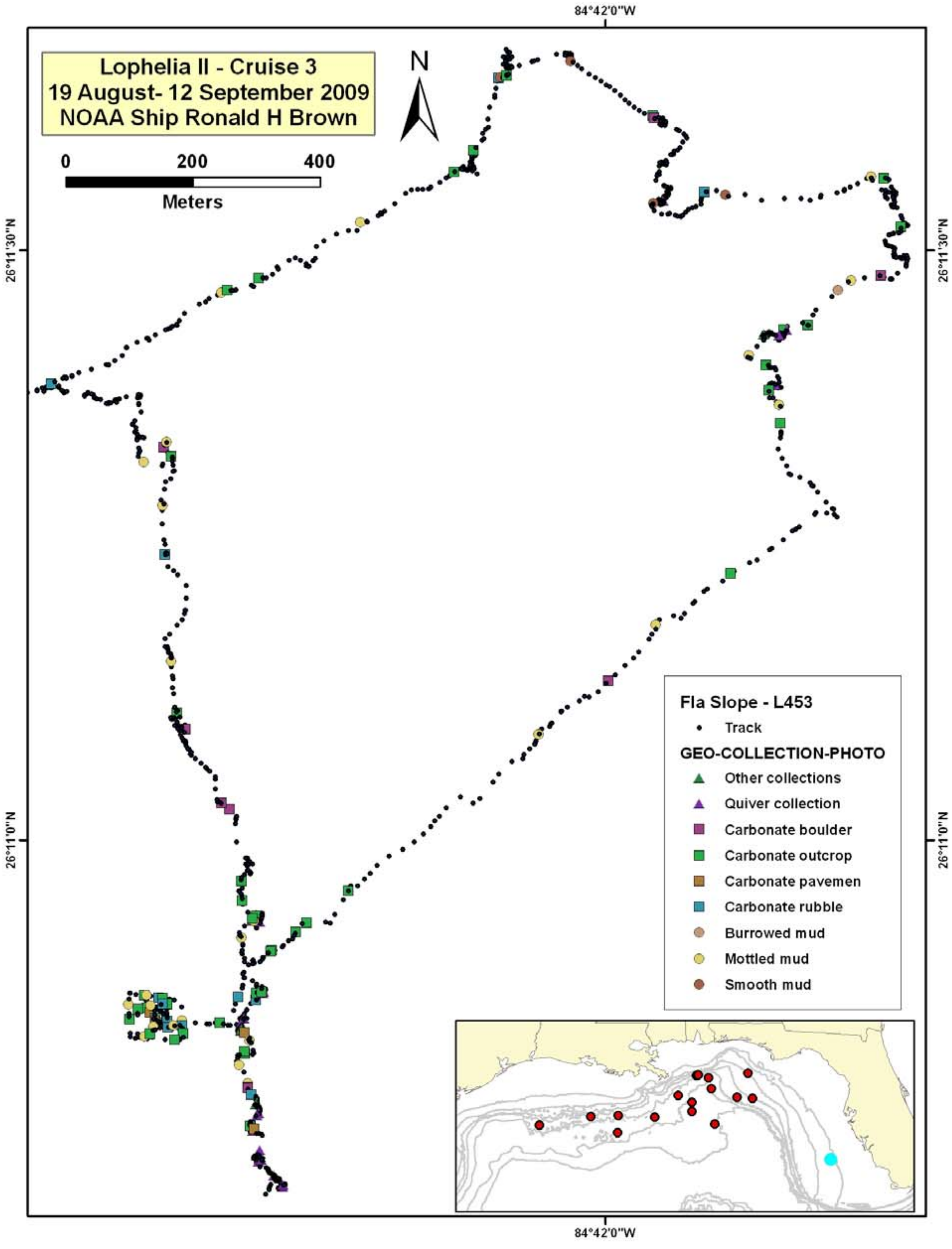


Figure 7-3. Geological-Collection-Photo events observed during lowering J2-453 at West Florida Slope (inset).

Biological Summary

Leiopathes (**Figure 7-**4) were present in most the areas surveyed, although their density was quite low and their distribution patchy. Much more common were colonies of *Stylaster* (**Figure 7-5**) which ranged in size from about 10 cm to 50 cm in height. Although there were many areas apparently suitable for *Lophelia*, it was only found in the deeper areas of the site we visited. Although there are many possibilities for the lack of *Lophelia* above about 425m meters, it was noted that the temperature in these shallower areas ranged up to 13°C, while in the areas.

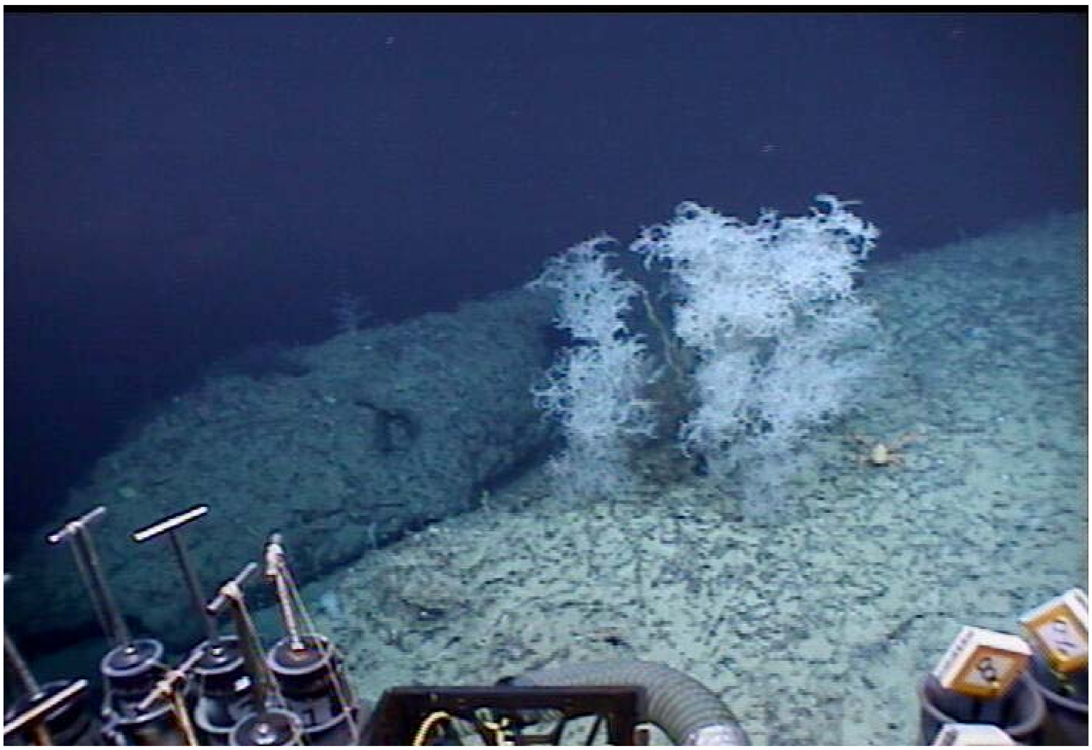


Figure 7-4. Large *Leiopathes* colony.

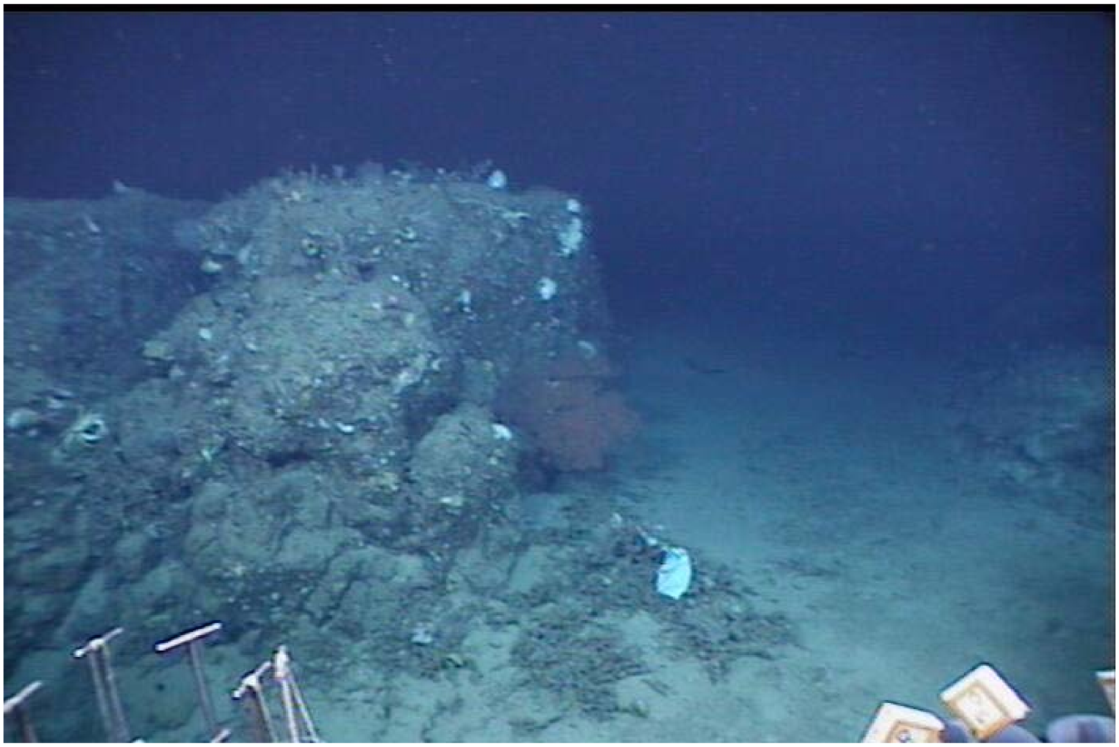


Figure 7-5. Largely unoccupied substrate at the site.

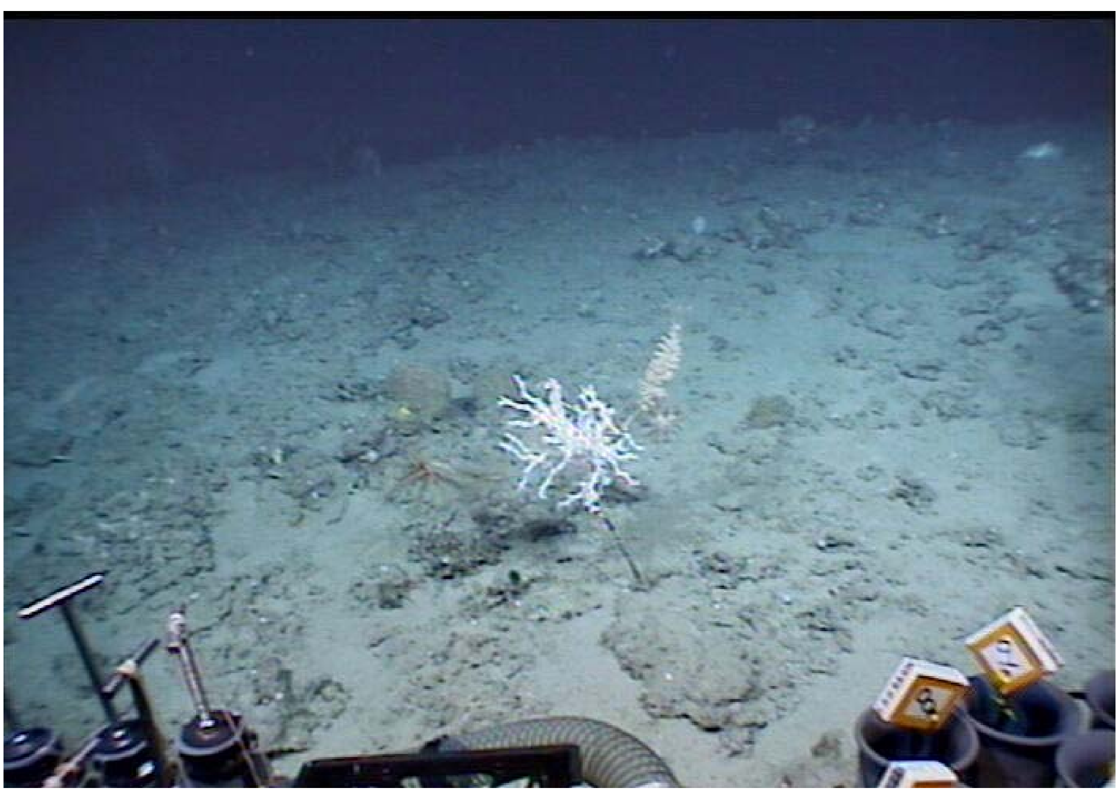


Figure 7-6. ***Lophelia.***

where *Lophelia* (**Figure 7-6** and **Figure 7-7**) was collected temperatures were in the 9 – 11°C range. The gross majority of the substantial cnidarian colonies encountered were heavily colonized by crinoids and many of them by ophiuroids as well. Most of the exposed carbonates were colonized by sponges, although large, potentially habitat forming sponges were rare. Along the shallower ridges we encountered much higher density of fishes, including individual tuna, small sharks, *Beryx* sp., *Hoplostethus occidentalis*, *Conger oceanicus*, *Laemonema* spp., and several schools of small unidentified fish. We also encountered zooplankton swarms along the edge of one of the shallower ridges.

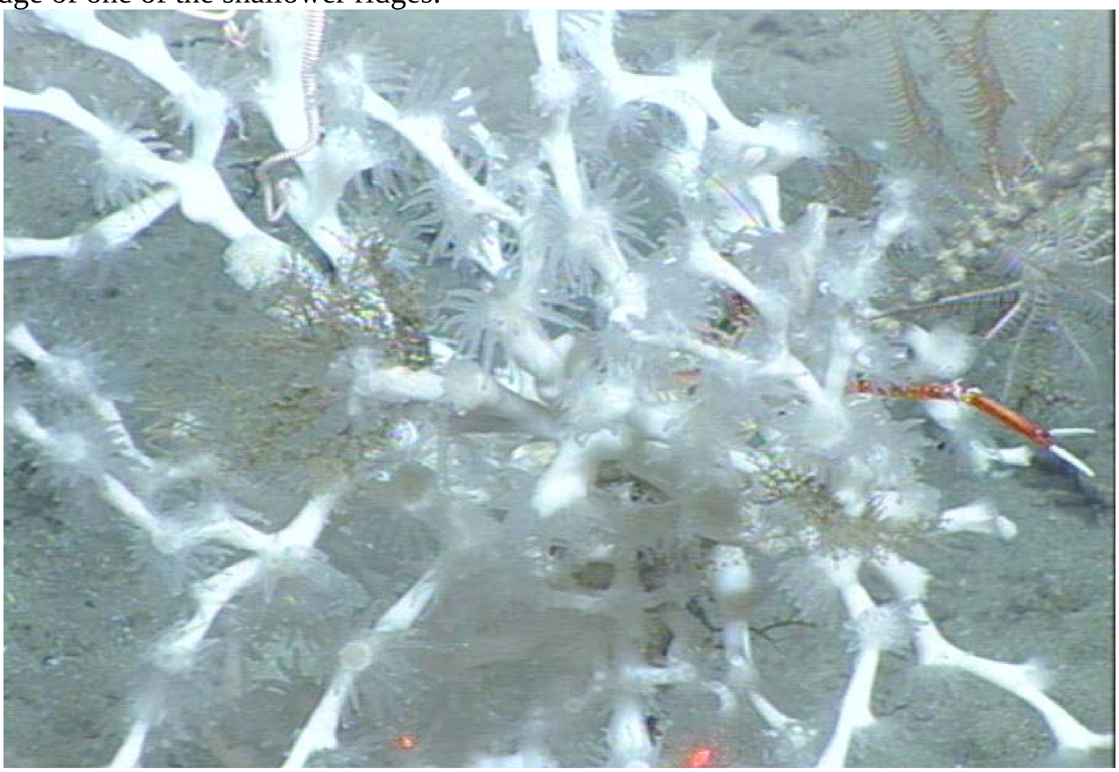


Figure 7-7. *Lophelia.*

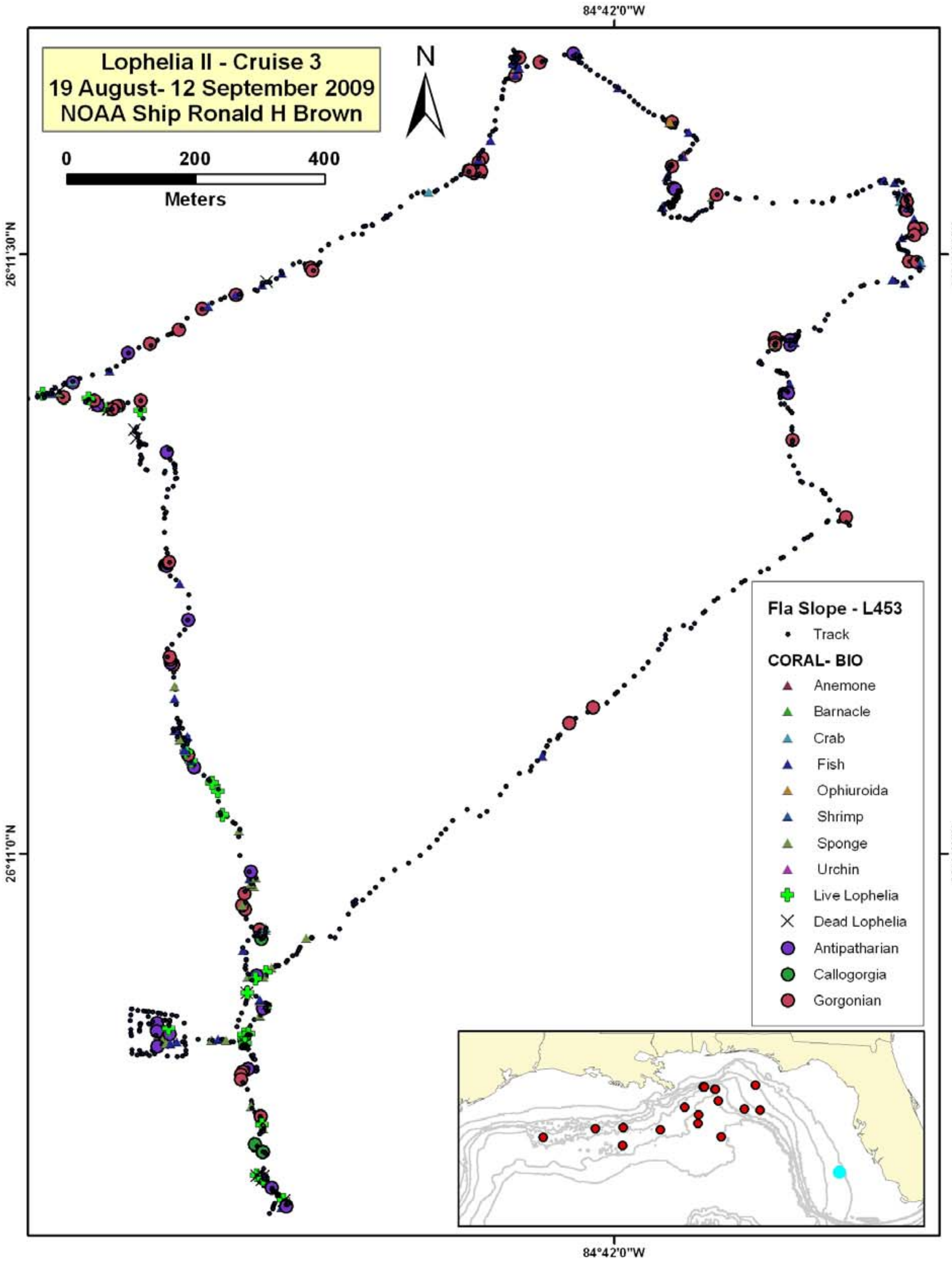


Figure 7-8. Coral-Biological events observed during lowering J2-453 at West Florida Slope (inset).

DC583 Site Summary

Geological Summary

This site was identified on MMS 3D-seismic data using bathymetric contours with seafloor amplitude underlay. The area of interest is located at the northwestern end of the Florida Escarpment. A dive was designed to visit targets near the base of the Escarpment in ~2,500 meters of water, transit up the steep slope, and investigate along the Escarpment at a depth of ~2,200 meters.

The first target was a structural mound with ~100 meters relief, bounded by faults, and with moderately high positive amplitude on top. The second target was potential rubble at the base of the Escarpment. The third target was the Escarpment itself, which was too steep for the 3D-seismic data to accurately resolve. It was expected to have occasional ledges of more resistant Cretaceous carbonate beds that should be good substrate for corals. Once on top of the slope, the main target was the strong positive amplitude of the stratigraphic top of Cretaceous, that constitues a regional marker interpreted from seismic and outcrops all along the Escarpment. Its amplitude response and position at the break in slope of the Escarpment suggested that it should be an excellent substrate for corals.

The first target at this site was an oval shaped mound bounded on the northwest and southeast by faults, as indicated on seismic cross sections. There was moderately positive amplitude response on the top and upper flanks of the mound. The *Jason* found only mud on the top (a thin veneer on top of rock?), but extensive outcrops of highly indurated rocks on the flanks.

The outcrops were generally massive, non-bedded, and made up of dense, dark brown to black rock – no sedimentary bedding was observed. The surface of several of the outcrops had pillow structures reminiscent of basaltic lava and many had large fissures 10's of meters long, 1 meter wide, and 5-10 meters deep. There were a few outcrops that appeared to be 2-3 flows stacked on top of each other and extending 10's meters. The relief on the fault faces was up to 25 meters high and near vertical (in places there were overhangs).

Though one outcrop did not appear to be sedimentary (lacked any bedding), it did appear to have fossils on the exposed side. Also, there were 2 – 3 cm wide, 20 cm long “tubes” that, in vertical cross-section formed fans and on the rock surface, the tops were rounded and packed together.

Three rock samples were collected. The first was collected near what appeared to have the3 morphology of basaltic flows (the *Jason* could not sample directly from the outcrop and was forced to pick up a small rock nearby) – it was black on the exposed side and grey to brown on the bottom side, with several bivalve fossils observed. The second was collected near the fossil outcrop – it was also black on the exposed side, grey to tan on the bottom side, but was devoid of fossils. The third was sampled near what appeared to be possible tar flows. The sample was black on the exposed side and white and finely granular on the inside.

After leaving the mound, *Jason* climbed up the Florida Escarpment, which is composed of vertical to near vertical massive, grey to brown rocks with little to no bedding. One 50 meter tall wall near the top was composed entirely of nodules. Where ledges were observed, brown mud covered the flatter areas. Based on seismic correlation to nearby wells, it is likely that all the rocks encountered on this dive were Upper Cretaceous limestones. Analysis at onshore labs will verify this interpretation.

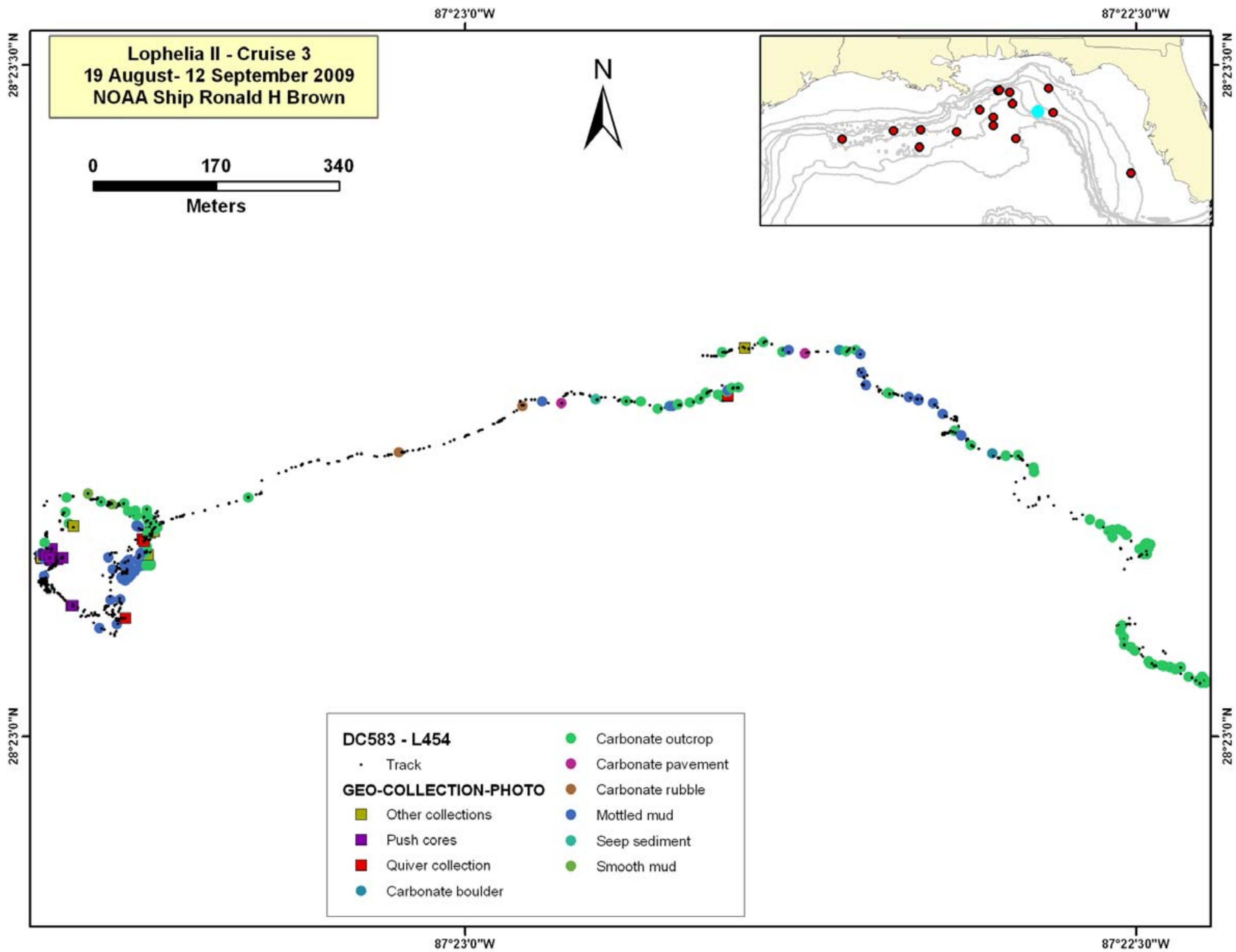


Figure 7-9. Geological-Collection-Photo events observed during lowering J2-454 at DC583 (inset).

Biological Summary

We worked in two distinct areas at this site; a mound to the W and an escarpment to the E. The mound at 28°23.11'N, 87°23.28'W was covered with very light colored sediment on the top, with two 6-8 m diameter pockmarks with accumulations of pteropod shells at the summit. A large holothurian was seen adorned with these shells at one point. One octopus with an arm span of about 70cm was encountered and filmed. On the sides of the mound were significant rock outcrops of 10 – 30 m relief with at least 2 genera of bamboo corals (one branched and one unbranched, **Figure 7-10**), one antipatharian and one bubble gum coral. These were moderately abundant on the E and N sides of the mound. On the W and S sides of the mound, there were sparse octocoral colonies at the top and scattered tubeworm (*Escarpia laminata* and *Lamellibrachia* sp.) aggregations closer to the base. *Keratoisis* sp. bamboo corals were common and relatively large, up to 1 m. *Lepidisis* sp. and *Isidella* sp. were rare.

Figure 7-10. Tubeworms near the base of the outcrop.

The single observation of *Isidella* marks a depth record for this genus in the Gulf, previously 1100 m. *Sibogagorgia* sp. was observed repeatedly, another depth record for the genus. On the SW corner of the mound was a very high density seep community with tubeworms in the cracks in the rocks and a large bed of mussels (*Bathymodiolus brooksi* and *B. heckerae*) on the cliff face and accumulating at the base of a small platform (**Figure 7-11**). Associated with the tubeworms and mussels were the common species *Munidopsis* sp., *Alvinocaris muricola, Ophioctenella acies*, as well as a few additional species awaiting more complete taxonomic identifications.

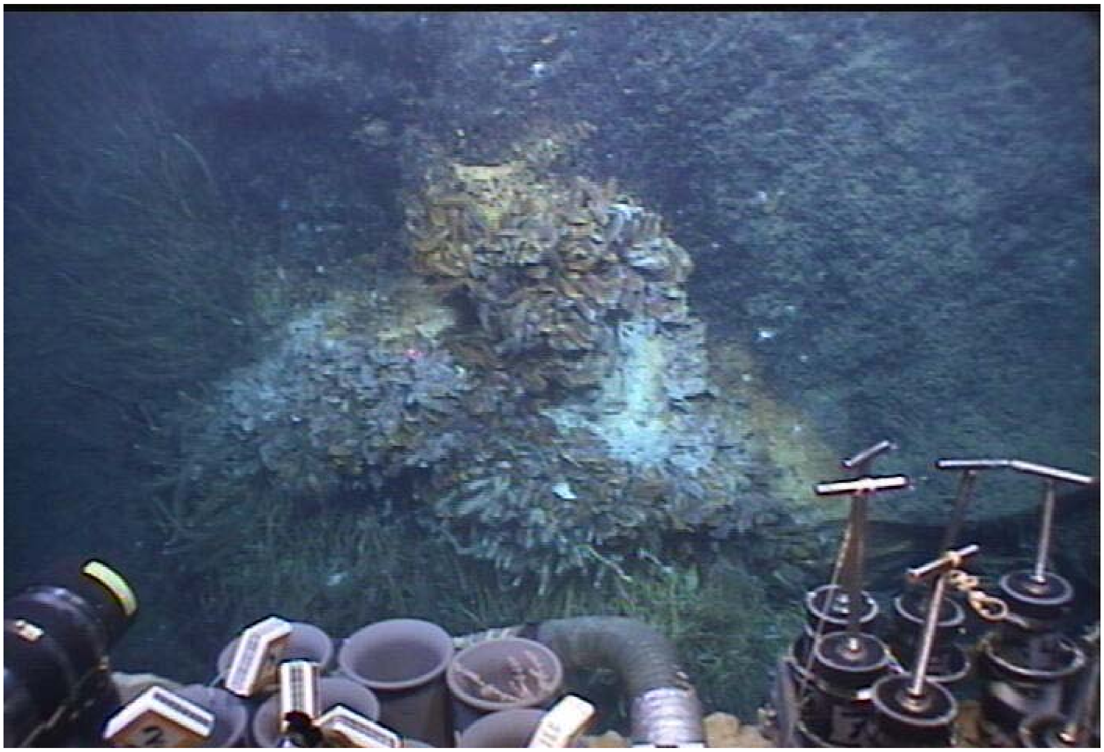


Figure 7-11. High density seep community.

The area between the mound and the escarpment was covered with plain sediments with occasional holothurians and a few rattail fish. At the base of the escarpment (**Figure 7-12**) were accumulations of sediments with carbonate crusts and white staining, possibly from outwatering of the escarpment. Above the foot of the wall were near-vertical outcrops and occasional platforms. This lower portion of the scarp contained small aggregations of tubeworms in vertical cracks and pockets in the rock. Corals were not observed or abundant until the top of the scarp, where paramuricids became remarkably dominant and abundant, each hosting a single *Asteroschema* ophiuroid (**Figure 7-13**). Other bamboos, including *Keratoisis* and *Leipidisis* were present, mostly on the east facing outcrops and walls, regarding of depth, as we began downslope to the southeast on the way to target five.

Figure 7-12. The base of the escarpment.

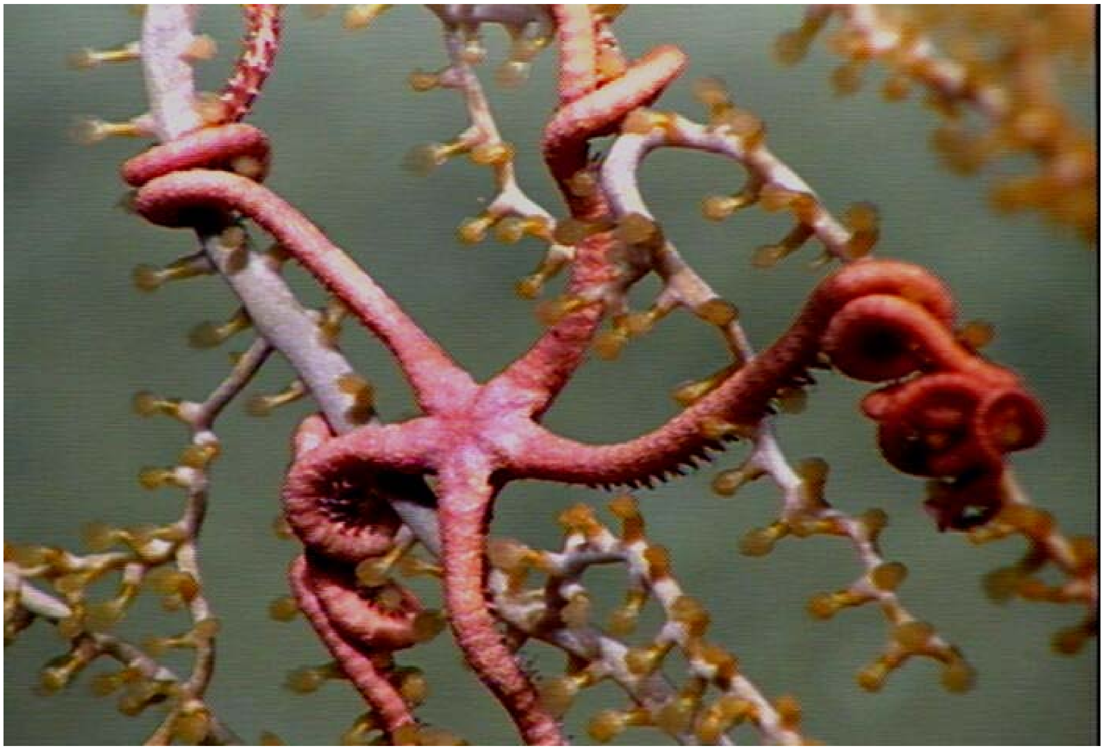


Figure 7-13. Paramuricid hosting a single *Asteroschema* ophiuroid.

Remarkable on this dive was the top of the escarpment, where a smooth, terraced, “limestone-like” seafloor dominated for at least 75m -100m distance (likely more than an area of 400m2)- only holothurians and shrimp were observed here. The greatest abundance of paramuricids were at the rim of this “limestone” cap. Just below (5m) these octocorals was a ~5m-tall wall (named “Bamboo Wall” of bamboo corals, including *Keratoisis* and *Leipidisis*- the densest concentration observed on the dive. This wall also included an interesting narellid primnoid which may be a new species. As we headed south along the ridge the carbonate outcrops were largely devoid of colonial cnidarians, although occasional octocoral (*Iridogorgia*) colonies were encountered (**Figure 7-14**) and a large *Bathypathes*- like black coral was sampled. This too may be a new species (very tall with no polyps on the central branch).

Asteroschema sp. brittlestars, shrimp, and isopods were observed on *Paramuricea* sp. and *Chrysogorgia* sp. corals. Overall, 7 octocoral species were observed, and six were collected. Only two fish were observed during the transit to the top and then down the southeast side of the escarpment- a synaphobranchid eel and a *Coryphaenoides* rat tail.

Figure 7-14. Bamboo coral colonies.

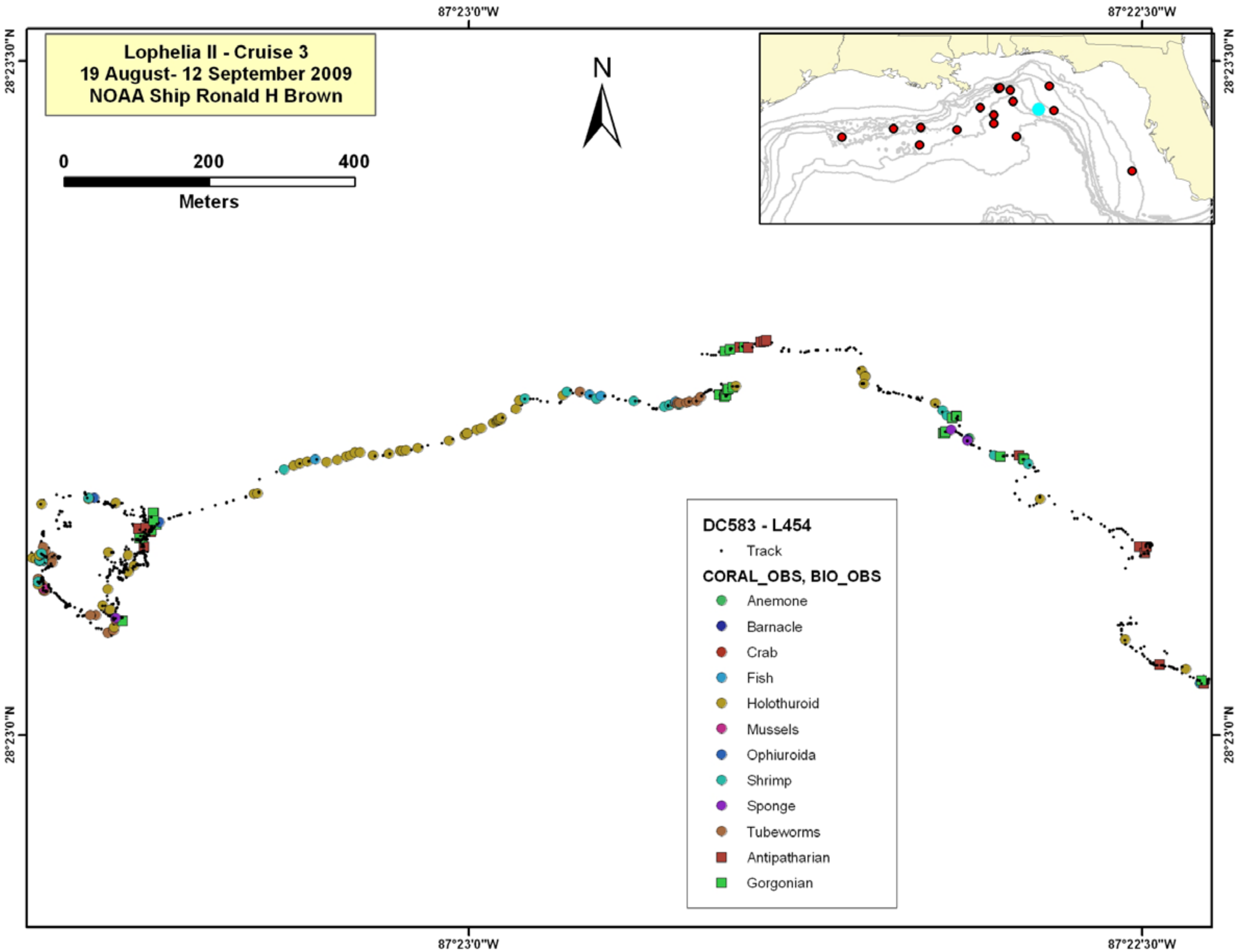


Figure 7-15. Coral-Biological events observed during lowering 454 at block DC583 (inset).

MC294 Site Summary

Geological Summary

This site was discovered and evaluated using MMS 3D-seismic data. It is characterized by a series of structural highs and lows along a regional northwest-southeast ridge at a depth of approximately 1400 meters. The area chosen for evaluation using the *Jason* shows anomalously high positive amplitude response on the seismic data. However, the seismic cross sections do not indicate much acoustic blanking in the subsurface which is an indicator of the presence of gas and perhaps active gas migration. When acoustic blanking and high amplitudes on seismic data coincide, hardgrounds are generally present on the seafloor and available as coral habitat.

Though most of the ingredients for a successful deep coral exploration dive were present at this site, not all were. The high positive reflectivity on the 3D-seismic suggesting the presence of hardgrounds on an elevated ridge was confirmed only in one small area where a pavement of authigenic carbonate was encountered. However, a fine layer of mud covered the rock, preventing coral colonization (**Figure 7-16**). The carbonate was likely present at all the anomaly targets, but covered by sediment. The apparent lack of deep ocean currents to keep the rock clean also prevented larval dispersion to the site. A few tube worms, brine seeps, and bacterial mats also indicated the presence of low flux seepage.

Figure 7-16. Sporadic bacterial mats.

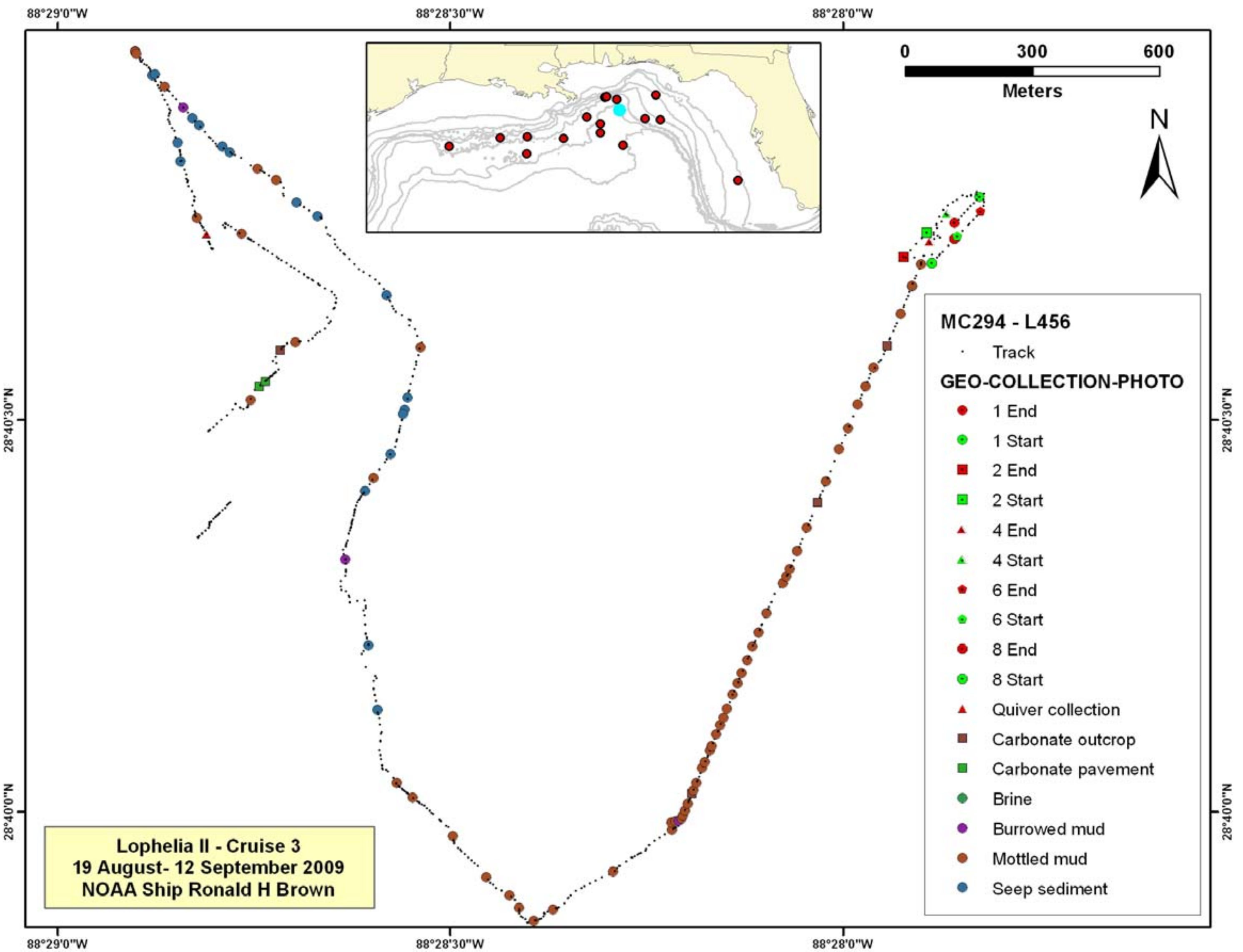


Figure 7-17. Geological-Collection-Photo events observed during lowering J2-456 at MC294 (inset).

Biological Summary

This site primarily contained relatively featureless sediment, with some evidence for seepage in a few areas. The northern section of the 2 km long ridge contained some isolated patches of stained sediments, bacterial mats, and a few areas of authigenic carbonate pavements. In some areas where the pavement was fractured, it was colonized by small tubeworms and a few small tubeworm aggregations (**Figure 7-18**) along with some seep-related galatheids. There was also one area with dead mussel shells and a small bed of live mussels. One sample of a frenulate siboglinid was obtained with some associated hydroids. The rest of the surveyed area contained primarily plain sediments and sparse bacterial mats. There were at least 10 species of fishes identified during the survey as well as a few different species of shrimp and crabs. Overall diversity was quite low, and there were no corals observed at all during the dive.

Figure 7-18. Small tubeworm aggregations.

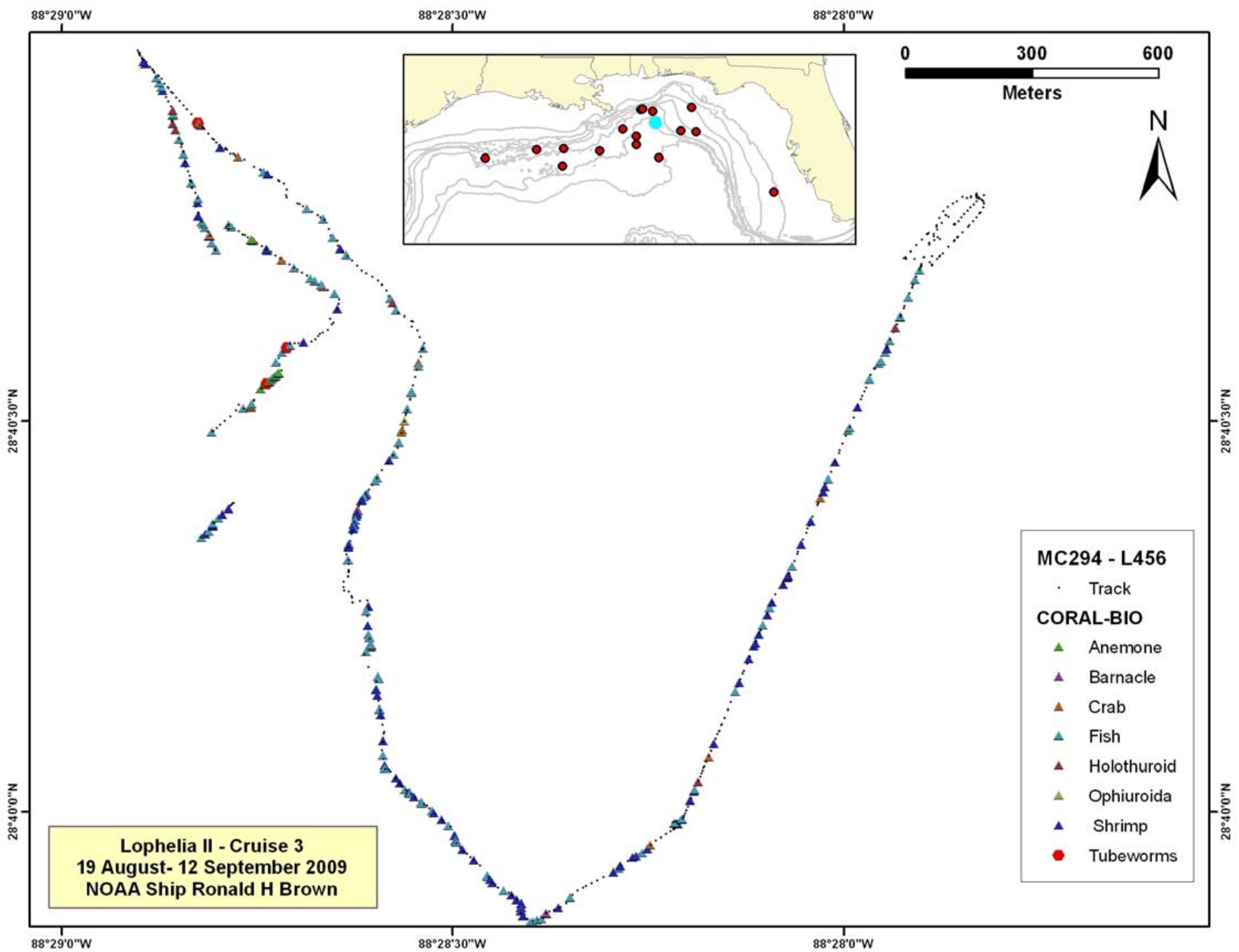


Figure 7-19. Coral-Biological events observed during lowering J2-456 at MC294 (inset).

AT047 SITE SUMMARY

Geological Summary

The feature of interest in AT 47 is one of several low relief complexly mounded areas east of the southern end of the Mississippi Canyon where the canyon transitions into the Mississippi Fan. Like the very interesting and productive dive sites in AT 340 visited during the 2006 and 2007 Chemo III cruises, this site is characterized by numerous low relief mounds and shallow depressions. The AT 47 site was identified on MMS 3D- seismic data processed to display reflectivity (amplitude) of the seafloor and configuration of the subsurface related to conduits for fluid and gas migration. Geologically, the area of interest in AT 47 is a broad structural nose plunging to the south and supported in the subsurface by salt. The mounds and shallow depressions defined by bathymetry have distinct high and low positive amplitude signatures, suggesting localized areas of relatively hard and soft bottom. The areas of high positive amplitude link to faults and other clear migration pathways from the flanks and top of salt as indicated on seismic cross sections. The region around and off the nose shows a notable lack of amplitude and bathymetric variability. Multibeam bathymetry collected during the first RV *Nancy Foster* reconnaisance cruise revealed numerous areas with narrow ridges and apparent small mounds of a few meters relief suggestive of possible coral habitat.

Much of the AT047 area that exhibited high positive amplitude on the 3D-seismic data had no carbonate hardgrounds exposed at the seafloor. However, there were clear signs of seepage everywhere, including patches of dark reducing sediment, localized brine flows, and white bacterial mats. The high seismic reflectivity or high positive amplitude of the seafloor reflector appears to be related to the extensive and dense clam beds which covered large areas defined by high surface reflectivity on 3D-seismic data (**Figure 7-20**). If this hydrocarbon seepage environment existed

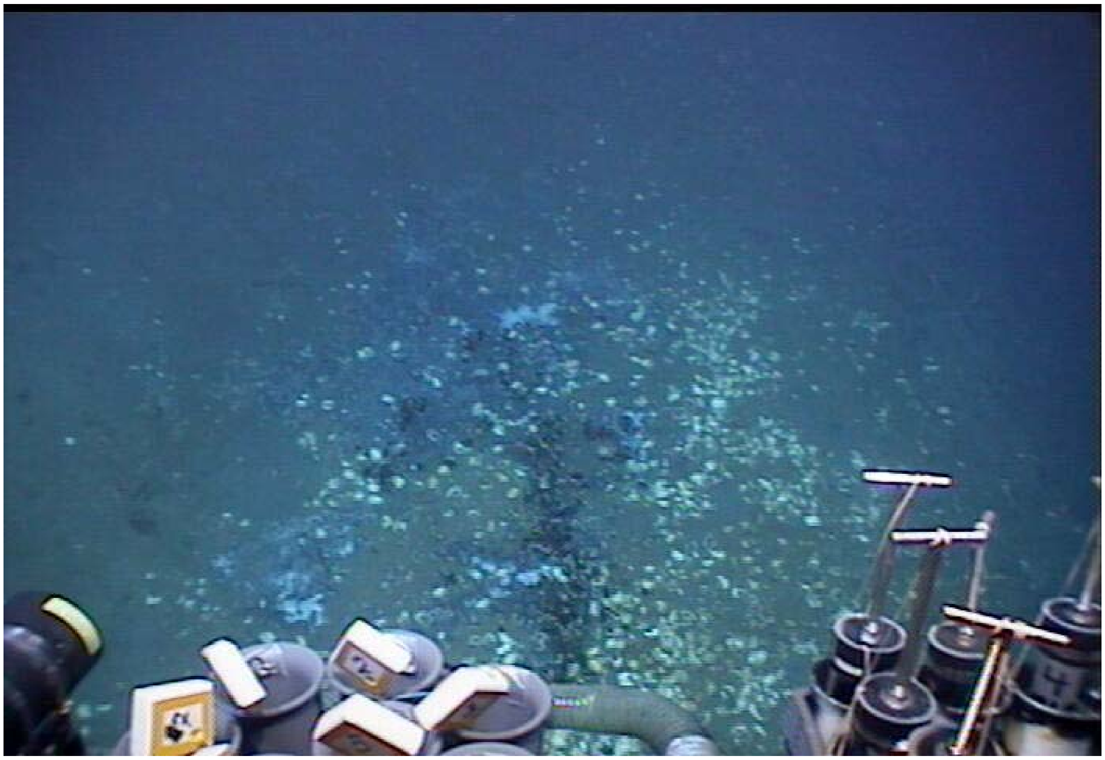


Figure 7-20. Extensive and dense clam beds.

for a long period, thick accumulations of clam shells would have resulted. These accumulations of shells would constitute a “hard and reflective” seafloor and account for the high amplitude seismic returns. Carbonate pavement may have been encountered, however, and when attempting to core near a clam bed. The *Jason* was unable to penetrate more a few inches with a pushcore. So, there may be a combination of seafloor cementation and clam shell accumulations that account for the reflectivity. At some Gulf of Mexico slope locations, such as the expulsion features in GC 204, abundant clam shells are located on the surface of mudflow deposits that clearly originated from one of the several fluid-gas expulsion centers. Habitation of successive mudflows by clams at this site was interpreted as the origin of the extremely high reflectivity of the seafloor. We were not able to define discrete mudflows at the AT047 site, although multibeam bathymetry of the area indicated that the highly reflective sites that support densely populated clam beds occur on lobate features

The highly reflective sites that support densely populated clam beds occur on lobate features that extend generally to the south. These may have been old mudflows that have been vertically displaced by the upward movement of shallow subsurface salt. Such movement would have activated local faults that acted as conduits for fluid and gas migration to the modern seafloor supporting a slow seepage environment.

On the flank of the first feature visited, thickets of dead Madrepora coral were common and large, one with live Madrepora on top (**Figure 7-21**). The shape and size of the thickets suggested carbonates were colonized, but they were too thick to directly observe their substrate. Soft corals were attached to clam shells, though a few were observed on carbonates (or aggregates of clam shells and dead coral).

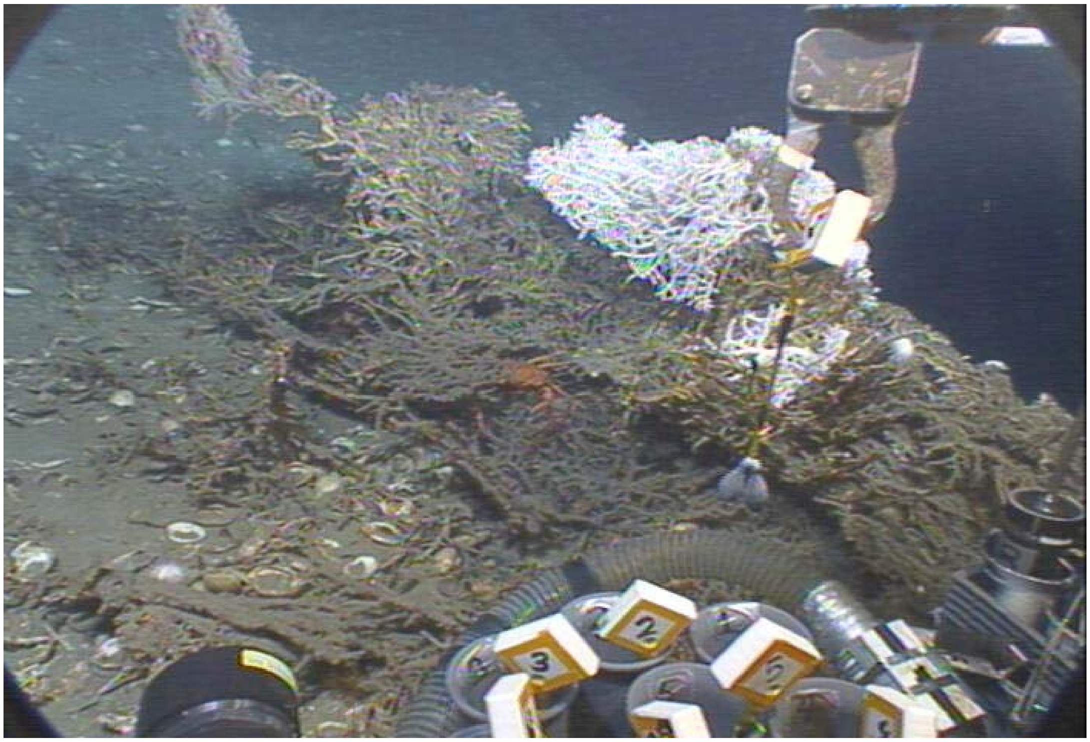


Figure 7-21. Thickets of dead Madrepora coral with live Madrepora on top.

Brine seeps were scattered throughout the clam beds. Some supported dense, but limited living mussel communities. In many areas, the mud was highly burrowed, with a mottled appearance, and had many small white patches on the surface that appeared to be Beggiatoa mats.

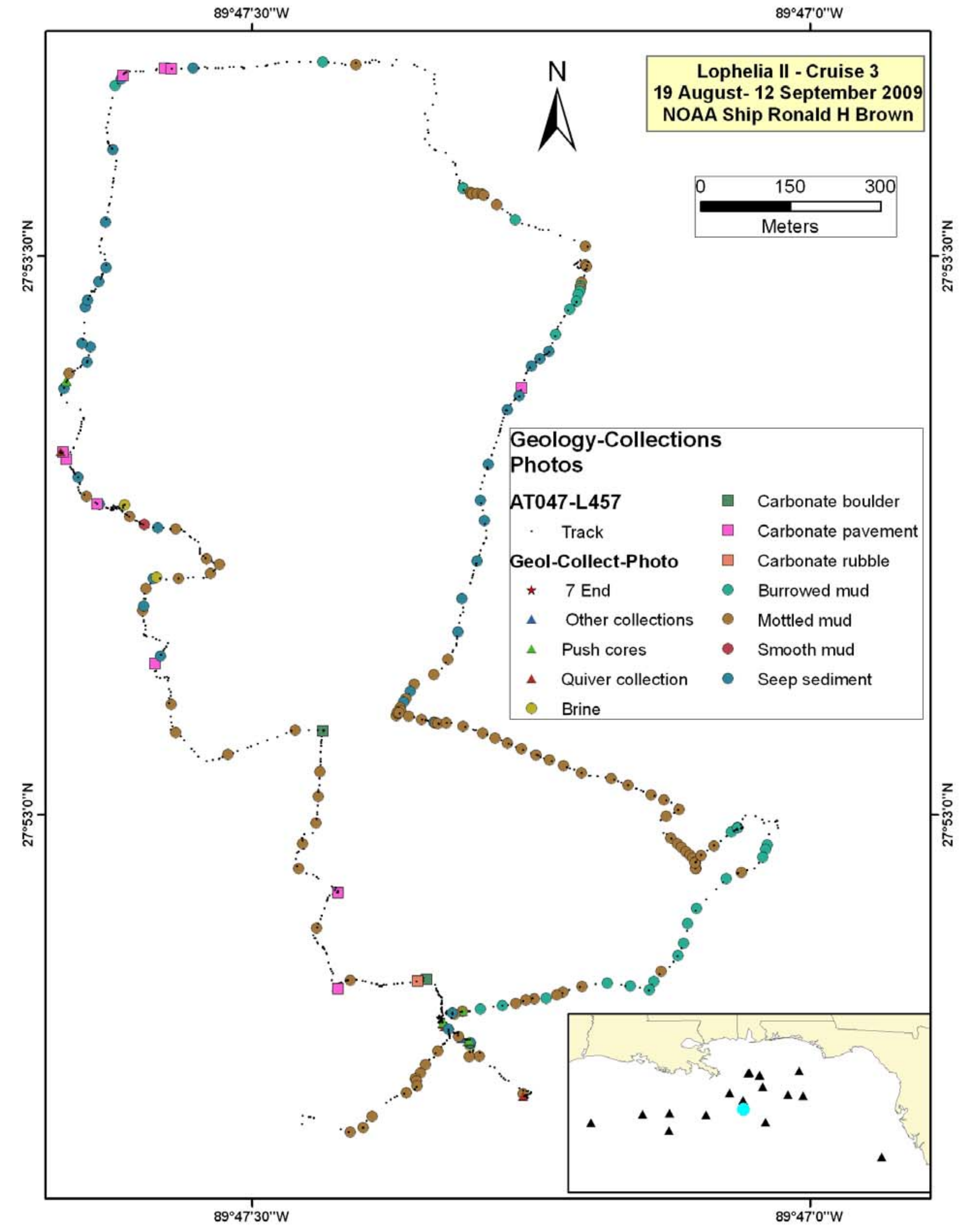


Figure 7-22. Geological-Collection-Photo events observed during lowering J2-457 at AT047 (inset).

Biological Summary

The most notable feature of this site was the magnitude of area covered with clam shells, articulated and disarticulated (**Figure 7-23**). The gross majority of the intact clam shells that were clearly visible were Calyptogena ponderosa. This field identification was confirmed with the collection of a live C. ponderosa, one of the only apparently live clams seen during the dive. Not only did the shell beds cover large expanses of the sea floor, but on some slopes the beds appeared to be at least several layers thick. Corals of any type were absent from most of the areas surveyed, and most of the areas surveyed that were not covered with bivalve shells were covered by muddy bottom with burrows and small areas with white stained sediment. There was almost no exposed carbonate except in one small area. A few small areas with small chemosynthetic communities were present.

Figure 7-23. Articulated and disarticulated clam shells with some live mussels.

The major exception with respect to coral occurrence was in the southern-most area surveyed, and encountered at the very beginning of the dive. In this area, there was a think cover of clam shells and live mussels on the lower portions of the slope near a Madrepora community, with steadily increasing areas of dead scleractinian coral rubble and small mounds of dead coral as we moved upslope (**Figure 7-24**). Also notable in this area were numerous golden crabs, often associated with areas of dead coral. Numerous colonies of *Paramuricea* gorgonians were seen attached either to the clam or coral rubble. Even here there was very little if any visible carbonate. Near the apex of this slope a single large, mini-van size, mound of dead *Madrepora* was encountered (**Figure 7-25**), with several areas of live coral present on the top and edges of this mound. Also present on the mound were attached gorgonians and at least 4 golden crabs

(*Chaceon*). Although this area was impressive for the quantity of dead coral and clam shells, it was apparently of limited extent, less than about 50 meters on a side. The abundance of coral rubble and clam shells on the slopes below the *Madrepora* mound suggest this site may have hosted coral and clams for at least hundreds to thousands of years.

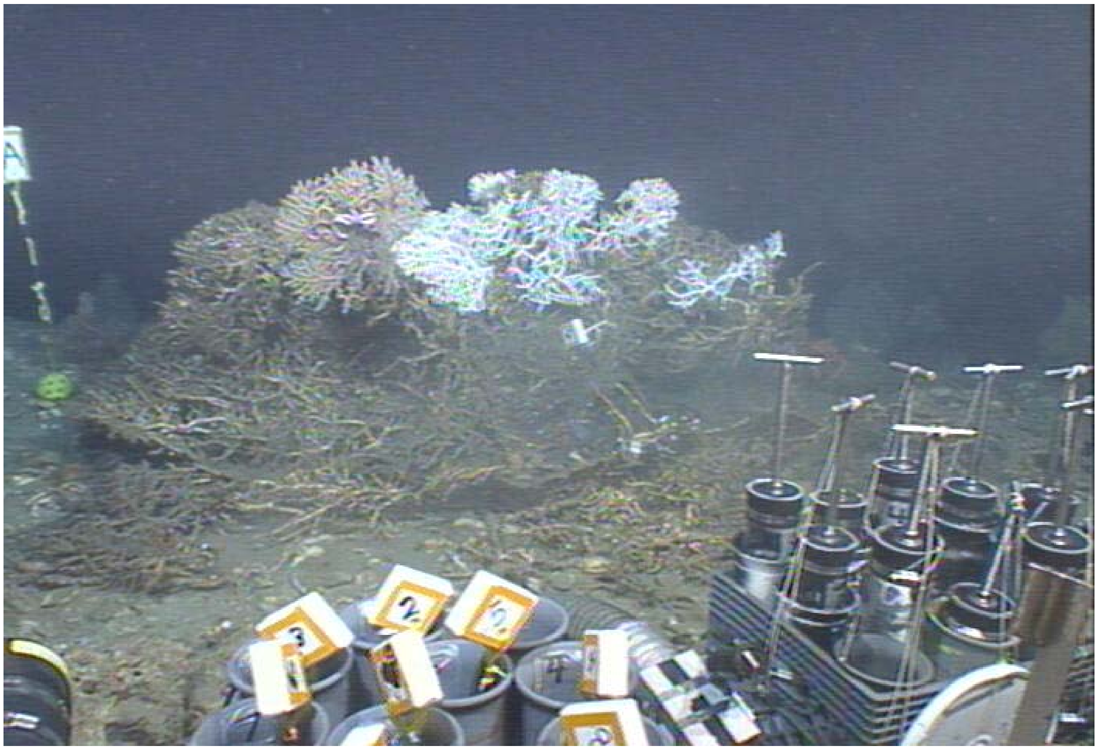


Figure 7-24. Large standing colony of Madrepora.

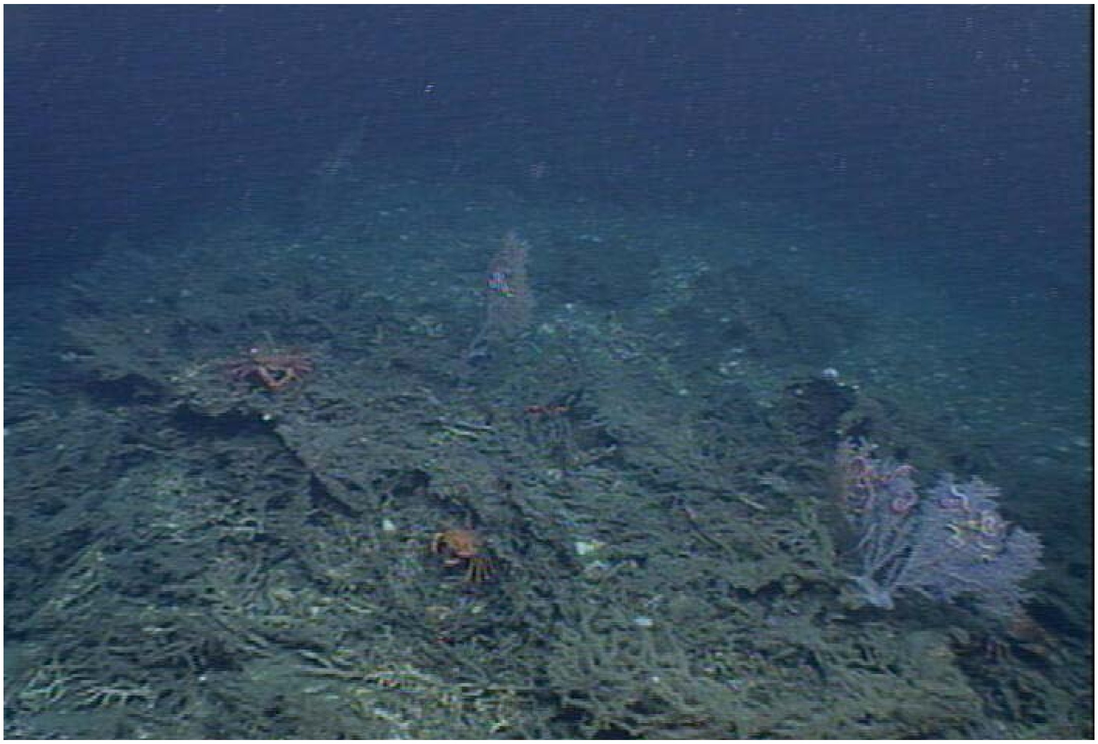


Figure 7-25. Dead *Madrepora,* areas of live coral and golden crabs (*Chaceon*).

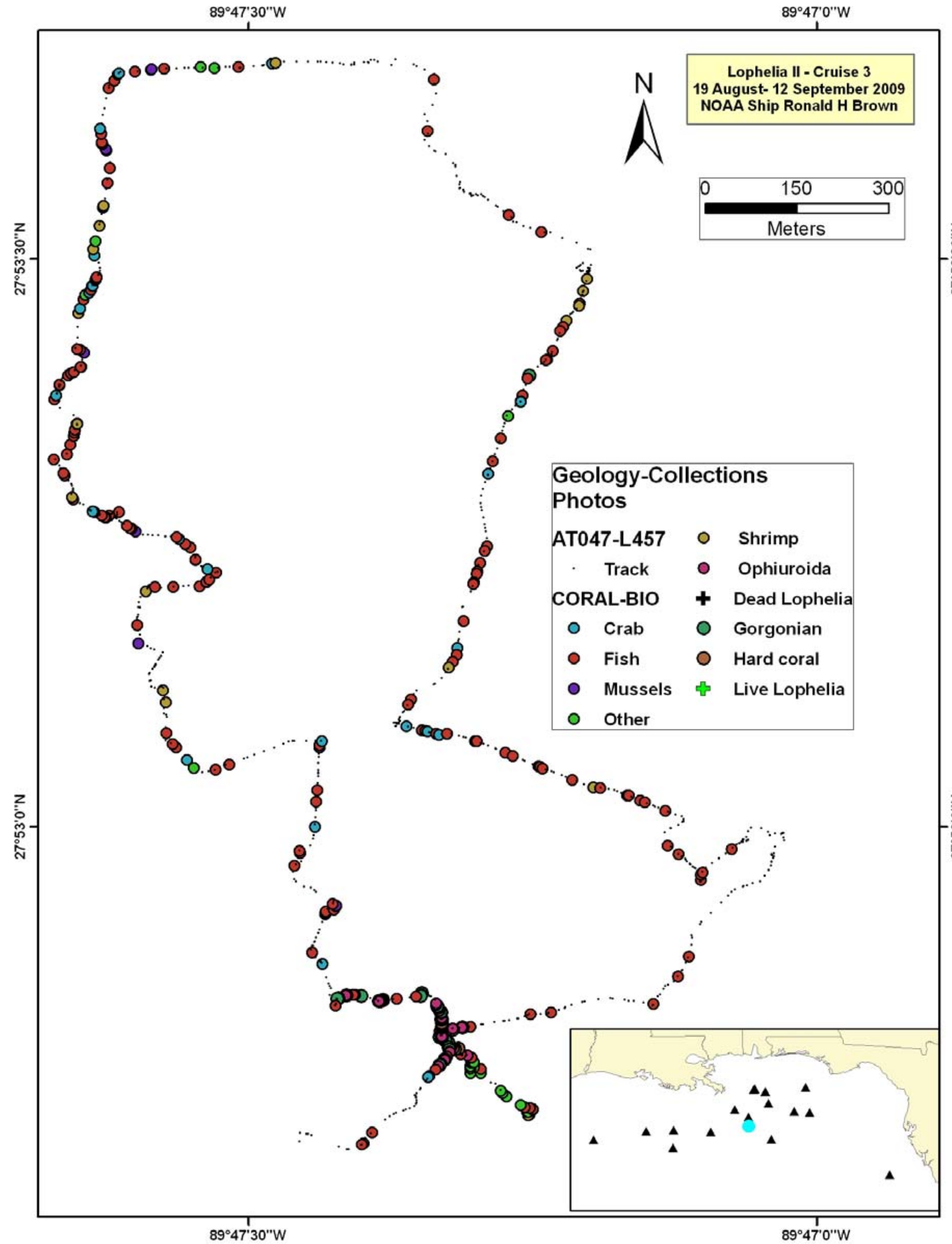


Figure 7-26. Coral-Biological events observed during lowering J2-457 at AT047(inset).

GC235 Site Summary

Geological Summary

The GC 235 site was identified on MMS 3D-seismic surface amplitude data superimposed on bathymetry. The feature of interest is characterized as a roughly circular low relief platform covered by a “bright spot” of high positive reflectivity on the surface amplitude map. The feature occurs in ~520 meters of water and as defined by bathymetry derived from the 3D-seismic data the platform and surrounding seafloor are devoid of much variability in small-scale relief. Around the northern, western, and southern flanks of the platform very low surface amplitude response is interpreted to be related to higher flux zones of seepage. This interpretation is supported by “gas chimneys” or vertical zones of acoustic blanking on the seismic cross sections that also correspond to the platform flanks. Initial interpretations of the seismic data suggested that the top of the platform would have abundant hard bottom areas and more scattered hardgrounds would be characteristic of the apparent higher flux zones along the northern, western, and southern flanks of the feature. Within these zones morphology of the amplitude/ reflectivity patterns were not suggestive of sediment expulsion resulting in mud volcanoes or mudflows. Going into the *Jason* dive on the GC 235 feature, the interpretation based on remotely sensed seismic data alone was that carbonates should present in abundance and they should provide a suitable substrate for corals and other benthic fauna requiring a hard substrate.

Though this site had a discrete, high positive seismic amplitude covering the platform, no authigenic carbonate hardgrounds were encountered associated with this part of the overall anomaly. The origin of the high positive amplitude is still undetermined. It is possible that hydrocarbon seepage to the platform top ceased some time ago and the once active seepage and carbonate-rich area has now been buried in hemipelagic sediments. The shallowly buried carbonates would then be the source of the high reflectivity of the platform top. Small boulders were found to the southwest where the amplitude anomalies appear weaker and much smaller, similar to the seismic character at GC 234 where corals were found. The scattered hard bottom features of this area appear to be composed of seep-related authigenic carbonates. Signs of active seepage (bacterial mats and brine seeps) were frequently encountered as *Jason* moved through the area. However, the dive was cut short because *Jason* developed a hydraulic leak 6 hours into the dive and had to abort just when we encountered the seep-related substrates and associated tubeworms and soft corals.

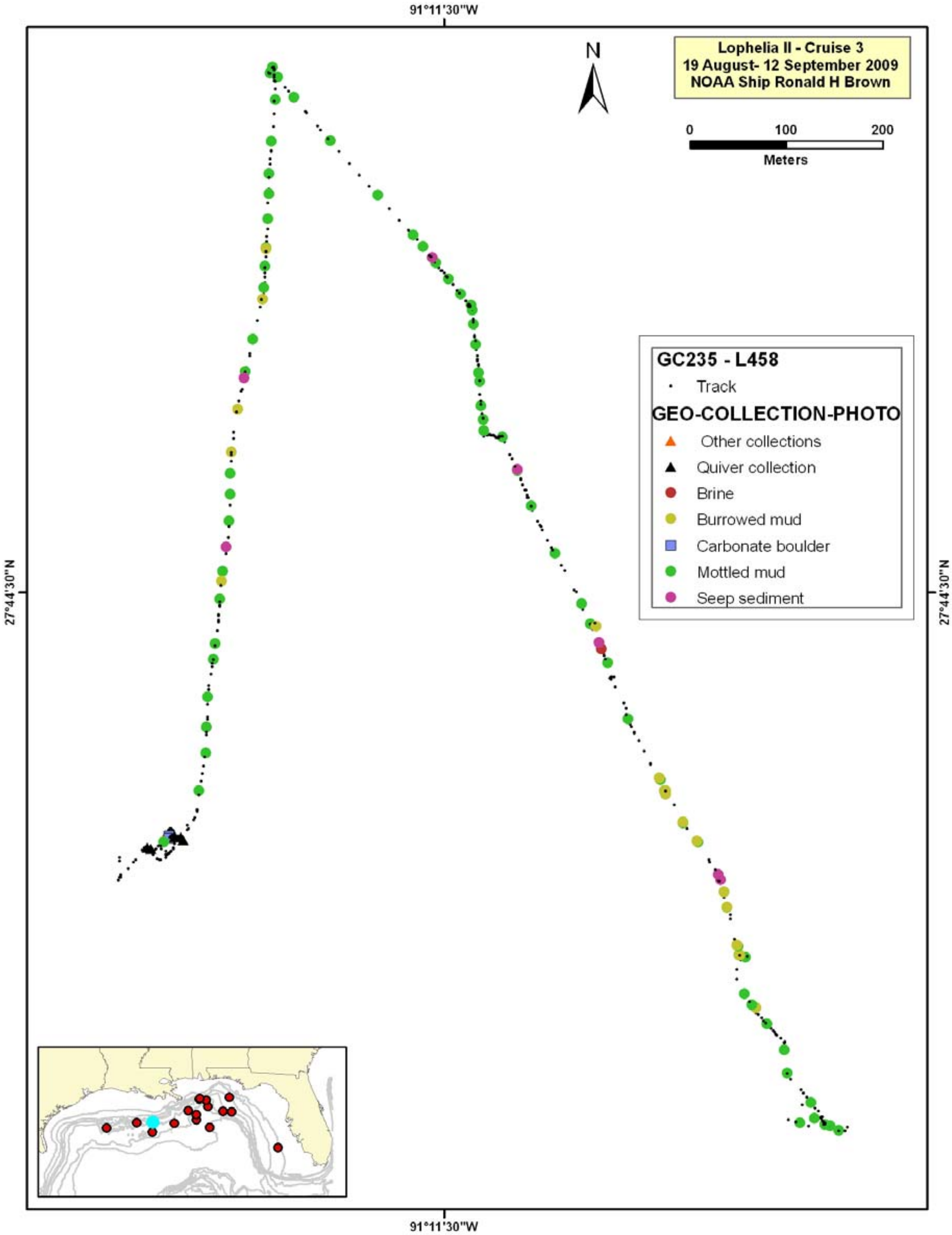


Figure 7-27. Geological-Collection-Photo events observed during lowering J2-458 at GC235 (inset)

Biological Summary

The central area of this site, over the areas of highest reflectivity, consisted of plain sediments, largely uninhabited by visible fauna. Around the periphery of the area of reflectivity were sediments with limited indications of seepage with occasional bacterial mats and some frenulate siboglinids (pogonophorans). Off of the southern edge of the reflectivity, there were some exposed authigenic carbonates that were colonized. The largest was a 2-3 m high and 2-3 m wide boulder and a few smaller carbonates that were entirely colonized by the vestimentiferans *Lamellibrachia luymesi* and *Seepiophila jonesi* (**Figure 7-28**). Slightly north and east of this large tubeworm aggregation were a number of small, low-lying carbonates colonized by primnoid gorgonians (some *Callogorgia* spp.), cup corals, and individual tubeworms (**Figure 7-29**). Although we likely explored the majority of the exposed carbonates in this area, the sub developed a hydraulic leak before we could finish a thorough survey.

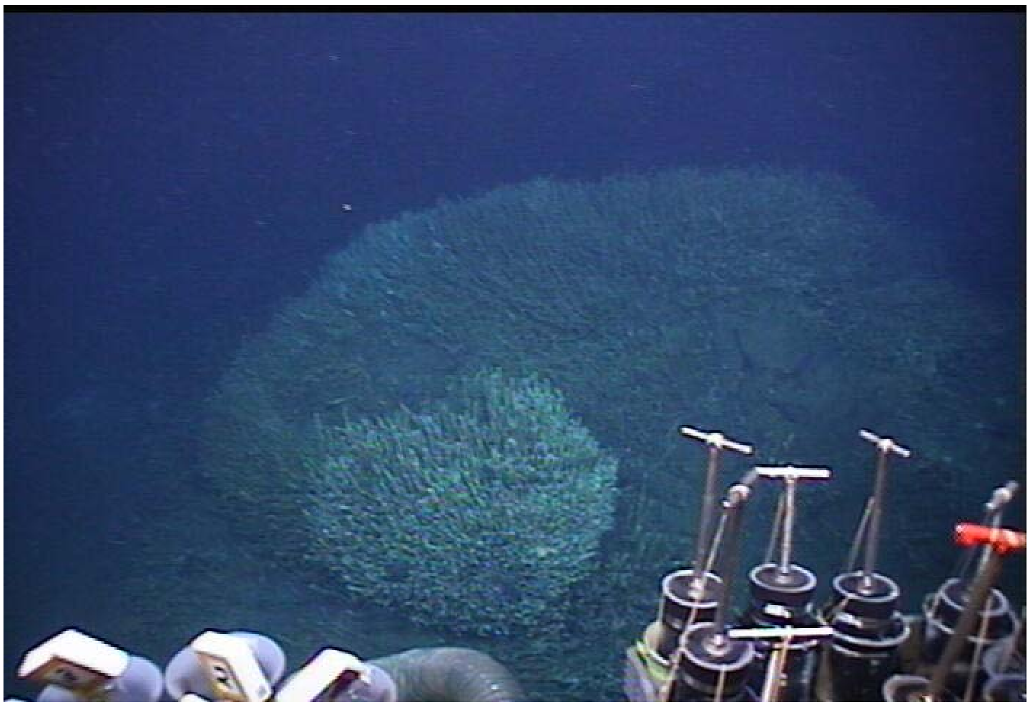


Figure 7-28. Vestimentiferans *Lamellibrachia luymesi* and *Seepiophila jonesi.*

Figure 7-29. Primnoid gorgonians.

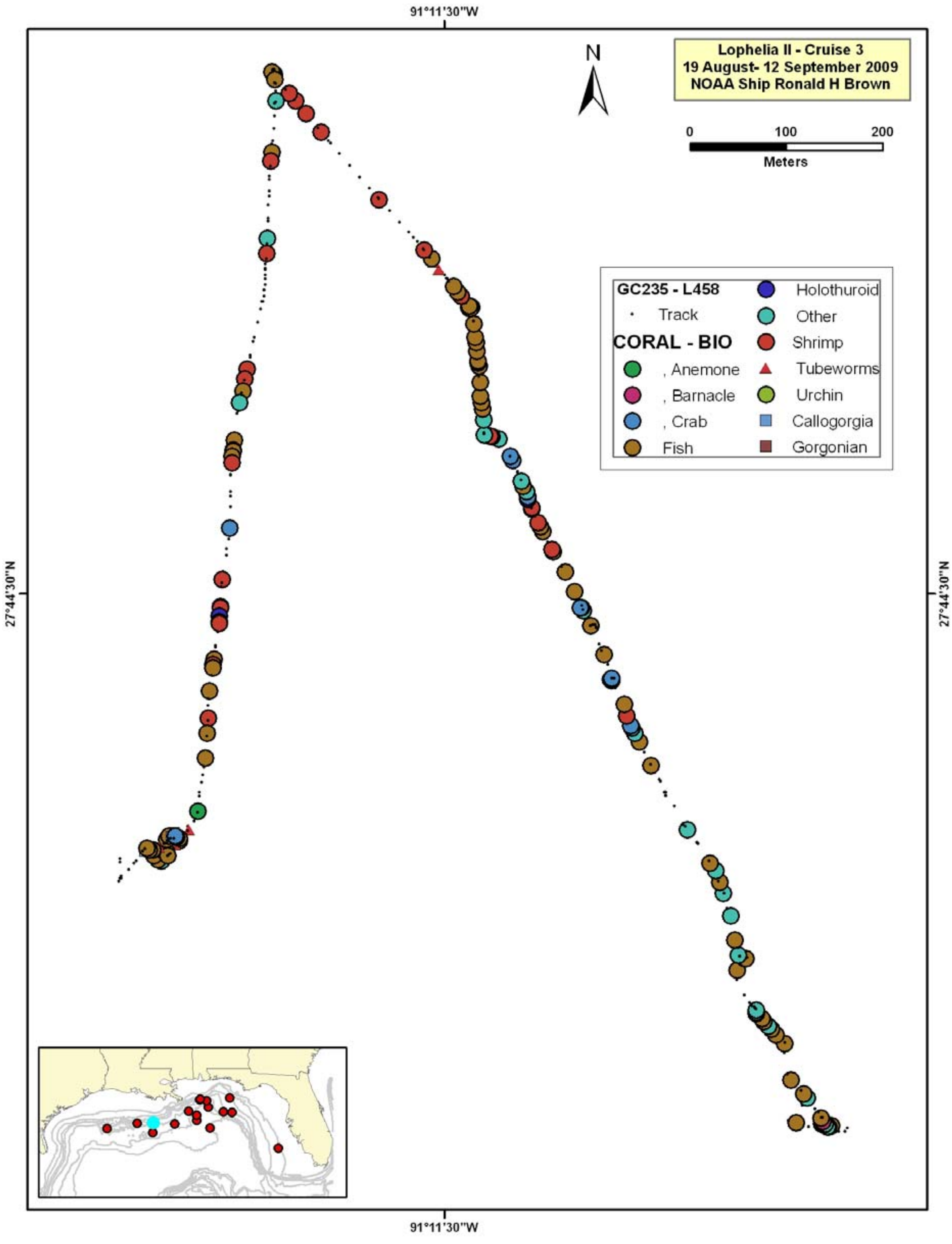


Figure 7-30. Coral-Biological events observed during lowering 458at block GC235 (inset).

GB299 Site Summary

Geological Summary

The GB 299 site was identified on a MMS 3D-seismic amplitude map with a bathymetry overlay. This feature stands out as a NE-SW trending oblong structural high that is 7-10 km across with variable, but strong, high positive amplitude response along the top and on the steep southern flank. The surface of this regional bathymetric high is very irregular with discrete ridges and depressions that generally have the same NE-SW orientation as the overall feature. The feature is supported by a salt body in the shallow subsurface. Above the top of salt the sedimentary section is highly faulted. The complex topography at the modern seafloor is related to this faulting with the long depressions being clearly linked to the downthrown sides of faults and ridges linked to the upthrown sides. Although the subsurface beneath this local seafloor relief is highly faulted and complex, there are few potential migration pathways that show acoustic blanking that could be interpreted as a signature for the presence of gas. However, the high amplitude areas along the southern flank of the overall feature were selected as the first target areas. In the survey planning stage, it was observed that strong returns occurred on a steep slope where the returns should be weaker due to the incidence angle of the seismic signal. The top and the southwest flank was also selected as a target for seafloor observations.

Though this site had discrete strong amplitude response coincident with bathymetric highs and steep scarps, no large, continuous areas of carbonate substrate were observed, but small carbonate cobbles and small pavements were typical of the seafloor. The depths ranged from 410 meters at the beginning of the dive up to 340 meters at the crest of the bathymetric high. Many of the carbonates had corals and sea anemones attached and several of the whole coral samples taken that appeared to be growing in mud had authigenic carbonates as their base, buried by the mud (**Figure 7-31**). The carbonates were presumably exposed when the coral larvae originally settled and the coral growth was able to keep up with the slow sedimentation rate of the hemipelagic mud. Many of the common scattered, small individual corals that appeared to be in mud, may have had small, carbonate cobbles controlling their distribution (**Figure 7-32**). These associations suggest that the area has had a recent history of very slow seepage. Perhaps more rapid and diverse fluid-gas expulsion occurred in the past, but there is no evidence of higher flux rate response features on the modern seafloor as interpreted from observations made by *Jason.* If higher flux rate features are present but now buried by the constant rain of hemipelagic sediment, a long time has elapsed since this was an active seepage site. The accumulation rate of hemipelagic sediments in the deep Gulf of Mexico has been measured to be about 30 cm/1000years.

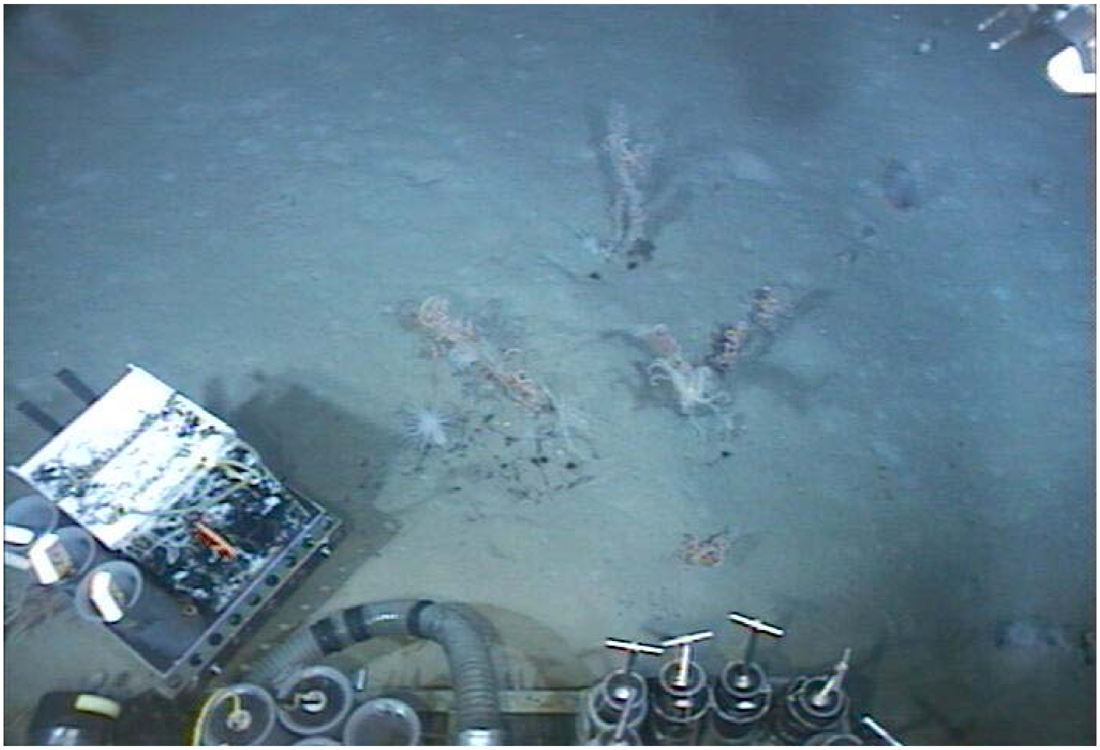


Figure 7-31. Carbonates with corals and sea anemones attached.

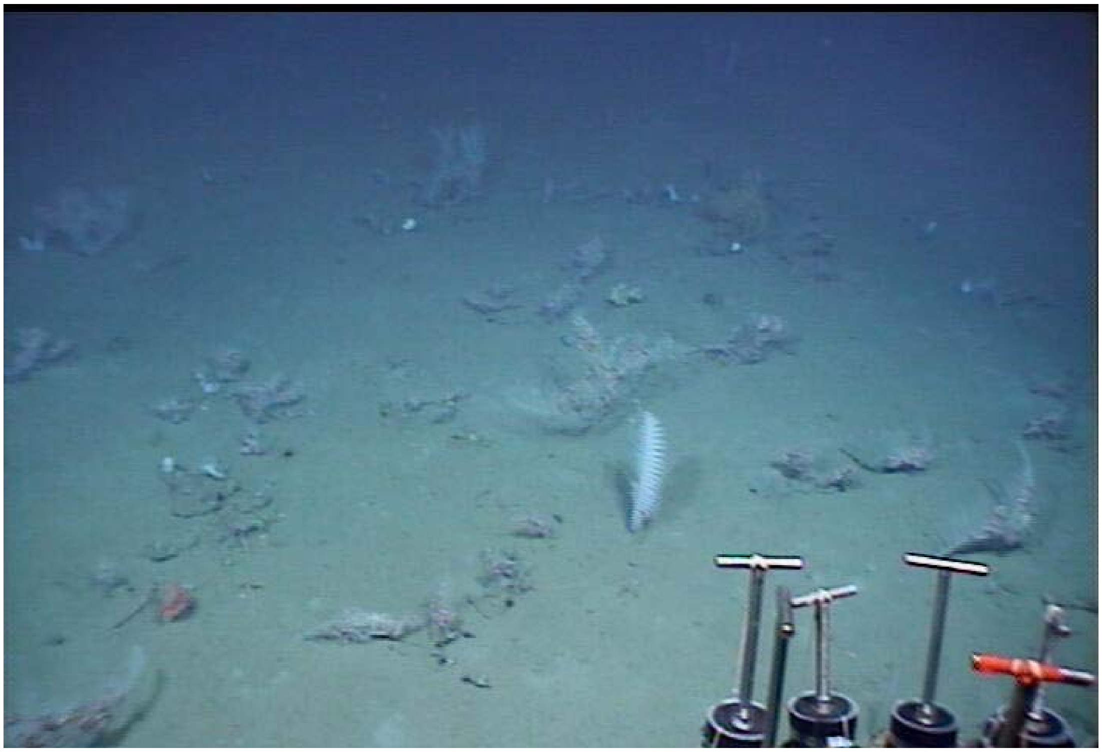


Figure 7-32. Small individual corals and a sea pen.

In one area that appeared to be primarily mottled mud, half meter wide holes (the bottom of the holes were indeterminate, but in at least one case appeared to be well over a meter) , with fish and shrimp living in and around them (**Figure 7-33**). These may have a biological origin or may be gas blowout tubes caused by explosive gas release as interpreted for similar features at GB201 in 2008.

Figure 7-33. Half meter wide holes.

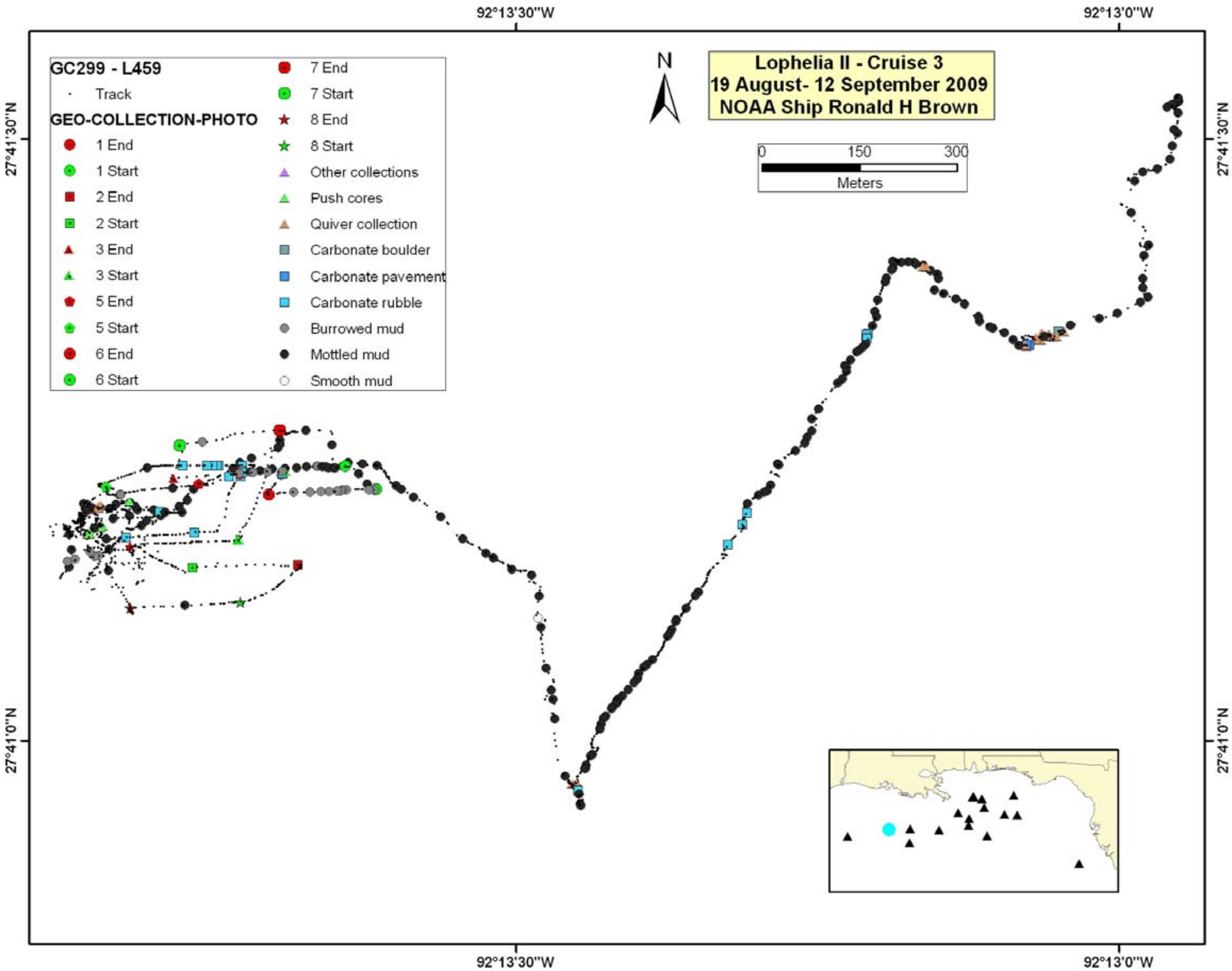


Figure 7-34. Geological-Collection-Photo events observed during lowering J2-459 at GB299 (inset).

Biological Summary

There was very little hard ground fauna on the local topographic high in the area surveyed. The areas of high reflectivity coincided with low relief carbonate rubble and pavements with attached gorgonians and antipatharians which were scattered over much of the area surveyed on the gently sloping northern portion of the site between the depths of 350 and 365 m, and on the ridge to the north between 370 and 390m. Especially impressive at this site was the diversity and overall high abundance of gorgonians and antipatharians with associated ophiuroids (**Figure 7-35**). At least 3 different species of antipatharians and 4 different species of gorgonians were collected along with 5 species of commensal ophiuroids. In addition to the commensal ophiuroids, numerous other echinoderms were present in the hard grounds including several different crinoids and basket stars. Colonial scleractinians were almost completely absent from the areas surveyed, although a single small colony of *Lophelia* was seen along with the occasional cup coral (**Figure 7-36**). Two distinct areas with multiple colonies of *Leiopathes* sp were encountered and sampled for population genetics work.

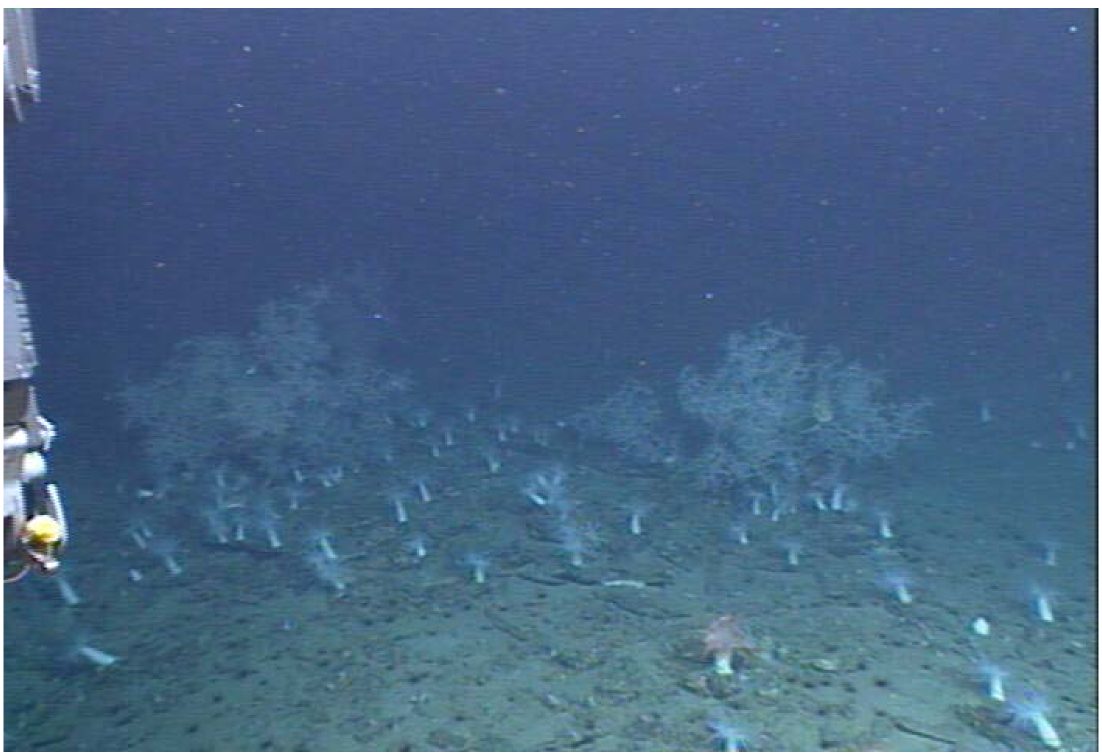


Figure 7-35. Carbonate rubble and pavements with attached gorgonians and antipatharians.

The most abundant gorgonian at this site was *Callogorgia* (potentially more than one species), and 1000's of colonies with attached ophioroids were documented. *Callogorgia* occurred virtually all over the site, with the highest density on scattered carbonate rubble along the N facing slope near the 365m contour line (**Figure 7-37**).

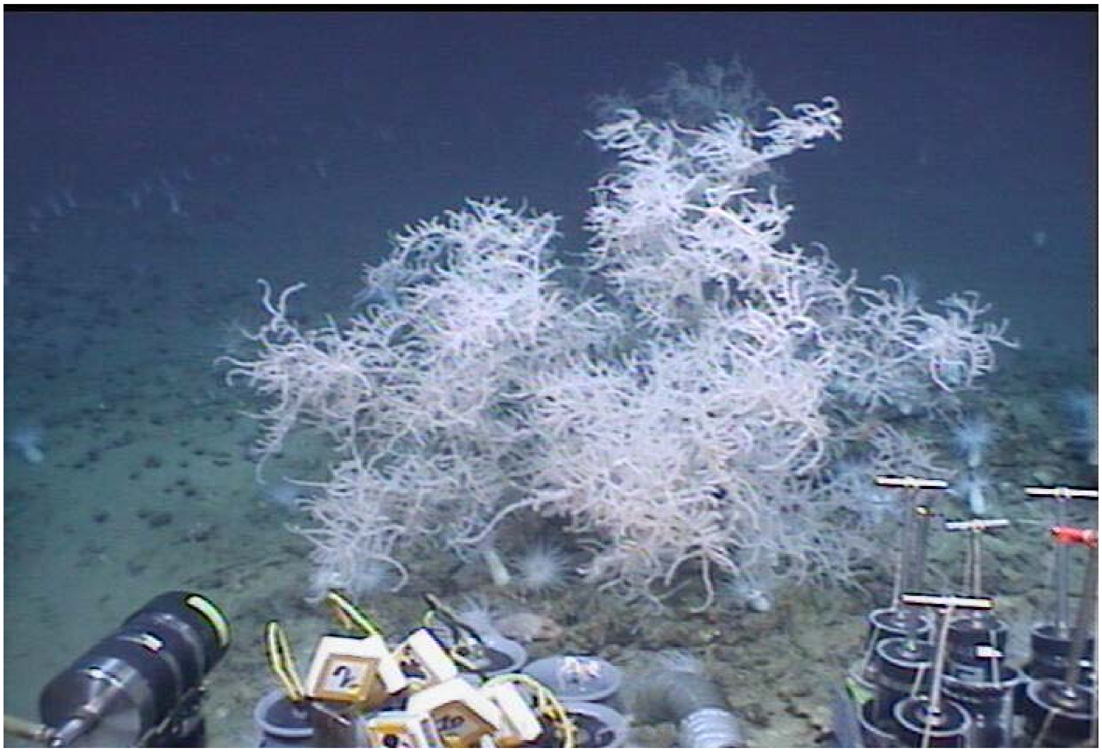


Figure 7-36. A colony of the white color-morph of *Leiopathes*.

Figure 7-37. *Callogorgia* spp. colonies with attached ophiuroids.

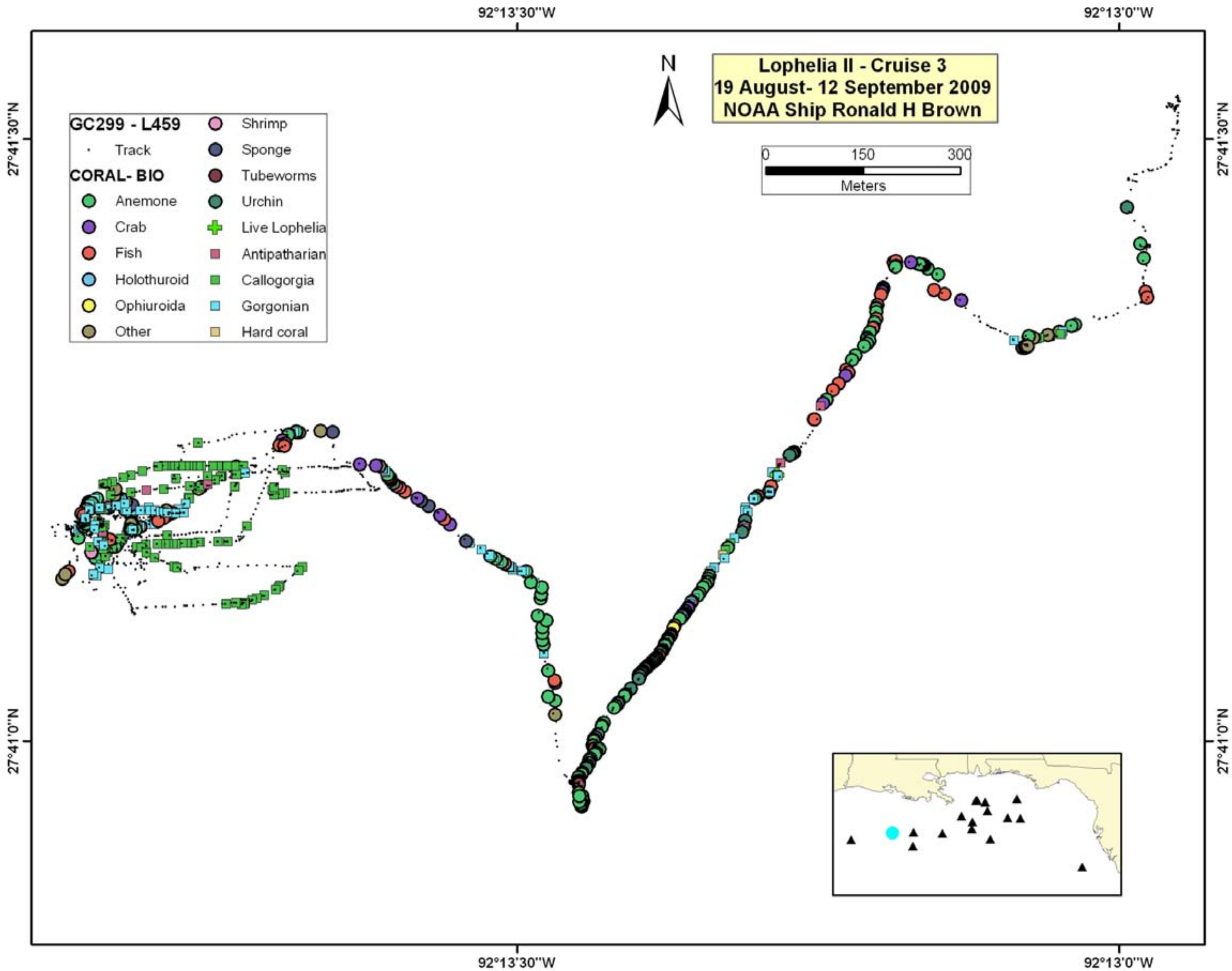


Figure 7-38. Coral-Biological events observed during lowering J2-459 at GB299 (inset).

GB 535 Site Summary

Geological Summary

Lophelia was sighted here during the last few minutes of a JSL dive in 2003. Examination of MMS 3D-seismic data and bathymetry suggested that there may be more extensive hard grounds and the potential for other areas with *Lophelia* in this immediate area. Though the very steep slope of the scarp shows little amplitude variation on the seismic data, the top of the slope does, suggesting the presence of carbonate hardground substrates.

Multibeam bathymetry data acquired during the *Nancy Foster* cruise in 2008 with the *Sentry* AUV identified a large area of fluidized sediment expulsion and several smaller features that also appear as centers for more localized flows. The data also defined a long ridge of about 50 m relief and small bathymetric features associated with the upper edge of the ridge. Seismic data clearly define this scarp as a fault. The top of this fault with its small mound-like features was the area chosen for investigation.

Downthrown to the fault, a broad, low relief (20 meters maximum vertical relief on the edges) domal feature with high positive amplitude stands out on the 3D-seismic amplitude map. The *Nancy Foster* (*Sentry* AUV) multibeam data clearly define near-concentric ridges on the surface of this large domal feature, strongly suggesting fluidized sediment expulsion from a point of origin(vent) located toward the southwestern end of this broad area. Three smaller vents are also a part of this general area. Strong acoustic blanking beneath these features on the seismic cross sections suggests that gas seepage to the seafloor is very active. Photographs from the 2008 *Sentry* survey found no exposed carbonates or corals on the surface of this broad area, but white material interpreted as *Beggiatoa* and evidence of brine seepage were common. The white material could very well be barite or both barite and *Beggiatoa.* Pockmarks, suggesting the rapid release of gas, are typical of the area as well. These features are clearly identified on the MMS 3D-seismic profiles and seismic-derived bathymetry.

The substrate near the base of the down-to-the-northwest fault scarp was almost entirely composed of mottled mud with minor carbonate rubble. The steep slope of the fault scarp had a few carbonate cobbles and some areas of rubble, but was primarily mottled mud. The top of the scarp had common carbonate rubble, pavement, and occasional small and large boulders. On the gentle slope past the top of the scarp, seep related features and organisms were observed on pavement and small boulders. These localized communities appear to be responding to seepage along a family of small faults
that are "splinters" off the main down-to-the-northwest fault. These small splinter faults act as conduits that focus hydrocarbons to the upthrown side of the major fault.

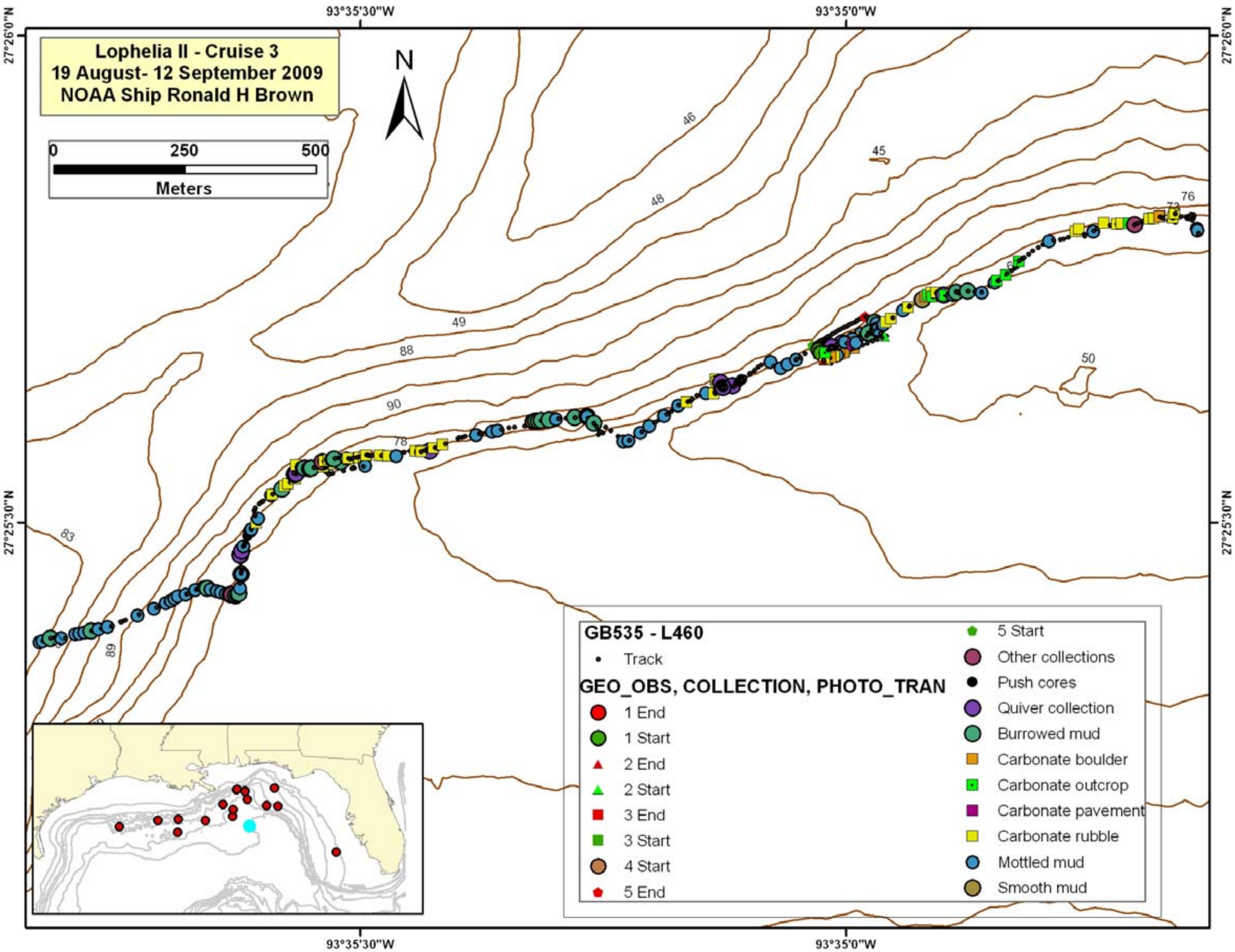


Figure 7-39. Geological-Collection-Photo events observed during lowering J2-460 at GB535 (inset)

Biological Summary

Although we did not explore much of the area at either the base of the ridge or up-slope from the ridge crest, we found evidence of active seepage and chemosynthetic communities both above and below the ridge itself. Very little other than soft sediment was observed on the lower portions of the ridge slope, but carbonate rubble, pavement and occasional boulders were present close to the ridge crest along the entire length of the ridge surveyed. The most abundant macrofauna on this rubble were white sponges (**Figure 7-40**).

Figure 7-40. White sponges.

The orange antipatharian whip corals, Stichopathes sp, and three octocorals, *Narella* sp. *Nicella* sp., and *Scleracis* sp were patchily distributed on carbonate rubble and on the boulders (**Figure 7-41**). Additionally, *Lophelia* colonies were present along much of the top of the slope of the ridge and along its crest (**Figure 7-42**). Colonies of live *Lophelia* ranged from very small colonies consisting of less than 20 polyps to mounds of *Lophelia* framework several meters in diameter and two meters high covered with live *Lophelia*. In one area the entire slope below a pair of mounds was scattered with *Lophelia* rubble suggesting a long history of *Lophelia* growth here (**Figure 7-43**).

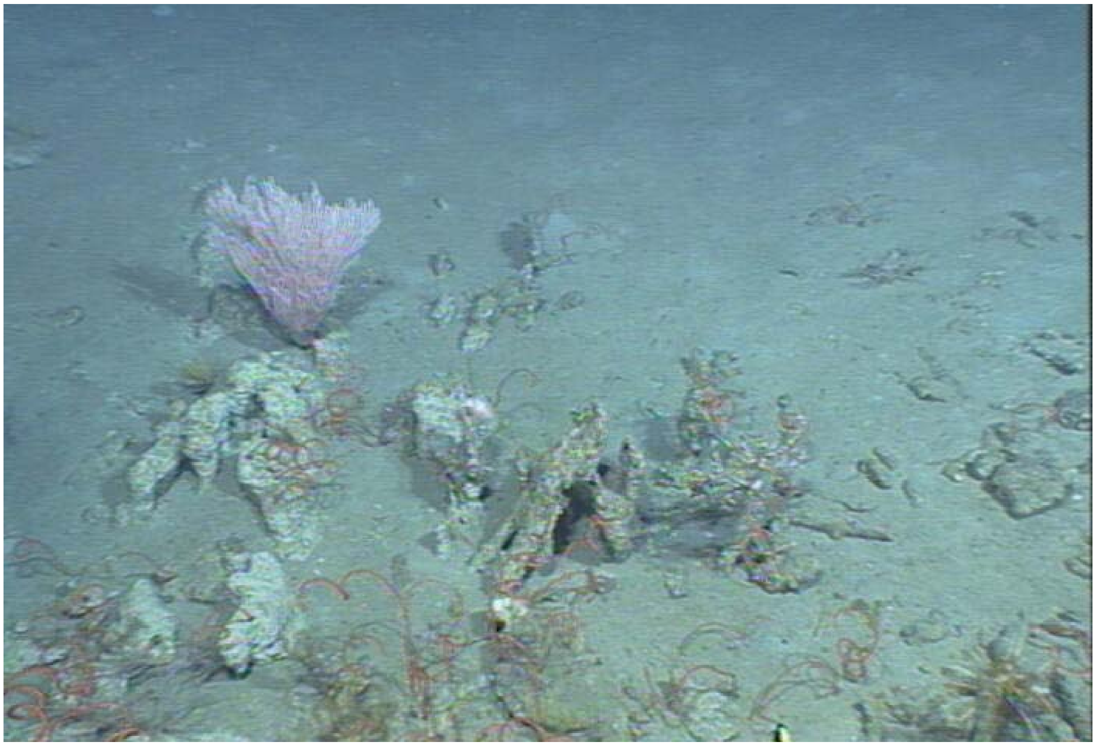


Figure 7-41. Patchily distributed fauna on carbonate rubble.

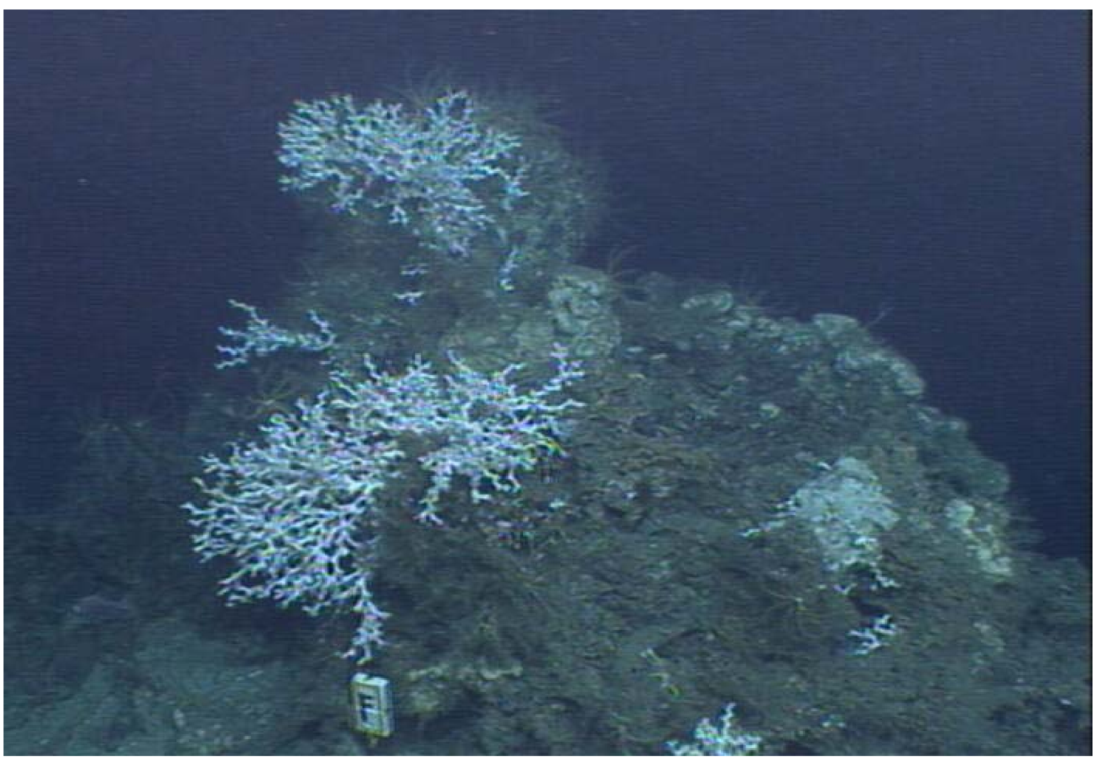


Figure 7-42. ***Lophelia*** **colonies.**

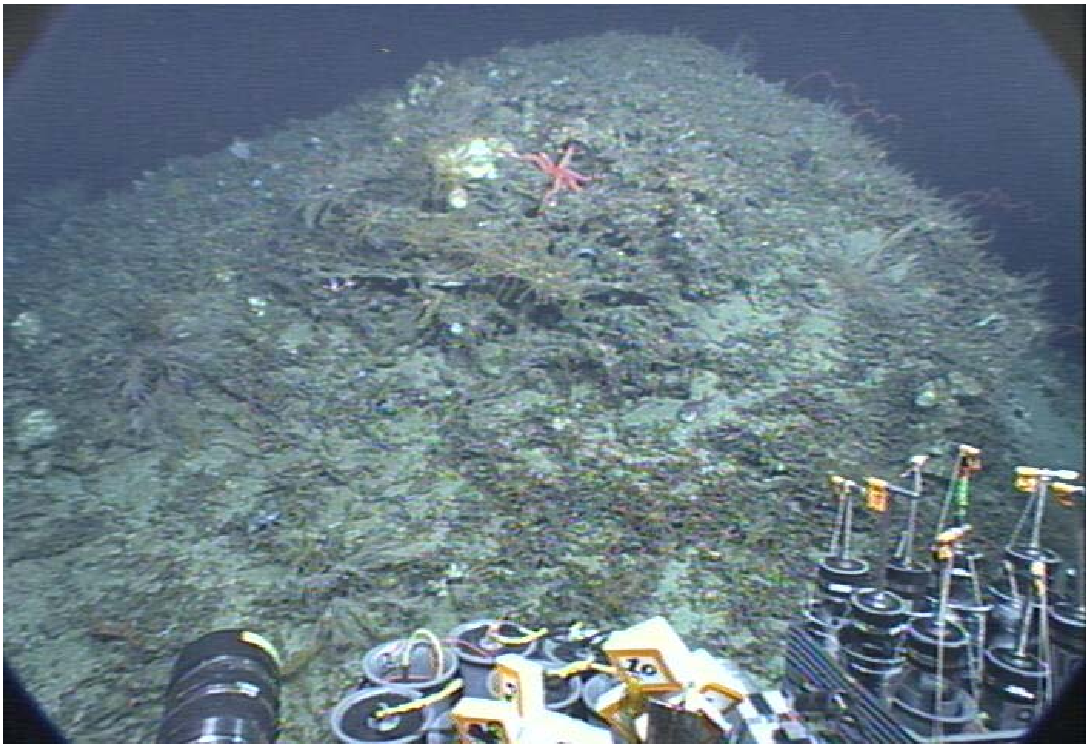


Figure 7-43. ***Lophelia*** **rubble.**

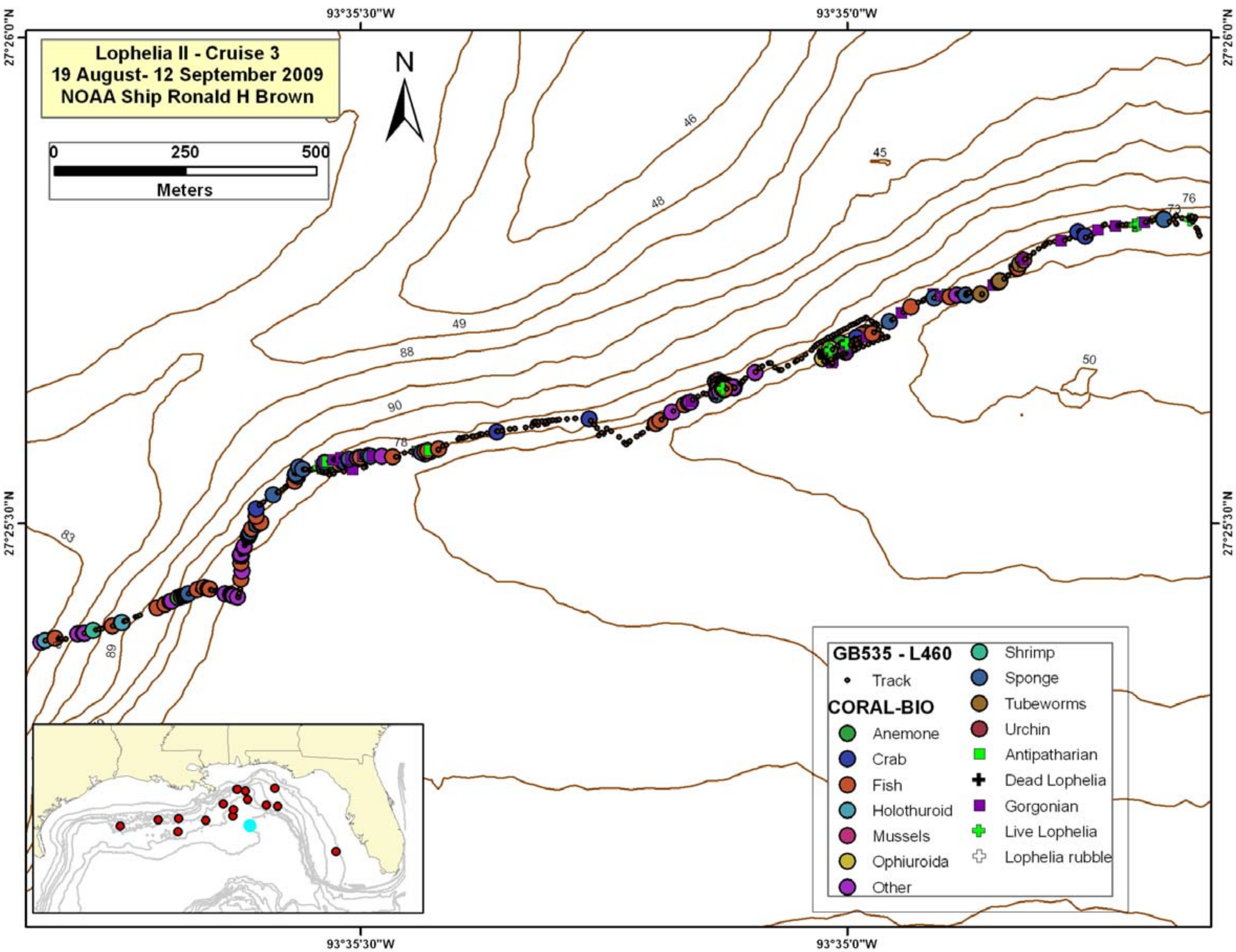


Figure 7-44. Coral-Biological events observed during lowering 460at block GB535 (inset).

GC 852 Site Summary

Geological Summary

This site was originally chosen for the Chemo III project and extensive seep and hard ground areas were verified during that program using camera sled, *Jason*, and *Alvin*. A high quality bathymetric map of the site was acquired with C&C Technology's *Hugin* AUV using an onboard multibeam system. Higher resolution multibeam bathymetry maps were made over selected areas with SM 2000 mounted on *Jason*. The *Hugin* AUV data define the overall site as a elongate ridge with considerable small scale topography on top. During a 2006 *Alvin* dive in support of the Chemo III project, the highest part of the ridge was found to support a thriving coral community. This area of the south-central part of the ridge was nicknamed "coral gardens." The GC 852 site was originally identified on MMS 3D-seismic data which defined it as a prominent N-S trending ridge supported by salt in the shallow subsurface. The ridge is ~15 km long, 5 km wide, with up to 200 meters relief, and it resides in ~ 1400 m of water. Discrete strong positive amplitudes are present along the top and flanks of the feature. The southern end and the highest part of the ridge were the focal points of prior visits to GC 852 associated with the Chemo III project.

The top of the ridge is covered with large boulders and outcrops of hydrocarbon and seep-related authigenic carbonate. These rocks provide the necessary substrates for corals and other attached fauna. The central part of the top of the ridge is 20-30 meters deeper than the shallowest south-central part that supports the abundant coral community. This part is sediment covered and has less exposures of carbonate and fewer corals. The northern and southern ends of the ridge have the most exposures of hard substrate (**Figure 7-45**). Among the exposed carbonates brine seeps, hydrocarbon seeps, and bacterial mats were found at both the southern and northern ends of the ridge during the 2006-2007 Chemo III dives. Limited observations of the ridge flanks suggest that carbonate outcrops are common. Some of the highest 3D-seismic surface amplitudes are concentrated on the ridge flanks, especially the east-facing flank.

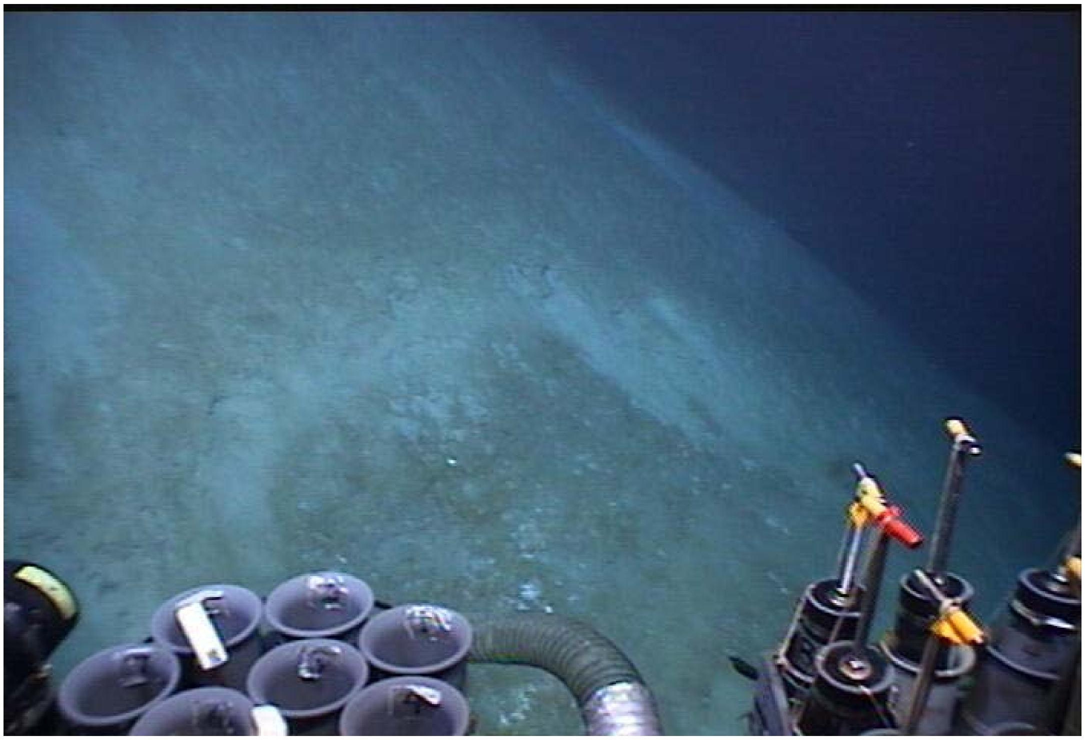


Figure 7-45. Steep slope on the flank of the northern end of the GC852 site.

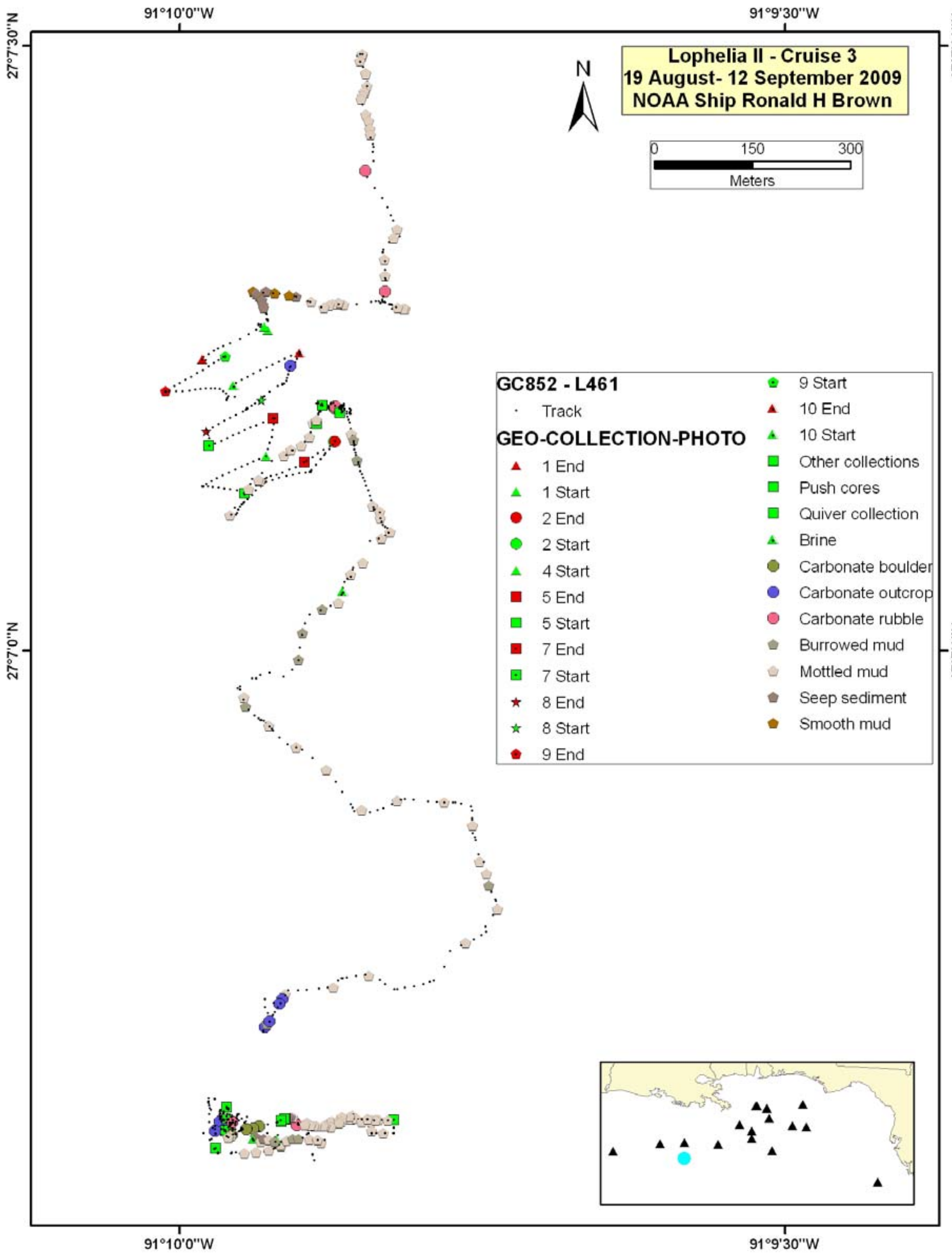


Figure 7-46. Geological-Collection-Photo events observed during lowering J2-461 at GC852 (inset).

Biological Summary

This site is composed of a long, linear ridge where we have observed corals, seep communities, and very high currents in the past. On the northern end of the ridge are very steep sides of sediments that appeared to be too unstable to support coral communities. At the base of this slope were a few isolated mussel beds. At the tops of the bathymetric highs on the northern end of the ridge were a few isolated octocoral colonies (**Figure 7-47**). The center of the ridge was also primarily soft sediments and was devoid of corals as well.

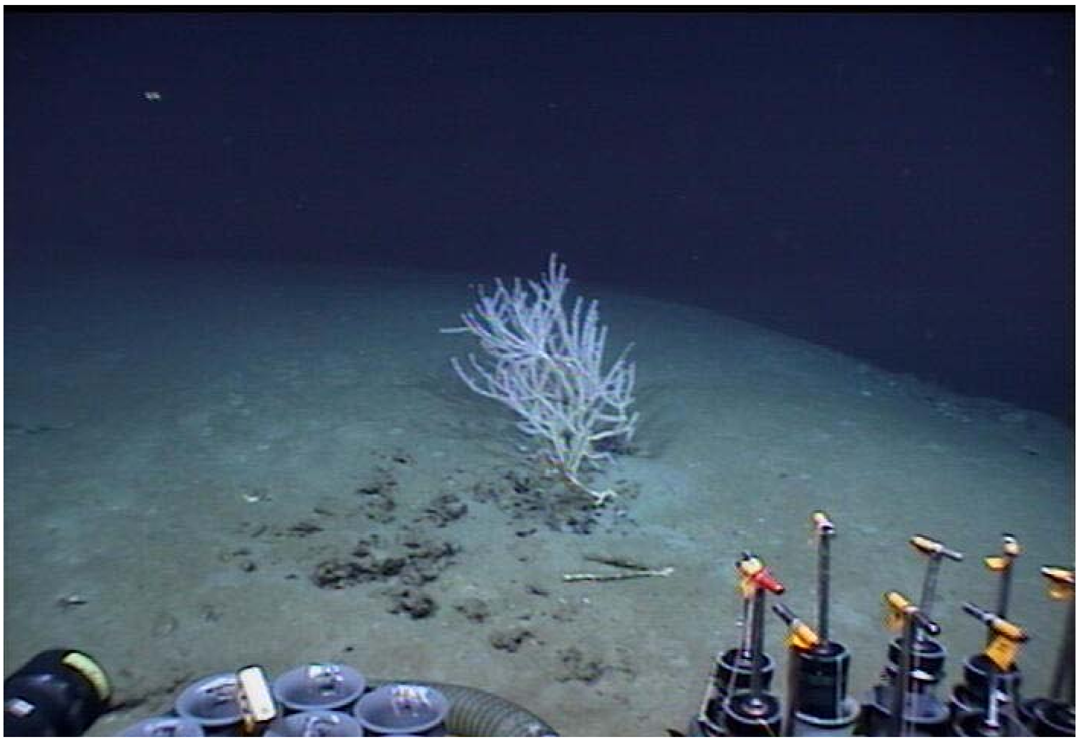


Figure 7-47. Isolated octocoral colonies at northern end.

On the central part of the site that we surveyed, there was a fairly large area of coral colonization (there is a larger seep area further to the south that we did not visit this year). The coral area (nicknamed “Coral Gardens” during the Chemo II project was dominated by bamboo corals, but also contained some *Iridigorgia* sp. colonies as well as *Corallium sp.*, *Paramaruricea sp.*, *Bathypathes sp*. In one area the boulders were extensively colonized by a purple alcyonacean**.** Two portions of this area were colonized by the scleractinian corals *Madrepora oculata*, *Solenosmilia variabilis*, and *Enallopsamia rostrata* (**Figures 6-48** and **6-49)**.

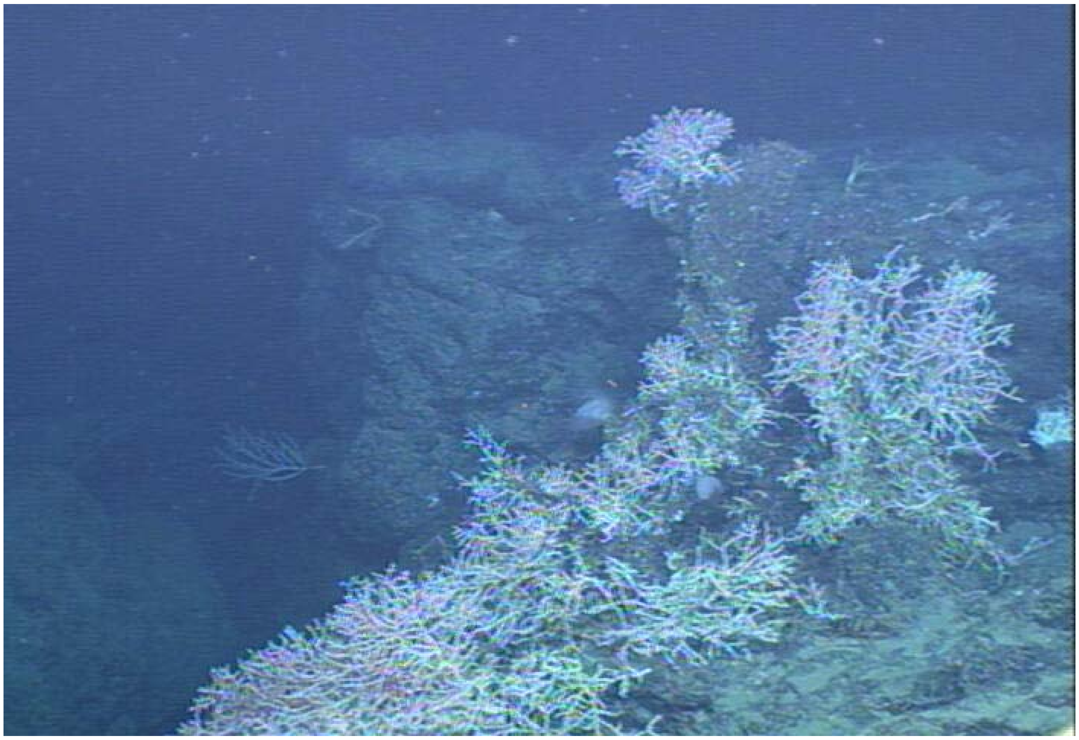


Figure 7-48. Coral colonization at central part of GC852.

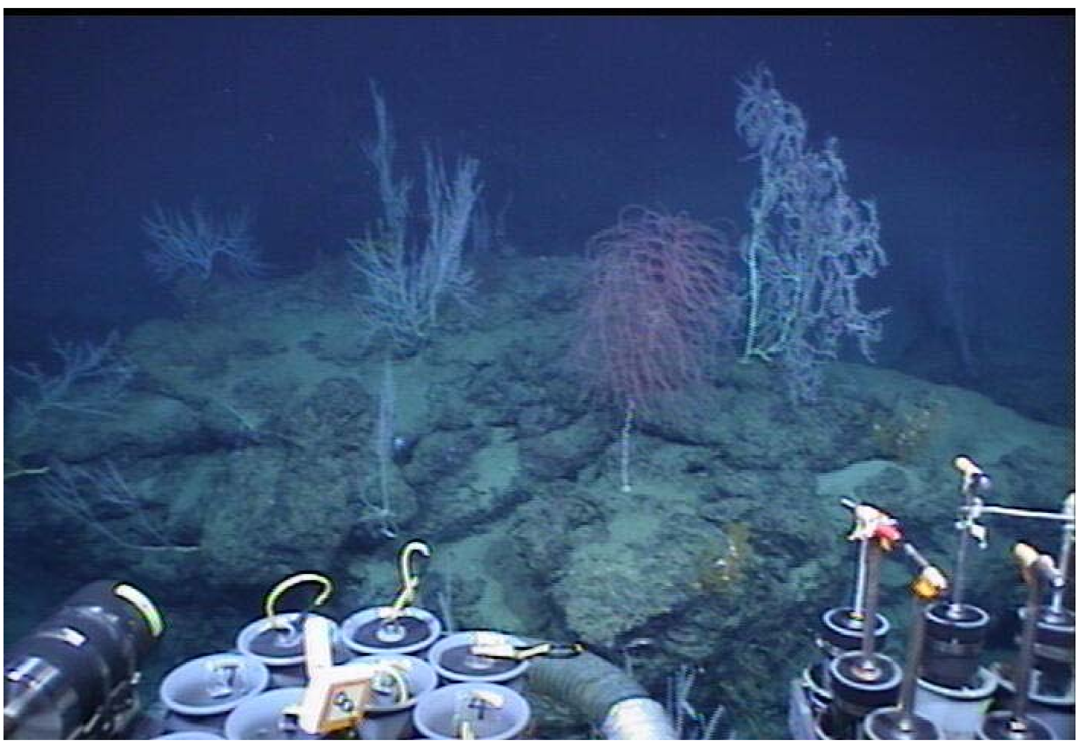


Figure 7-49. *Iridogorgia* and bamboo corals at the central portion of the site.

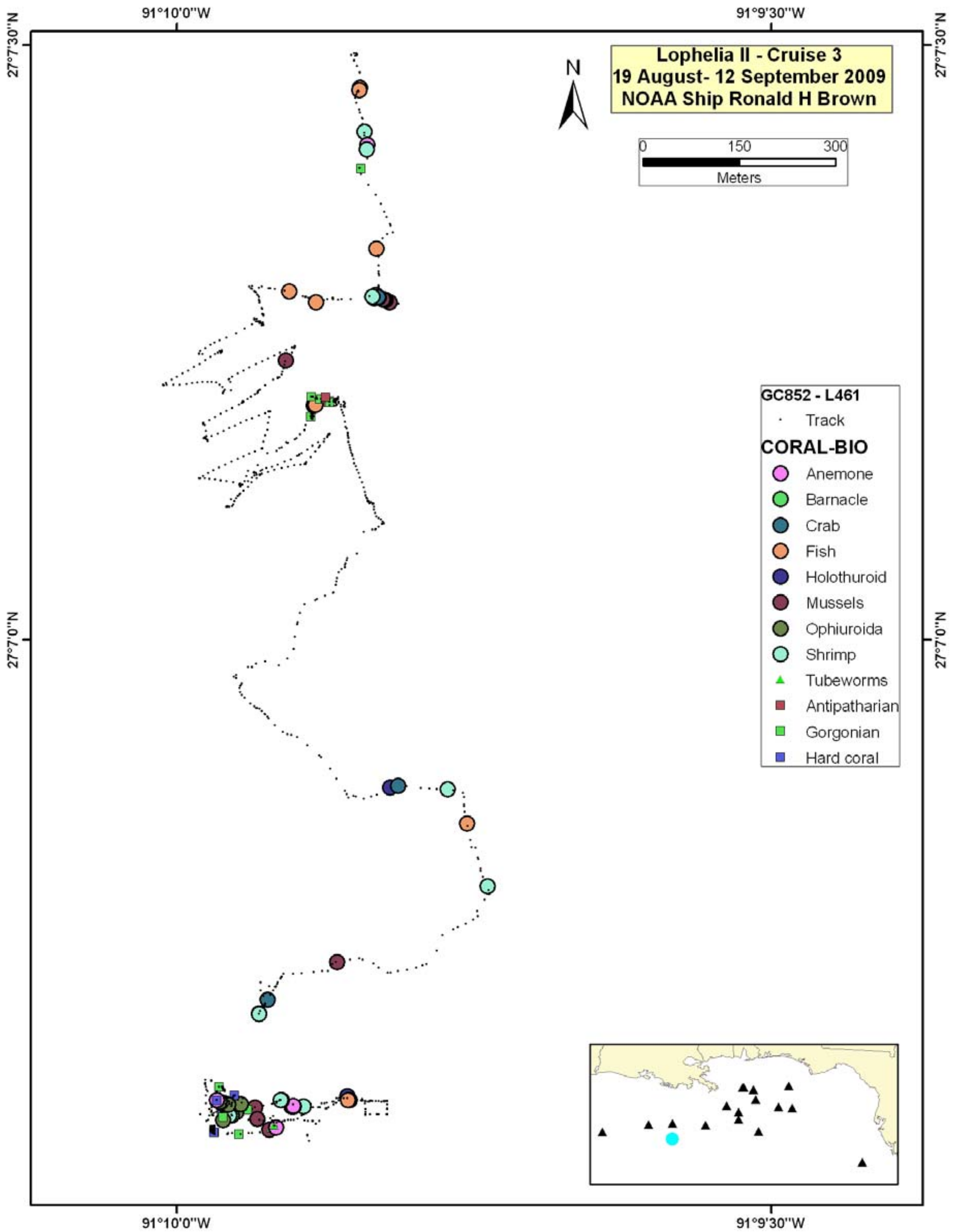


Figure 7-50. Coral-Biological events observed during lowering J2-461 at GC852 (inset).

GC 338 Site Summary

Geological Summary

This site was not on the final list of sites from MMS 3D-seismic data listed in the cruise plan, so there was no amplitude/bathymetry map onboard. Selection was based on in part on the need for a site in this general area to optimally use *Jason* surface times and previous high rating of the site and 3 Lat/Long coordinates chosen from the seismic targets initially identified from the seismic maps. The *Ron Brown* acquired multibeam bathymetry to plan the dive. As for other sites, bathymetric highs, as well as the seismic high amplitude targets, were scheduled to be visited. The seismic targets were discrete high positive amplitudes on the seismic interpretation, with little to no bathymetric relief, whereas the bathymetric high is an east-west trending ridge with little to no amplitude response on the seismic (presumably, since no geophysical targets were noted on top of the ridge on the written list of targets)

The area upslope of the first geophysical target was characterized by carbonate rubble scattered over the seafloor (**Figure 7-51**). Vesicomyid clam shells also were scattered throughout the area as the adjacent bottom photograph of the area shows. A few corals were found attached to the pieces of carbonate pavement and to a lesser extent clam shells. On top and north of the ridge, the seafloor was composed almost entirely of mottled mud with numerous burrows. Whereas to the southeast discrete areas of brine seepage and bacterial mat were encountered.

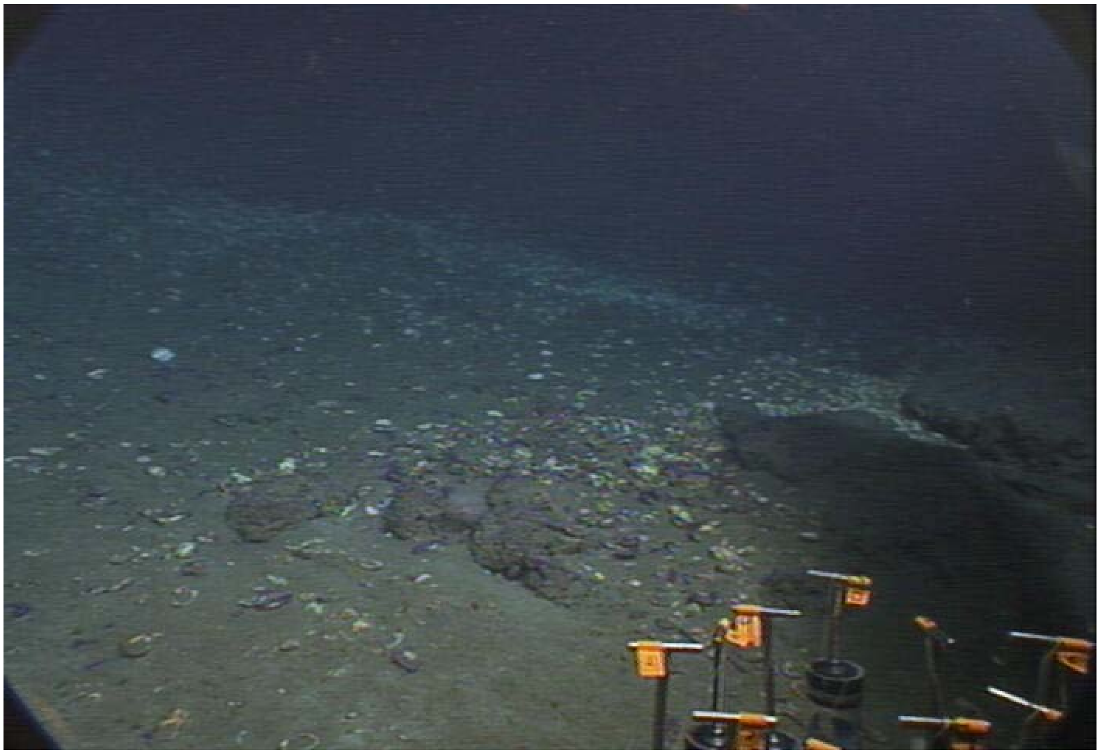


Figure 7-51. Carbonate rubble and clam shells scattered over the seafloor.

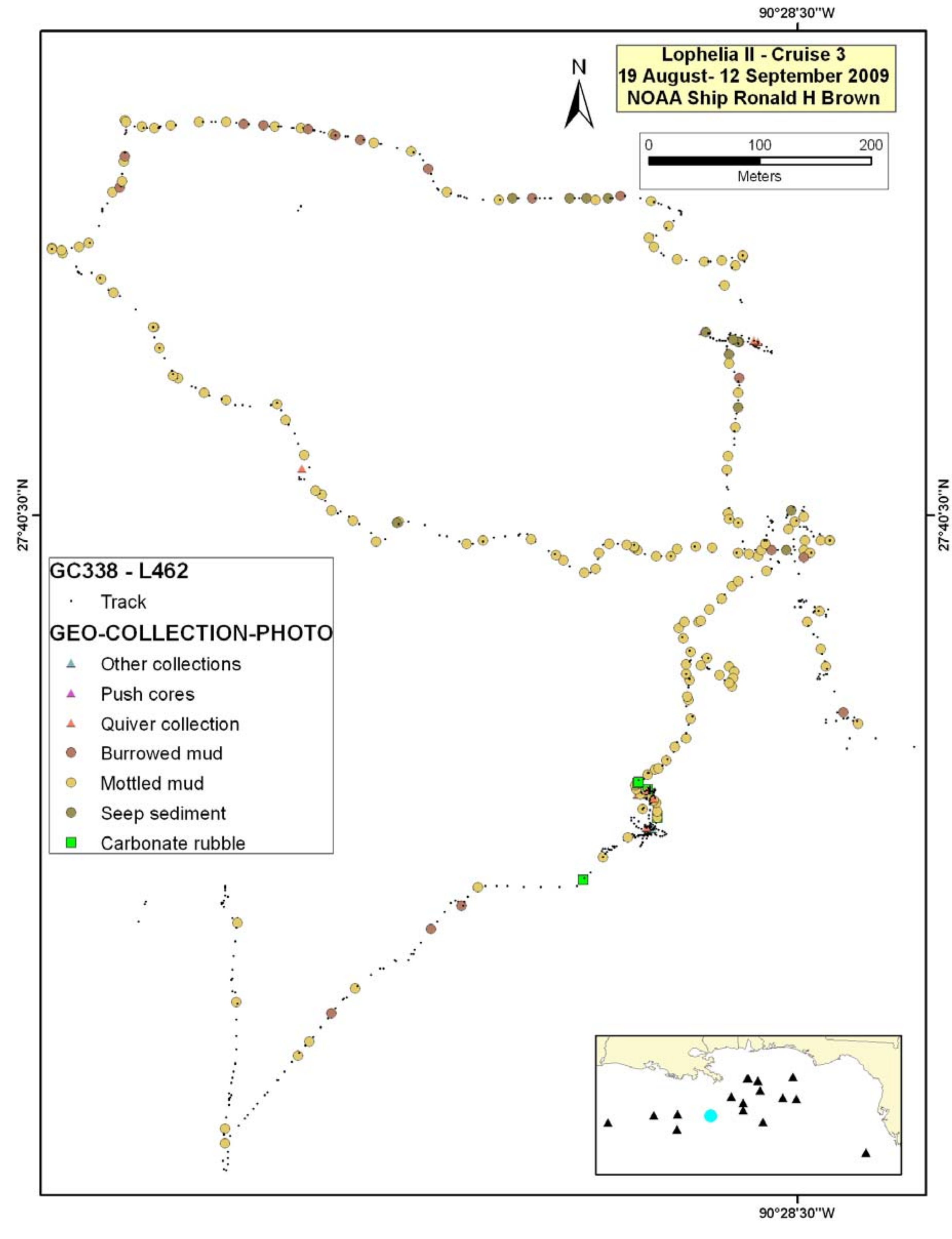


Figure 7-52. Geological-Collection-Photo events observed during lowering J2-462 at GC338 (inset).

Biological Summary

The only area visited with significant coverage of colonial cnidarians was on the southern flank of the ridge between the local topographic high and the 1st seismic target. In this area there were beds of disarticulated vesicomyid shells (primarily *Calyptogena ponderosa*) on the slope with variable amounts of carbonate from scattered rubble, to pavement and small boulders. On the carbonate were scattered colonies of *Callogorgia* with attached ophiuroids and a few colonies of other corals: *Callogorgia*, *Chrysogorgia*, *Bathypathes*, and *Paramuricea* (**Figures 7-53** and **7-54**). On the top and N and E flanks of the ridge very little sessile benthic fauna was noted, and the substrate was primarily mottled sediment.

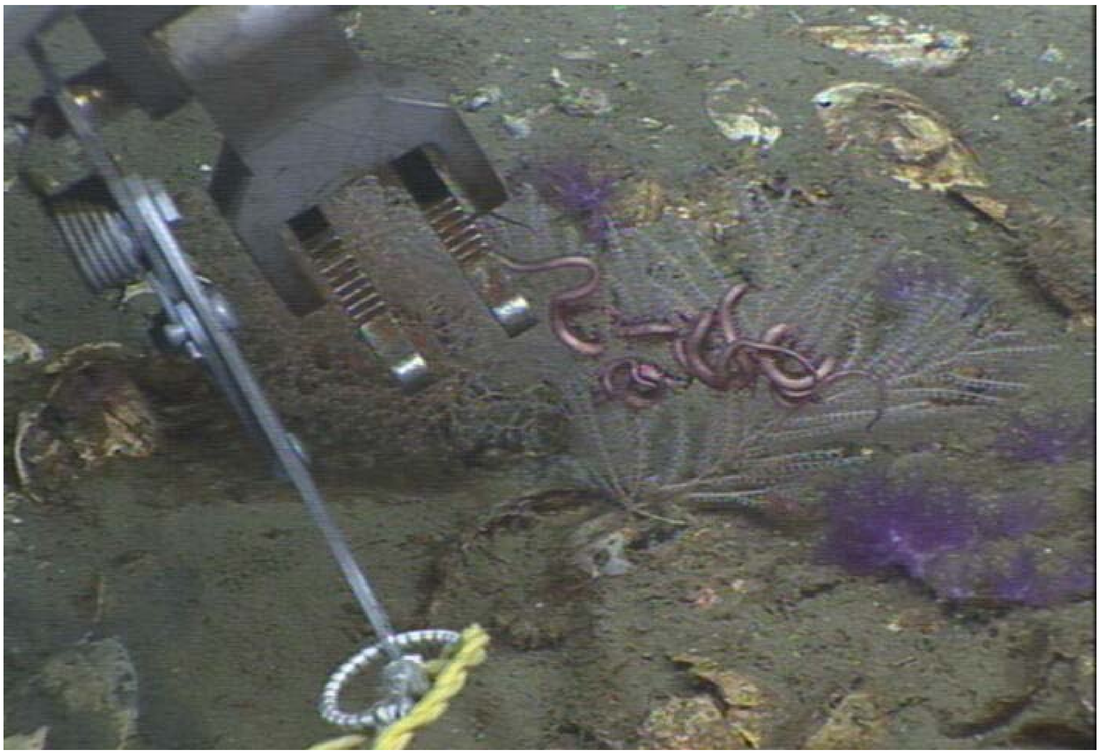


Figure 7-53. *Callogorgia* with attached ophiuroids.

Figure 7-54. ***Paramuricea*** **with attached ophiuroids.**

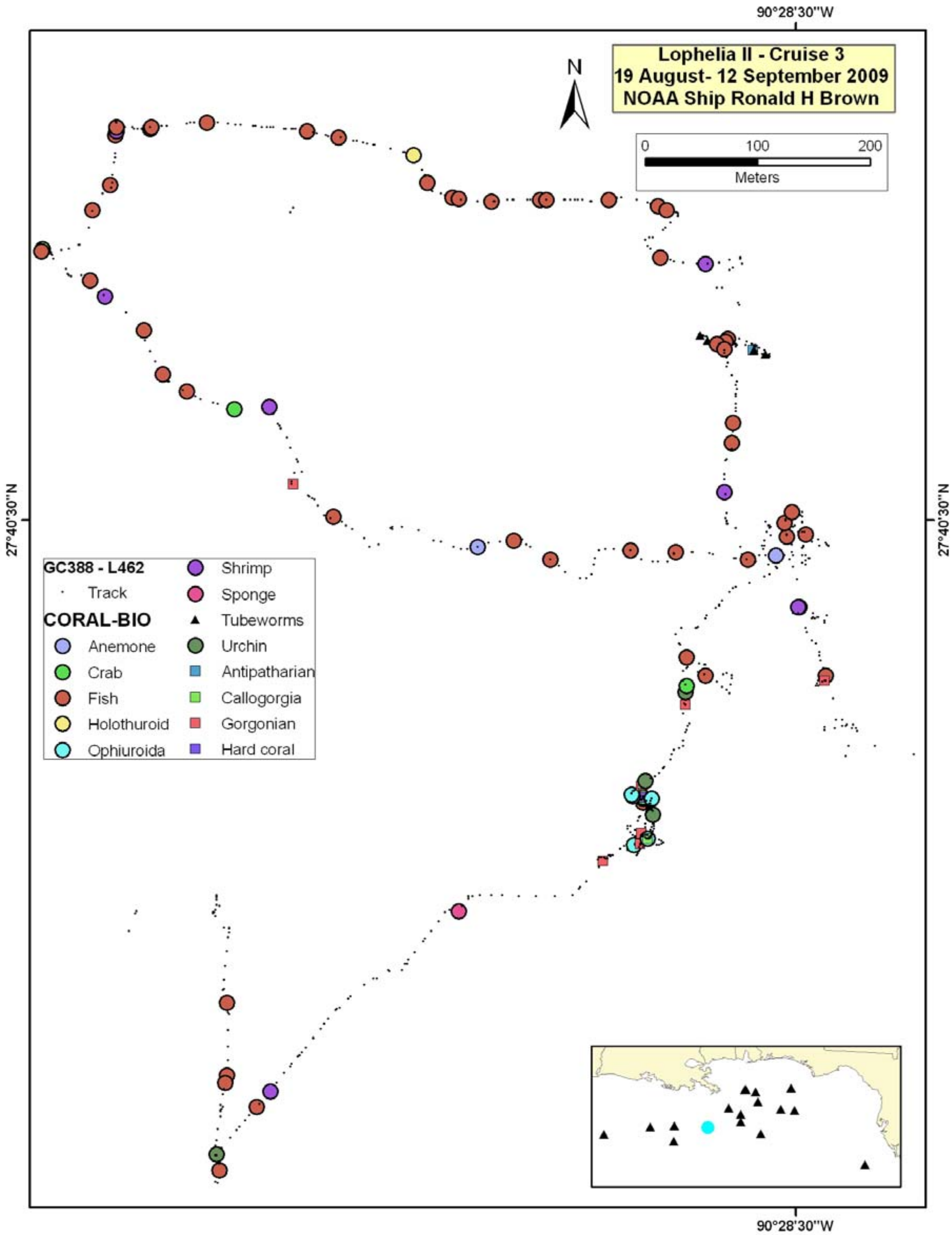


Figure 7-55. Coral-Biological events observed during lowering J2-462 at GC338 (inset).

MC751 SITE SUMMARY

Geological Summary

This site was identified using MMS 3D-seismic surface amplitude/bathymetry data. In map view, this feature appears as a small nearly circular pattern of highly reflective seafloor. The bathymetry and seismic profiles indicate that the amplitude anomaly is associated with a small mound that is approximately 1.5 to 2.0 km in diameter. This mound was initially visited in 2008 by the RV *Nancy Foster* using the "SeaEye Falcon" ROV. Being in 450-465 m of water, this site was at the operational limit of the ROV and only a small portion of the site was investigated . The site is characterized by a discrete, strong positive amplitude in plan view surrounded by normal positive (soft bottom mud) amplitude, on a plunging ridge at the upslope head of a seaward dipping canyon. Seismic cross sections indicate vertical acoustic blanking of the record beneath the mound which is generally interpreted as active gas pluming up to the site, suggesting a possible seafloor environment supportive of chemosynthetic communities and corals.

Once *Jason* transited the site it became apparent that there was a direct correlation between high positive amplitude from the 3D -seismic data and the presence of exposed large boulders, outcrops, and pavements of authigenic carbonates. There were a few areas of mottled mud, but the site was dominated by carbonates, all of which had clean surfaces that provided excellent attachment sites for fauna needing a hard substrate. Many carbonates were completely covered with corals and other organisms.

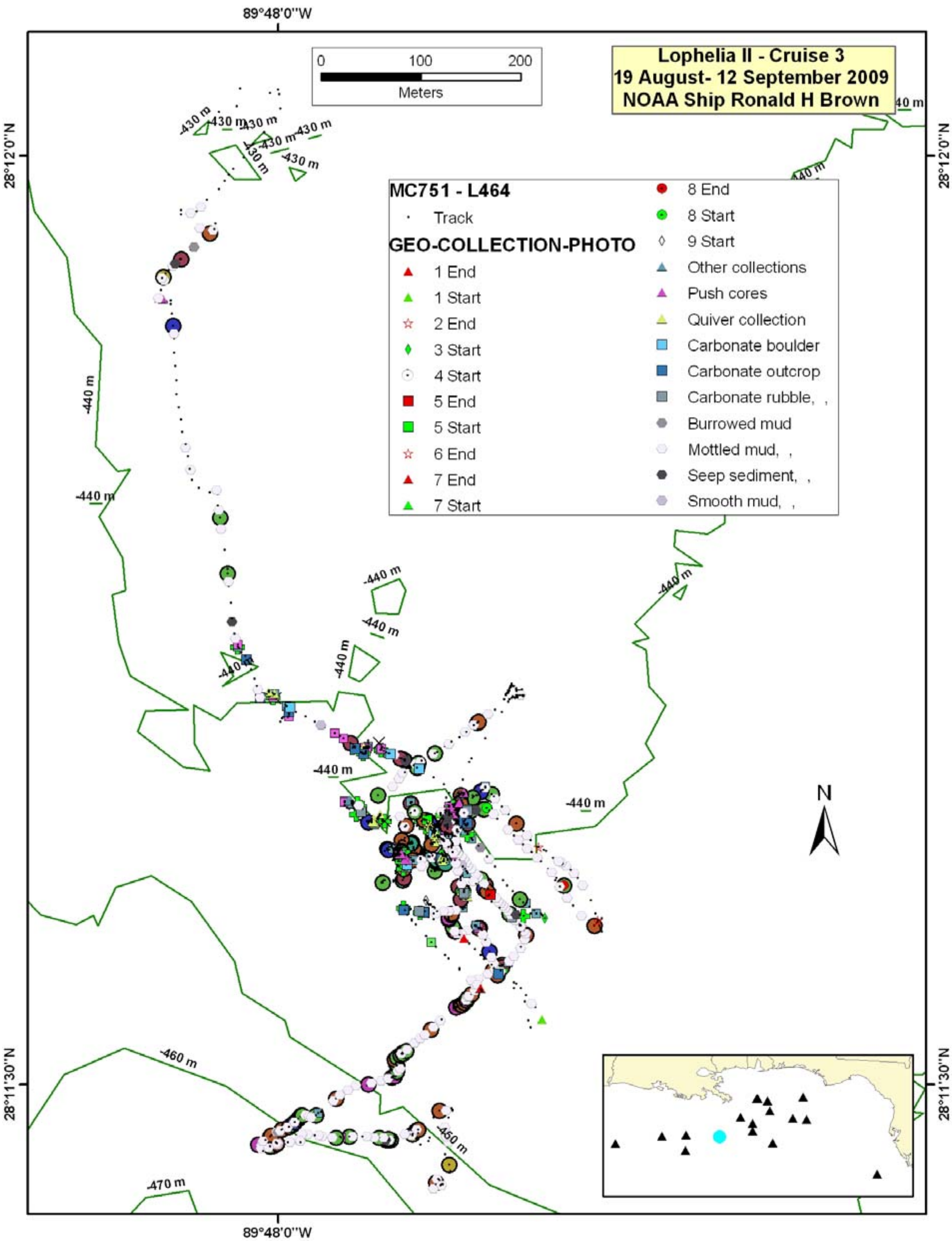


Figure 7-56. Geological-Collection-Photo events observed during lowering J2-464 at MC751 (inset).

Biological Summary

The main part of this site covers an area of approximately 500 by 500 m, with a central, high-density area of approximately 200 x 200 m. Within this area are numerous authigenic carbonate outcrops, slabs, and boulders colonized by *Lophelia*, *Callogorgia*, and other coral on the tops and *Lamellibrachia luymesi* tubeworms around the periphery (**Figure 7-57**). The abundance of live corals in the immediate vicinity of apparent active seepage (both tubeworms and bacterial mats in some locations) has not been previously observed to the extent that it is found at this site. The other known occurrences of *Lophelia* at relatively active seep sites consisted of mainly dead coral structure with a few live polyps at least a few meters away from any tubeworms. This site contained live, apparently healthy *Lophelia* growing directly along with and interspersed with tubeworms, and in some cases bacterial mats. This should serve as an excellent test for the hypothesis that the corals do not derive any nutritional input from seep productivity.

Figure 7-57. *Lophelia* and *Lamellibrachia luymesi* tubeworms.

There was a relatively high diversity of gorgonians at the site as well, including what appeared to be multiple species of *Paramuricea* and a *Paragorgia* sp. (**Figure 7-58**) that was previously collected for the first time in the Gulf of Mexico during this program. In addition, acesta clams were observed at the proximal end of tubeworm tubes, *Asteroschema* ophiuroids on *Callogrogia* and *Paragorgia*, and *Astrogomphus* ophiuroids and coiled gastropods were visible as associates on *Lophelia*. Few black corals were observed, but present were *Bathypathes* and *Stichopathes*. *Icella* corals and a large unknown white octocoral were also observed (**Figure 7-59**).

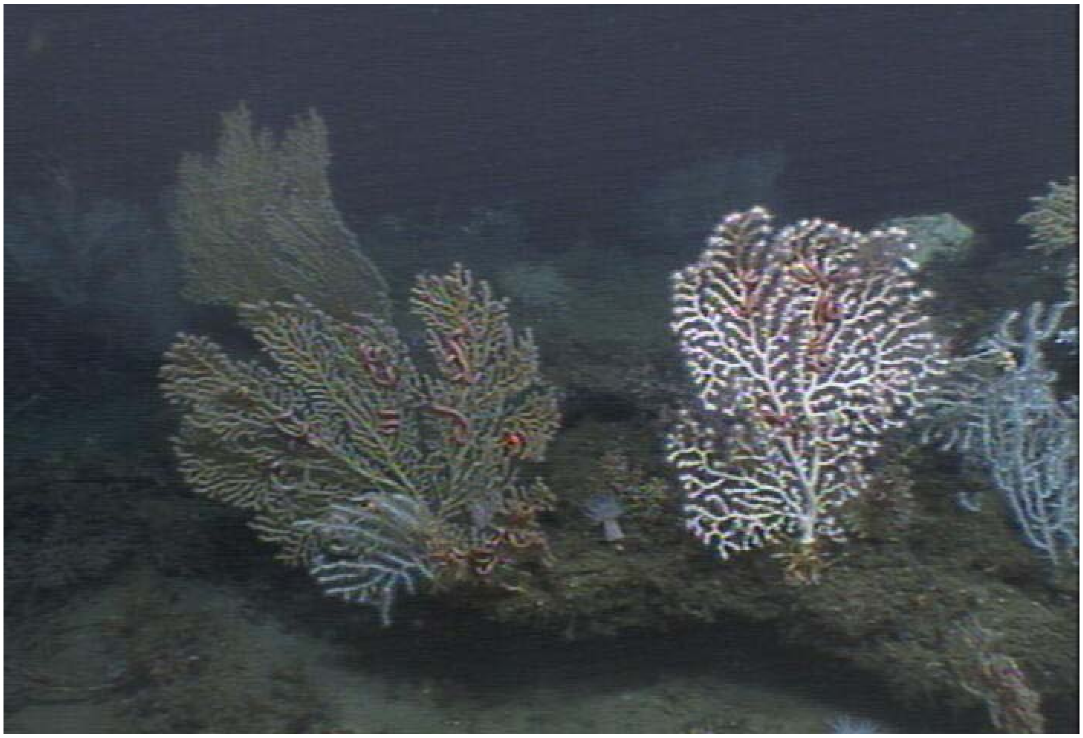


Figure 7-58. ***Paragorgia*** **sp. Coral on right side of image.**

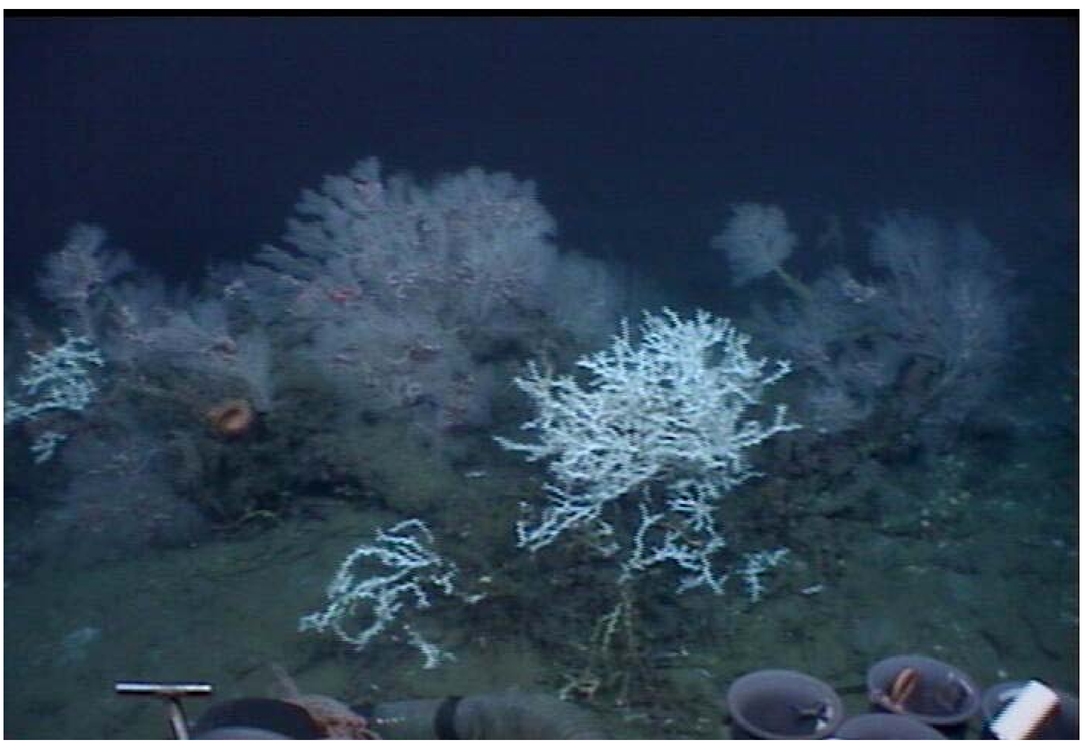


Figure 7-59. ***Lophelia*** **and** ***Callogorgia*** **colonies.**

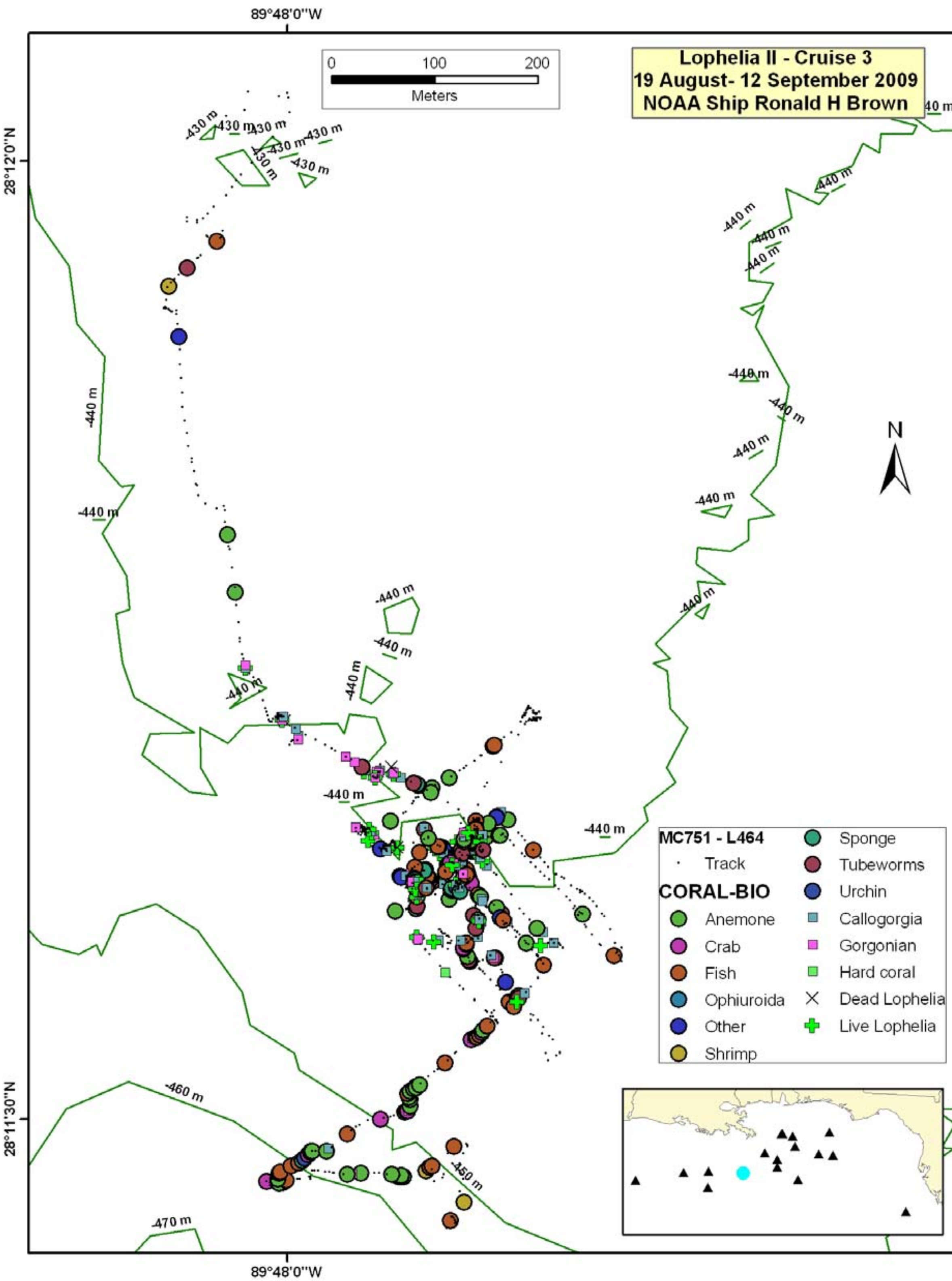


Figure 7-60. Coral-Biological events observed during lowering J2-464 at MC751(inset).

VK 906 Site Summary

Geological Summary

This site was identified several years ago from MMS 3D-seismic data. The regional area of interest is a complex of mounds and depressions superimposed on a large bathymetric high that generally dips to the south and is the reflection of a tabular salt body in the very shallow subsurface. The area of interest on the top of this regional feature is approximately 4 km X 4 km and ranges in water depth from about 320-400 m. At an area updip and at the bathymetric crest of the regional feature in VK 862, there is a complex mounded area of seafloor. This area has been visited several times by groups of scientists working on research programs focused on the study of coral communities and their geologic settings. It is a particularily productive site for *Lophelia*. At the southern end of the large salt-supported and seaward dipping bathymetric feature is a series of five small mounds that are roughly 150-300 m in diameter and have up to 50 m relief above the surrounding seafloor. The mounds are distributed in roughly a north-south line with the largest of the mounds at the southern end of the group. In 2008 the RV *Nancy Foster* collected multibeam bathymetry over the entire area from the well known mounded area to the north to the chain of small mounds to the south. These data clearly discriminate the small chain of mounds at the southern end of the underlying tabular salt body as well as other areas of small-scale mounded bottom to the northwest. These features were visited by *Jason* as part of this *Lophelia* study. The RV *Nancy Foster* bathymetry map was used for dive planning in addition to the 3D seismic data.

The 3D-seismic surface amplitude response of the mounds spread over the area of interest is variable, moderate-to-strong high positive. However, most of the discrete mounds at the southern end of the area are generally without much reflectivity (anomalously low positive signatures). Initially, we thought that this seismic response may be related to bubble-phase gas in the mounds as a product of seepage around the underlying salt mass. However, after the *Jason* dive on the largest of the southern mounds it became apparent that there was no evidence of seepage. A new seismic cross section through the chain of small mounds clearly indicates that there are no direct migration pathways from the deep subsurface to the mounds. Further, they are sitting on a hard horizontal reflector that appears to be the surface from which the mounds originate. This relationship is unique with regard to all the mounds we have studied on the northern Gulf's continental slope. Seismically, they are similar to the mounds of the pinnacle reef trend of the Mississippi and Alabama outer continental shelf. It could be that these mounds in VK 906 are *Lophelia* reefs that started on subtle relief features associated with the hard bottom that is clearly evident as a seismic reflector above the very shallow subsurface salt body. If this is the case, these small mounds would represent the first such *Lophelia* reefs identified on the northern Gulf of Mexico continental slope.

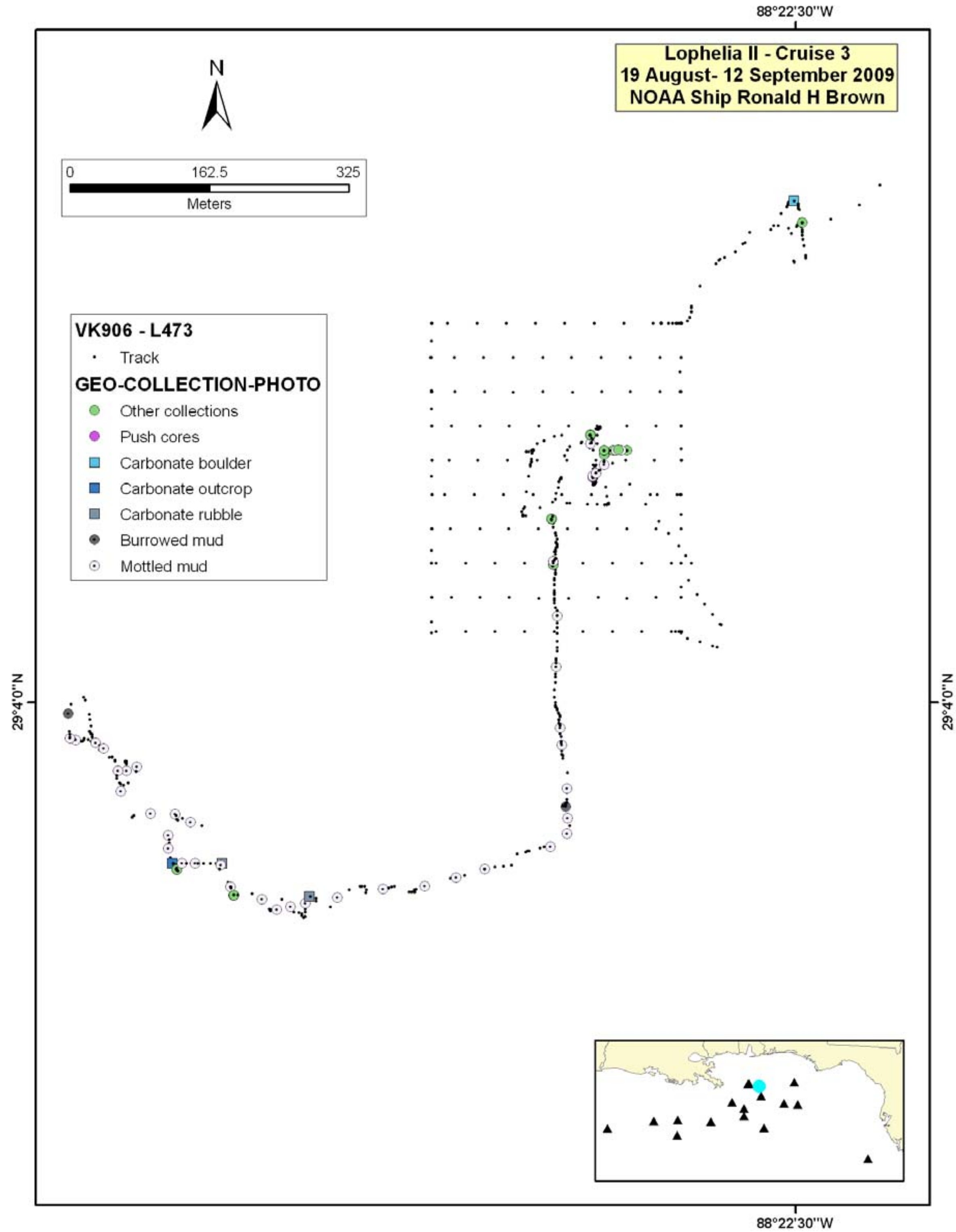


Figure 7-61. Geological-Collection-Photo events observed during lowering J2-473 at VK906 (inset).

Biological Summary

Numerous dives have been made in the extreme northern portion of this block and into the neighboring block, VK 862 at the local topographic high in depths between 320 and 349 m. In that location anemones are very abundant as is white Leiopathes and *Lophelia* are also present. During the 2008 *Nancy Foster* cruise much more of this site to the south was surveyed by multibeam and a dive was made down the side of a canyon running from 380 to 410 meters depth. On this transect both Callogorgia and *Lophelia* were observed, but no impressive aggregations of either were noted. At the very end of this dive, we encountered a mound that appeared to be composed primarily of coral and carbonate rubble and was capped by a few small colonies of *Lophelia*.

For our two dives on this site for the *Jason* cruise we decided to start off of a small hill that rises about 25 meters from the sea floor on the northern flank and 90 m on the south flank. We named this mound “Roberts’ Reef “, in honor of one of the two scientists that identified most of the sites we have visited on this cruise, Dr. Harry Roberts. The bottom of the trench to the south of the mound was primarily composed of soft sediment with few organisms, but in some areas were a few scattered outcrops that contained small colonies of *Lophelia*, antipatharians, and gorgonians (**Figure 7-62**). At the base of the mound on every side surveyed there was a moderately high density of glass sponges, anemones, and assorted crinoids and sea stars. On the slopes on the E and SW sides of the mound this community is joined first by the red form of Leiopathes and later *Lophelia* right at the 400 m contour. Density of both are higher near the top of the mound and over the top of the mound at about 390m depth *Lophelia* is the dominant coral and the white form of *Leiopathes* largely replaces the Red *Leiopathes* and covers extensive portions of the sea floor (**Figure 7-63**). The proportion of the substrate covered by *Lophelia* is among the highest observed at any site in the Gulf, with the coral forming long swales of standing coral thickets. These *Lophelia* reefs are apparent on the high-resolution SM2K multibeam bathymetry that we collected during the second *Jason* dive at this site. Most of the *Lophelia* mounds and swales here are covered with live coral and are often covered with small polyps near their terminal tips suggesting the corals at this mound could be in a quite active growth phase. Anemones and fishes were also very abundant on the top of the mound, including Barrel fish, conger eels, Tinselfish, and Beryx.

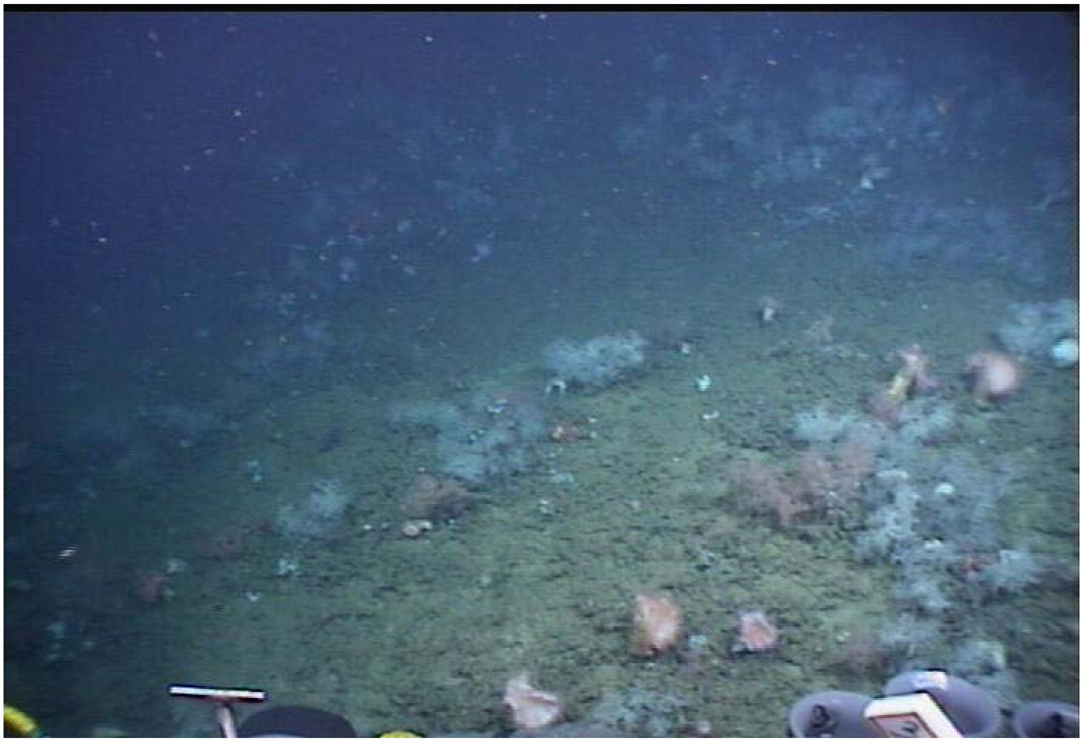


Figure 7-62. Small colonies of *Lophelia*, antipatharians, and gorgonians

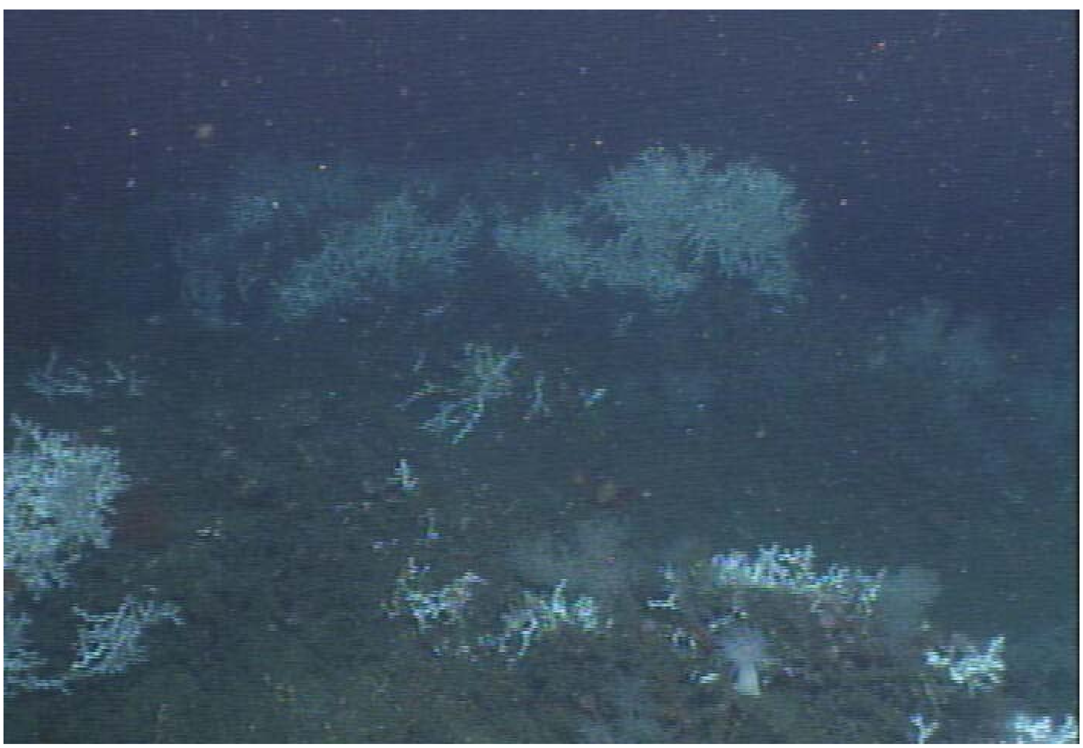


Figure 7-63. *Lophelia* and the white form of *Leiopathes.*

We also visited 4 other mounds visible on the *Nancy Foster* Multibeam maps. One about 200m to the SW of Roberts Reef is much smaller and the top is at about 440m depth. This mound had very similar fauna as the base of the mound at Roberts Reef, although we only found a few very small colonies of *Lophelia*. The next closest mound to the NE of Roberts Reef had lower relief and was also colonized by scattered anemones, Leiopathes colonies of a variety of colors, and a few small colonies of *Lophelia*. Another mound about 500 m to the NNW of Roberts Reef is smaller in diameter but rises from a similar depth to a similar height. Fauna on this mound was in general very similar to that of Roberts Reef, with a similar depth stratification and changes from the base to the crest of the mound. Although overall smaller in size, the percent coverage of *Lophelia* was similar at the crest of this mound. Another mound about 400 m further to the north only rises about 10 m from the sea floor, was actually very hard to identify when on the sea floor with the ROV and did not have a fauna distinctive from that of the surrounding sea floor other than the fact that the density of sea anemones was quite impressive near what we thought we the top of this little bump. The S base of the main mound structure was confirmed to be primarily carbonate and coral rubble and contained some small colonies of live *Lophelia*. The area of the S end of the mound surveyed remains quite small, and requires additional observations to determine the extent of this habitat type at this site.

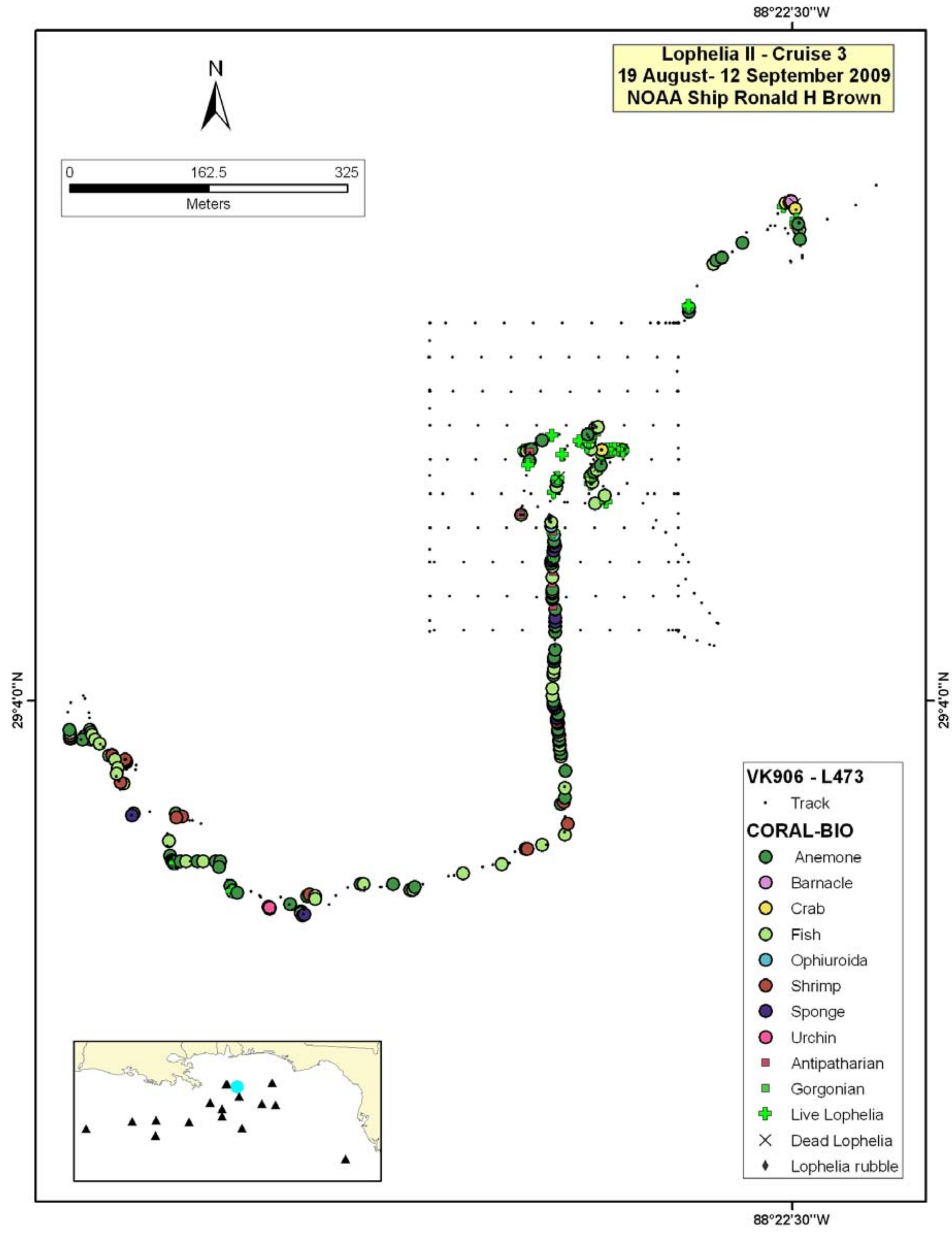


Figure 7-64. Coral-Biological events observed during lowering J2-464 at MC751(inset).

VK826 – Site Summary

Biological Summary

Viosca Knoll 826 is an incredibly complex site from a biological perspective (**Figure 7-65**). There has been a great deal of research completed on both the chemosynthetic and deep coral habitats at this site. The chemosynthetic communities are concentrated on the SW flank of the mound. These are dominated by small tubeworm aggregations on the edges of carbonate blocks and areas of vesicomyid shell hash. The carbonates are also colonized by a few coral species, mainly Callogorgia and a few antipatharian and *Lophelia* colonies. The SW facing slope of the mound progresses from this seep area to higher abundances of *Lophelia* on similar terrain of carbonate blocks and low-lying areas of shell hash. The E facing slope has more extensive development of *Lophelia* reef structures that tend to be on the steeper slopes on this side of the mound. The coverage of authigenic carbonate increases towards to crest of the mound with occasional areas of dense *Lophelia* coverage, but also an abundance of uncolonized hard substrate. There are also occasional tubeworm aggregations down in the cracks in the carbonates as well as shell hash and occasional bacterial mats on soft sediments on the S and W sides of the mound near the crest. Much of the NW corner of the mound remains to be surveyed. The NE corner of the mound is similar to the crest, with abundant carbonates and scattered *Lophelia* thickets interspersed with a few tubeworms.

Figure 7-65. A large shark at Viosca Knoll 826.

The newly surveyed peninsula to the E of the main site was one of the more spectacular discoveries on this cruise. This was a long, linear ridge of almost continuous *Lophelia* abundance over the 500 m surveyed. As we approached this ridge from the W, a large school of *Beryx* *splendens* surrounded the sub and continued with us for over 6 hours. On our second visit to this site, the same fish surrounded the sub again. It is possible that this is a fairly permanent resident population at this site, although future observations are required to confirm this.

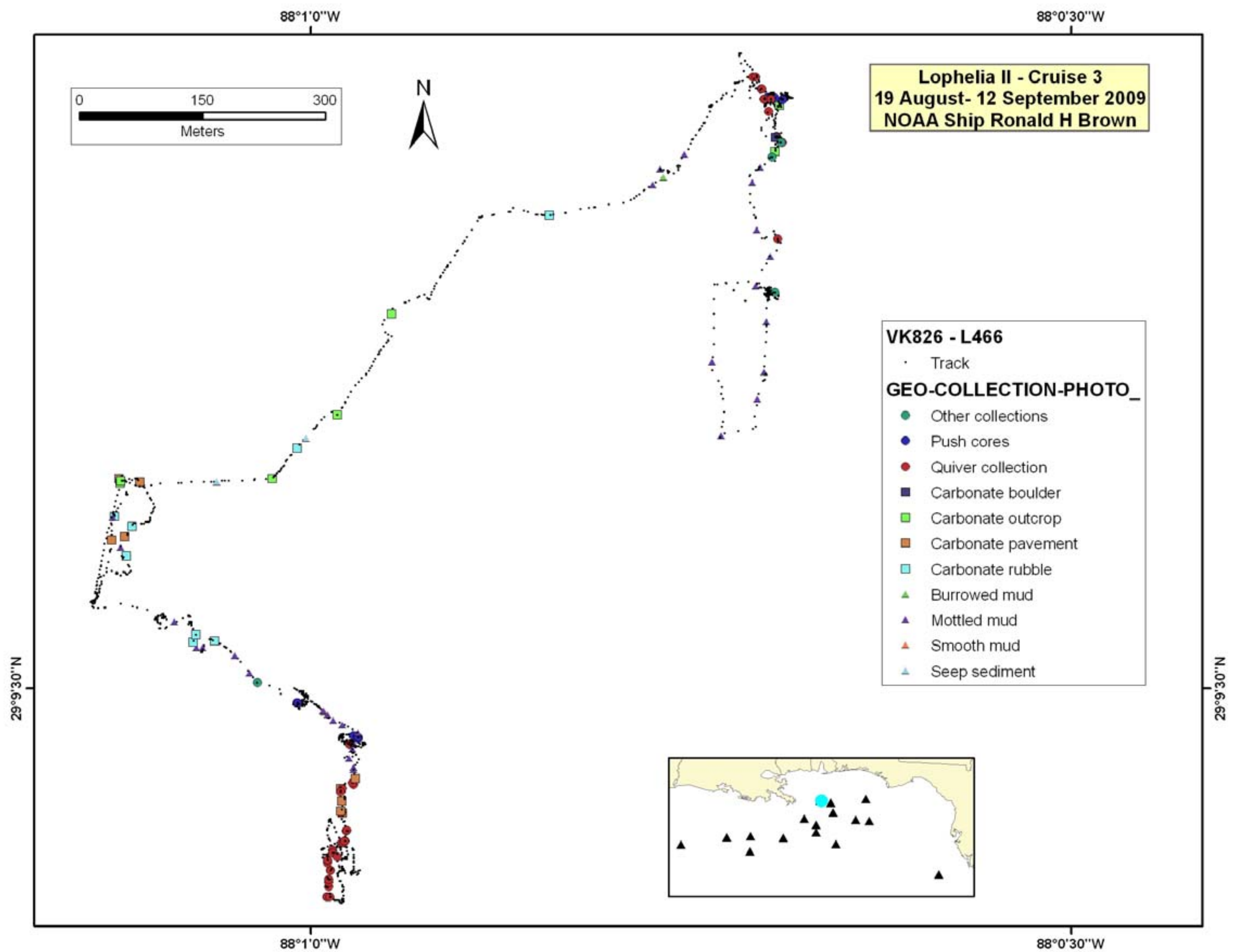


Figure 7-66. Geological-Collection-Photo events observed during lowering J2-466 at VK826 (inset).

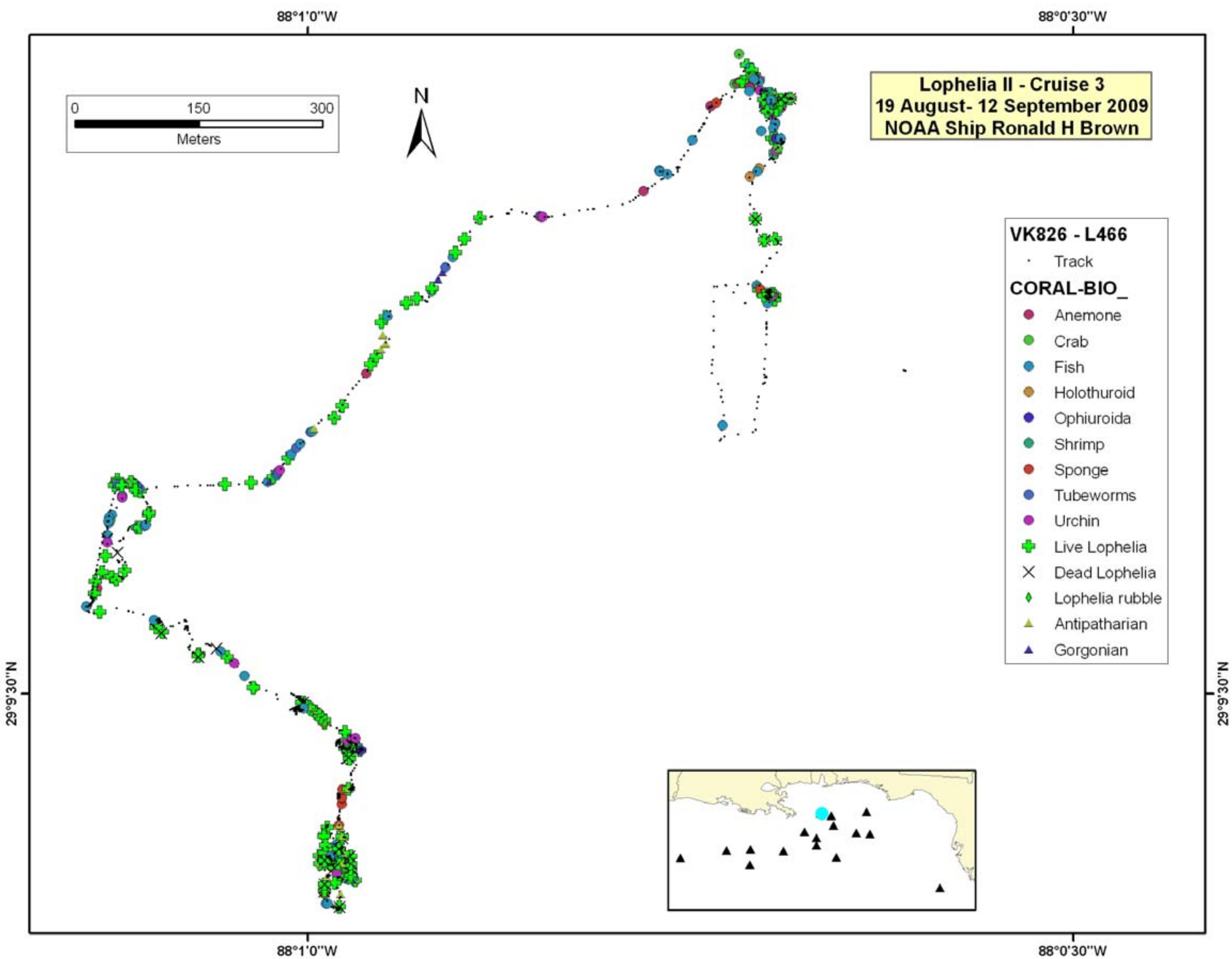


Figure 7-67. Coral-Biological events observed during lowering J2-466 at VK826(inset).

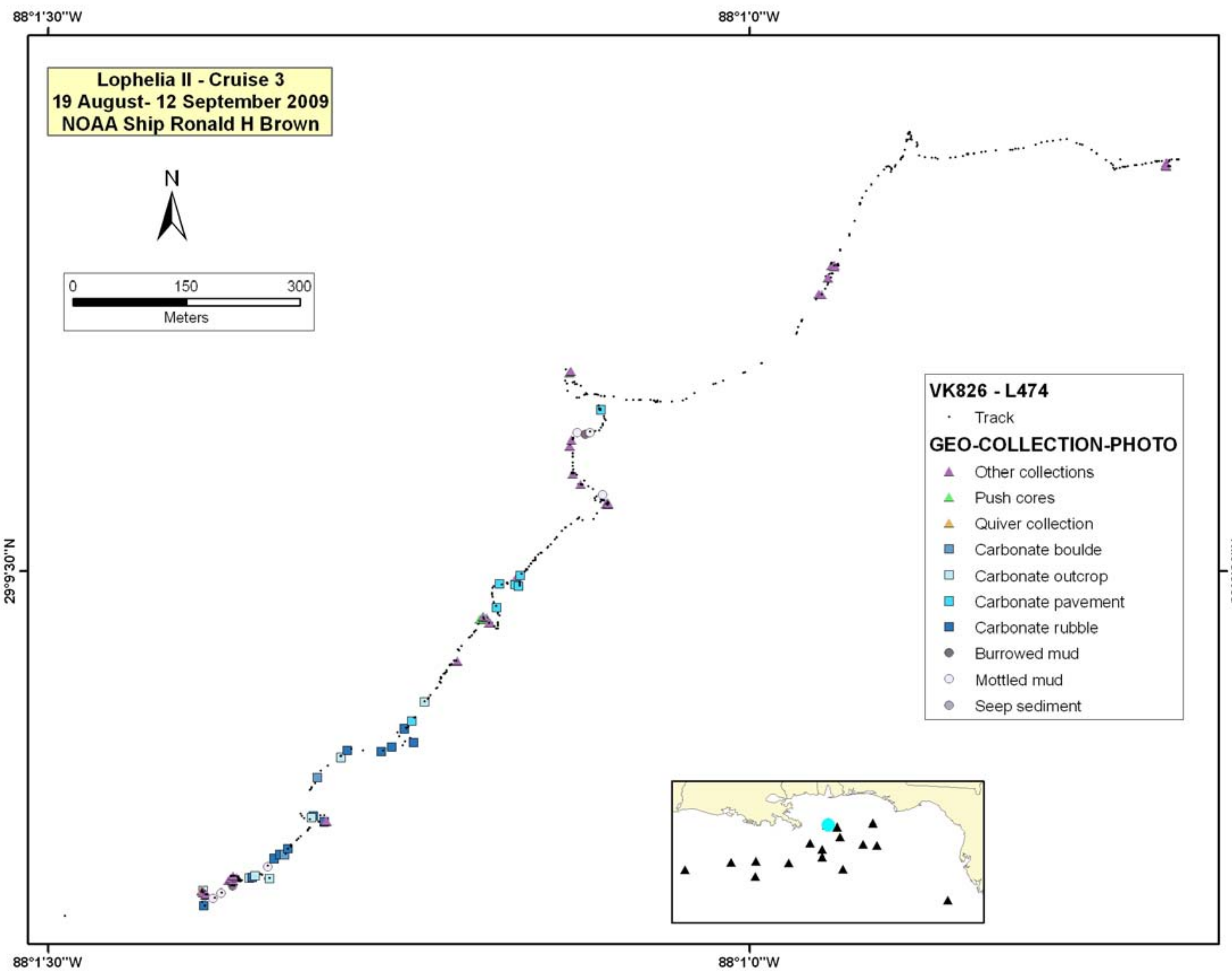


Figure 7-68. Geological-Collection-Photo events observed during lowering J2-474 at VK826 (inset).

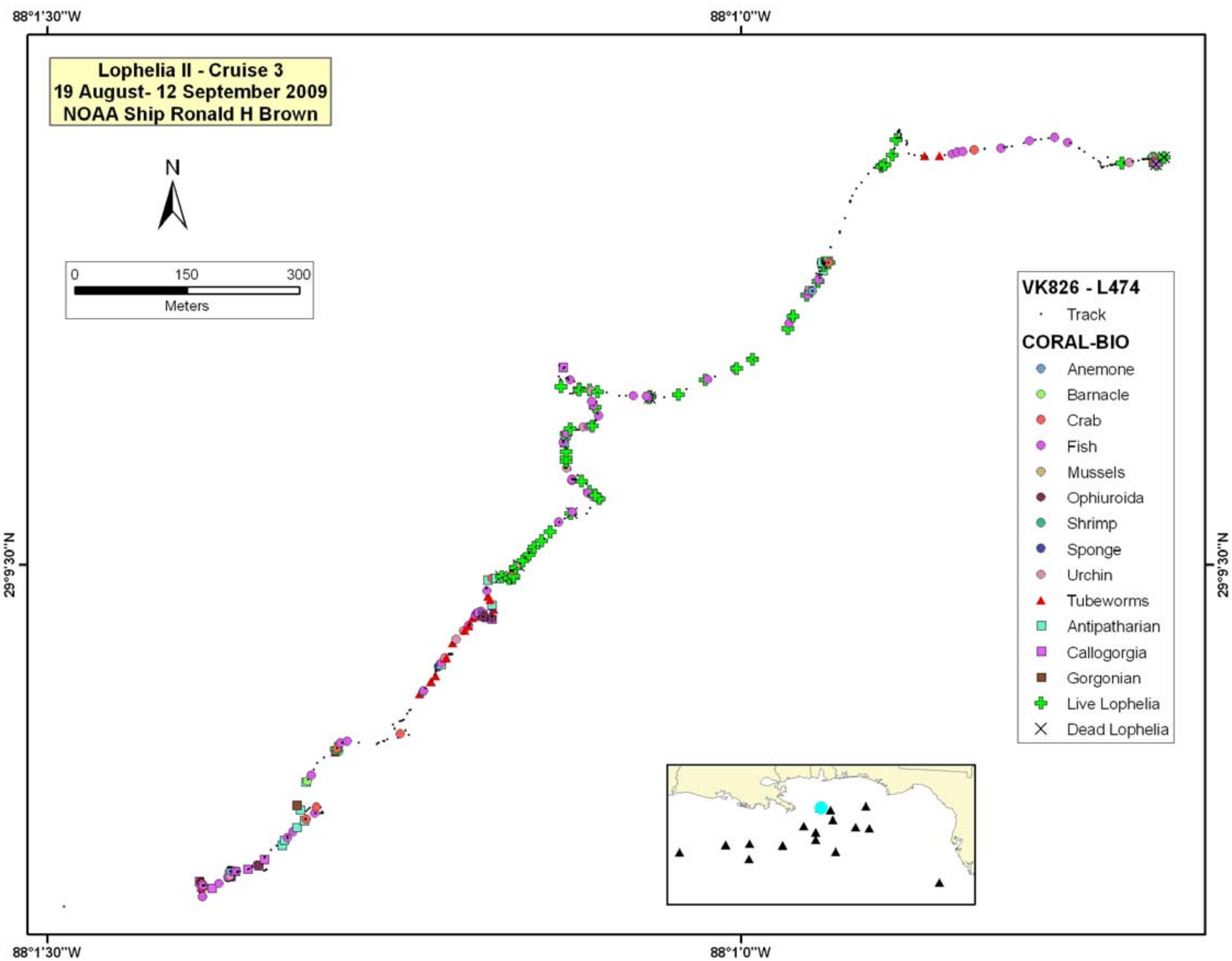


Figure 7-69. Coral-Biological events observed during lowering J2-474 at VK826 (inset).

Archaeological investigations of the Viosca Knoll or VK wreck took place on September 5 and 6, 2009. *Jason* II (JII) entered the water at 23:07 hours on September 5 and began the 632 m descent, arriving at the wreck site at 01:19 hours. The reconnaissance survey began shortly after arrival on site. Beginning at the port bow, JII flew down the port side of the wreck towards the stern, allowing scientists to examine the hull structure, view construction attributes, observe coral growths, and identify potential targets for recovery (**Figure 7-70**). Scientists were able to document sheathing fastener patterns and noted that the copper sheathing showed evidence of considerable patching and repairs. Near the port stern *Jason* imaged an area where the copper had deteriorated exposing 7 to 10 cm thick outer planking (**Figure 7-71**). At the wreck's stern area, JII examined a dense debris zone including fragments of the disarticulated stern, sternpost, and artifacts associated with shipboard life. Among the materials noted in the debris field was a 10 cm thick iron ring, approximately 0.61 m in diameter and a ceramic vessel or container. From this debris field JII continued the reconnaissance work, moving up the starboard side imaging remnants of rigging and mast structure. From the starboard investigations JII moved inboard documenting the wreck's interior before completing the reconnaissance survey.

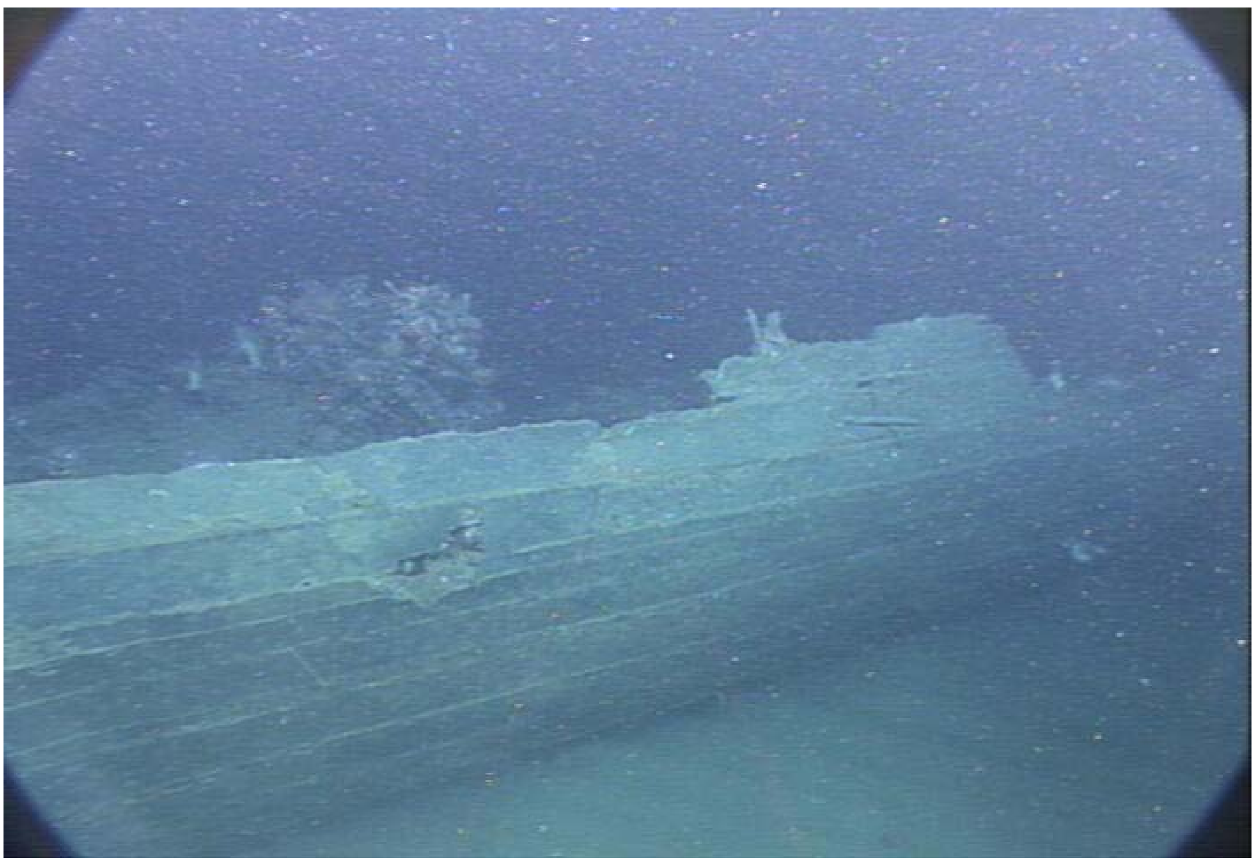


Figure 7-70. A view of the copper sheathing on the VK Wreck's port side hull.

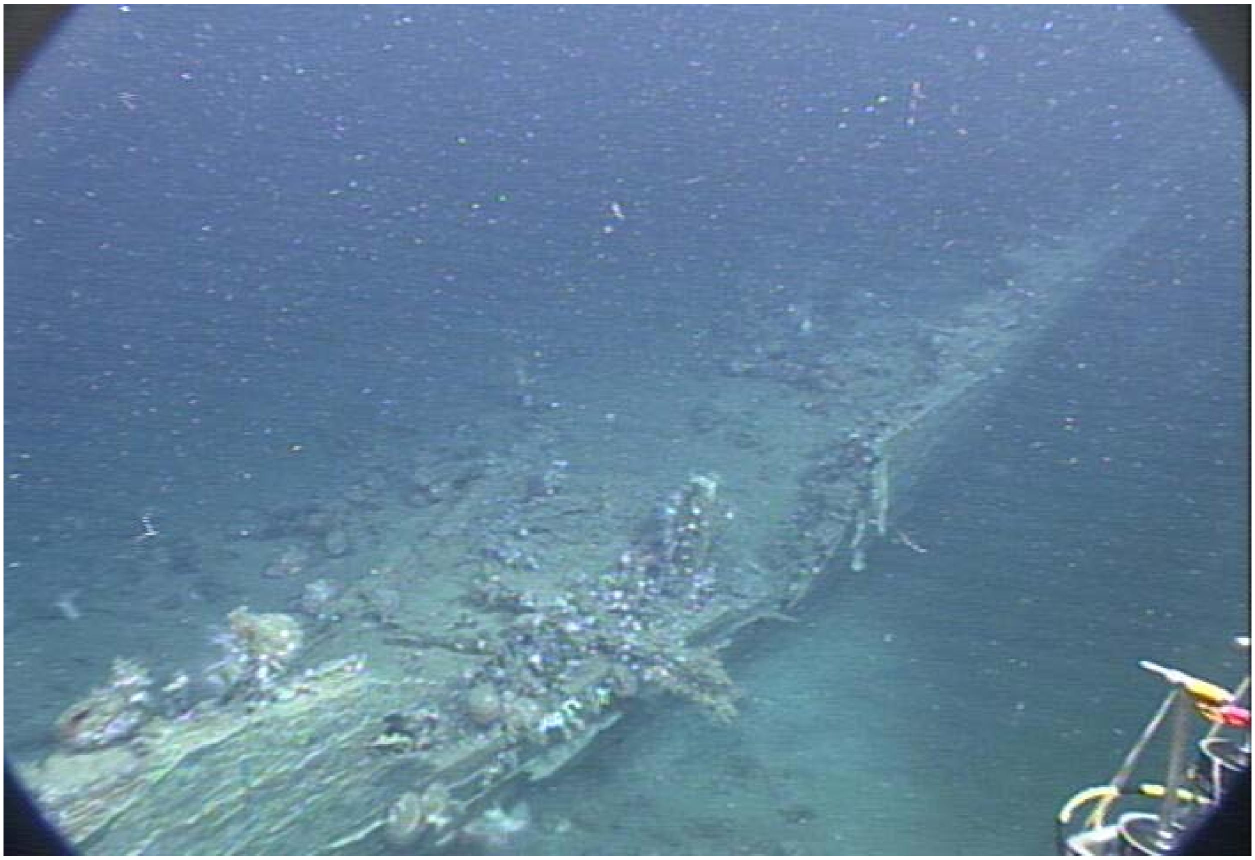


Figure 7-71 A view of the damaged area on the VK Wreck's port stern area.

With the reconnaissance completed, JII's next task was the wreck site mosaic. The mosaic survey consisted of 19 transect lines spaced 1 m run from the port side working towards the starboard side. JII flew the mosaic transects at an altitude of 6 m. Following the completion of the mosaic survey, a series of soft core samples were taken from areas near and adjacent to the wreck site and the short and long term microbiological experiments were deployed. With these tasks accomplished, scientists examined selected wreck areas in detail, including the ship's stove (**Figure 7-72**) located 77 m away from the main wreckage.

Before leaving the wreck site, the short-term biological experiment and select artifacts were retrieved. The recovered artifacts included a sample of the copper sheathing from the port side and a stoneware ceramic jar from the starboard stern (**Figure 7-73**). At 11:47 on September 6, JII completed investigations on the VK wreck site and returned to the surface.

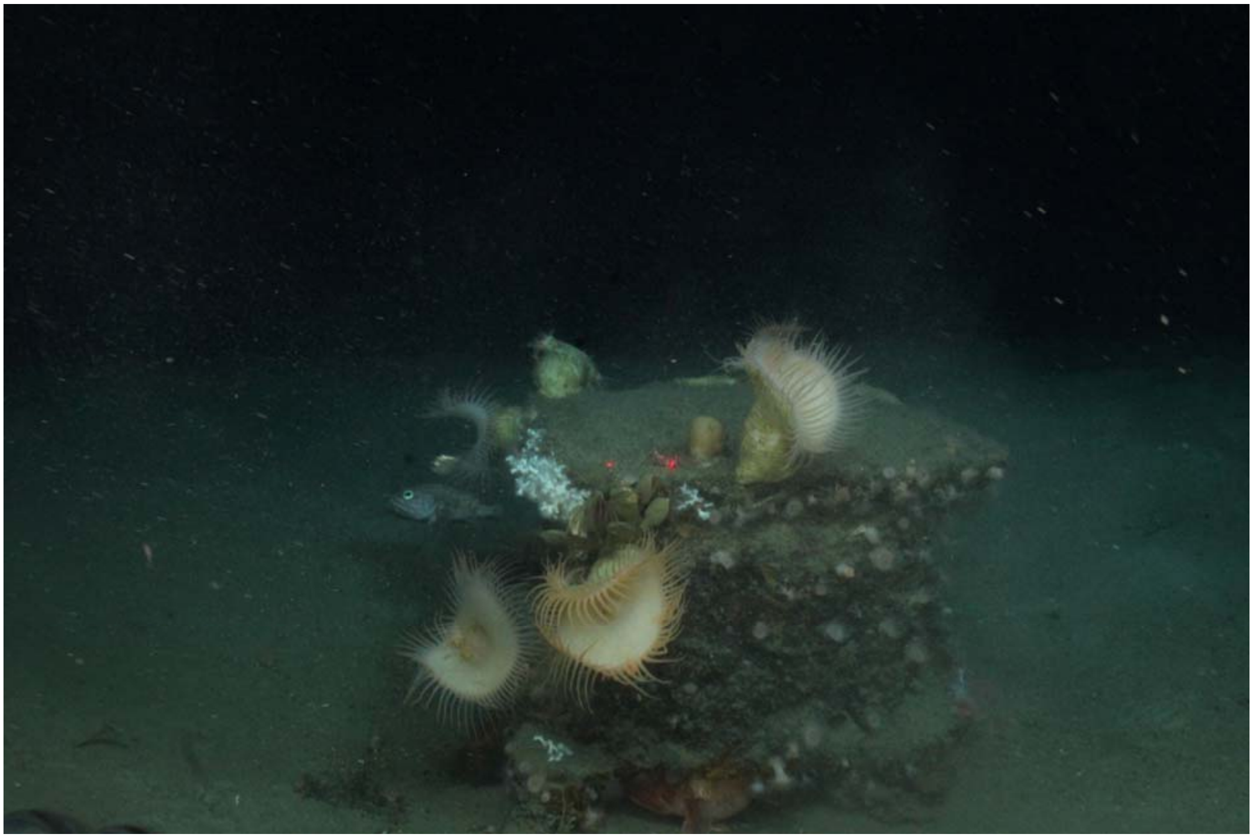


Figure 7-72. An image of the VK Wreck's ship stove.

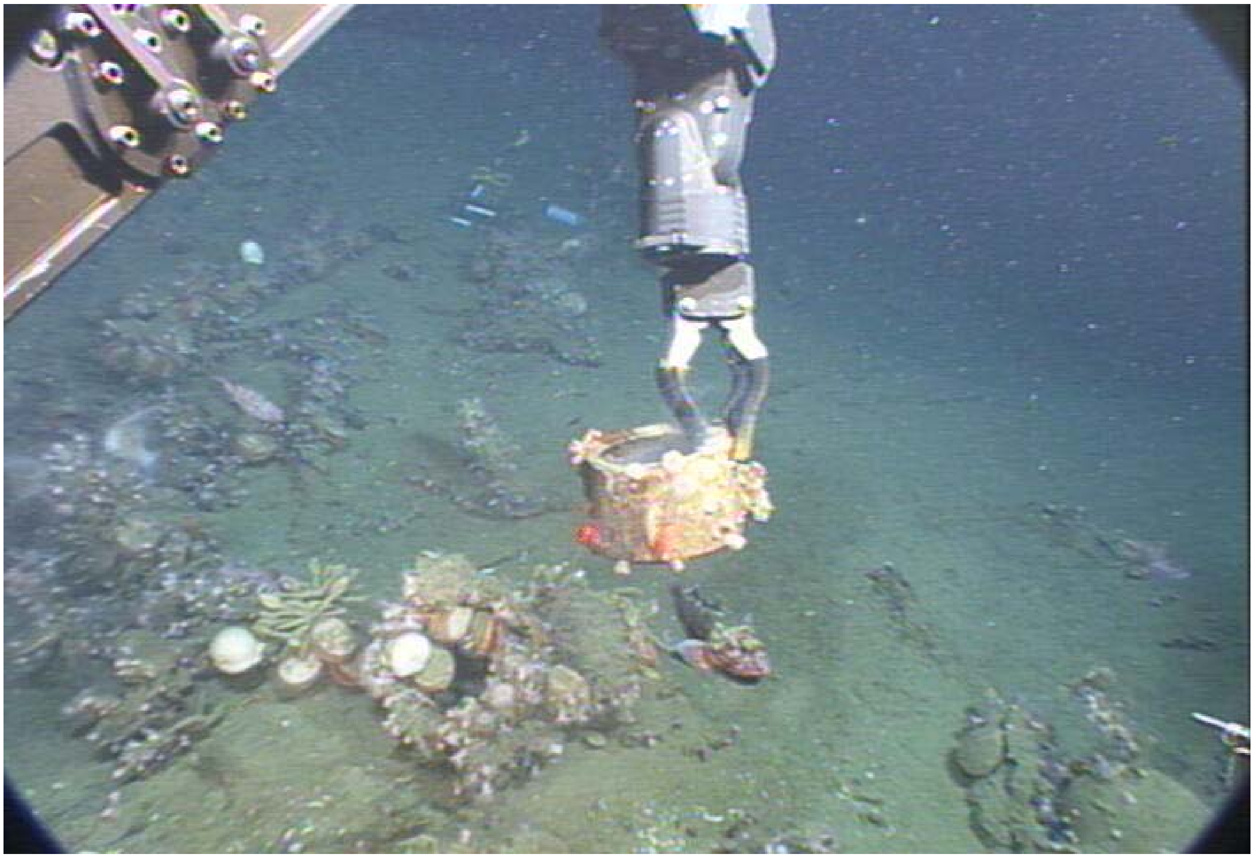


Figure 7-73. ***Jason*** **II recovering a stoneware container from the VK Wreck.**

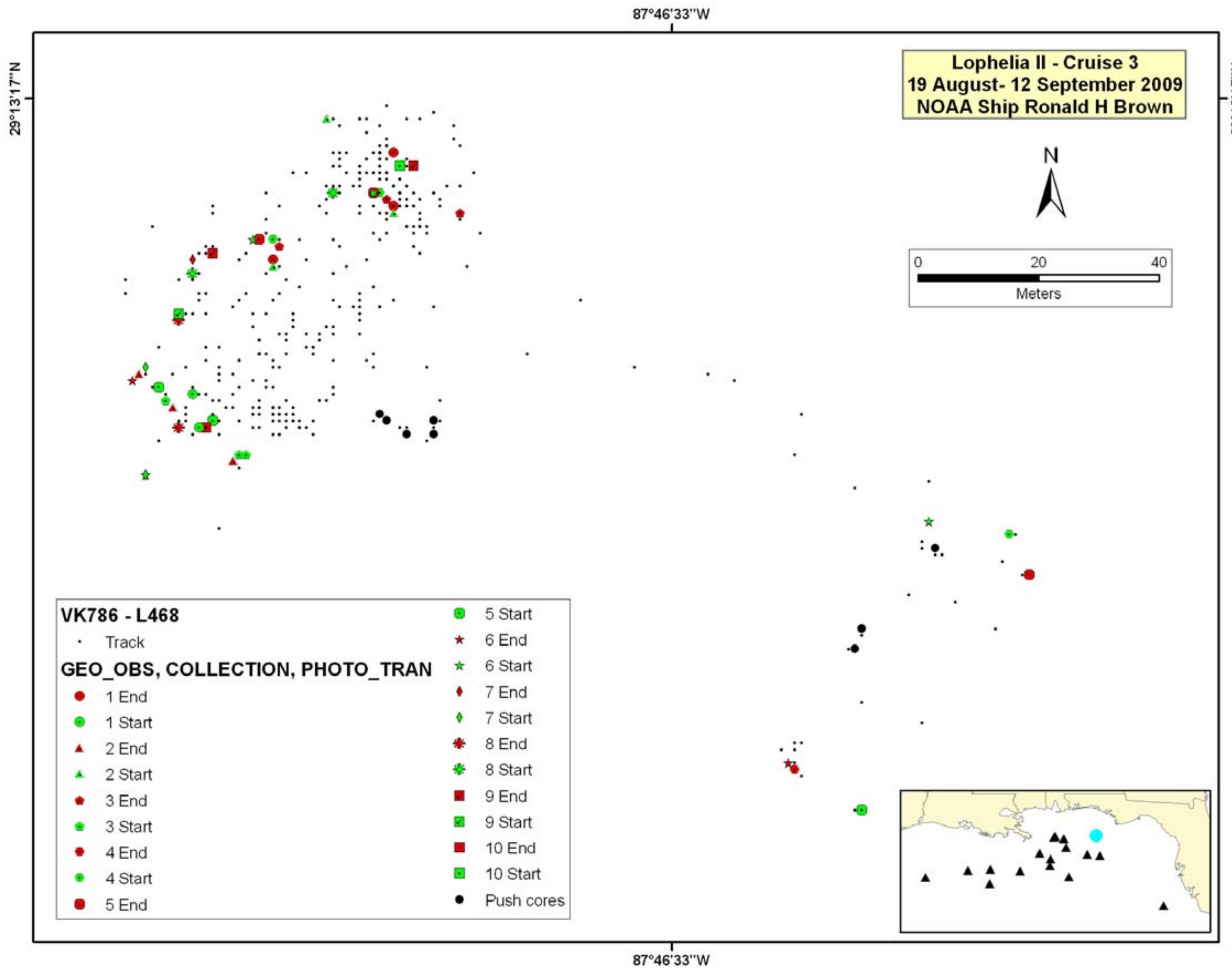


Figure 7-74. Geological-Collection-Photo events observed during lowering J2-468 at VK786 (inset).

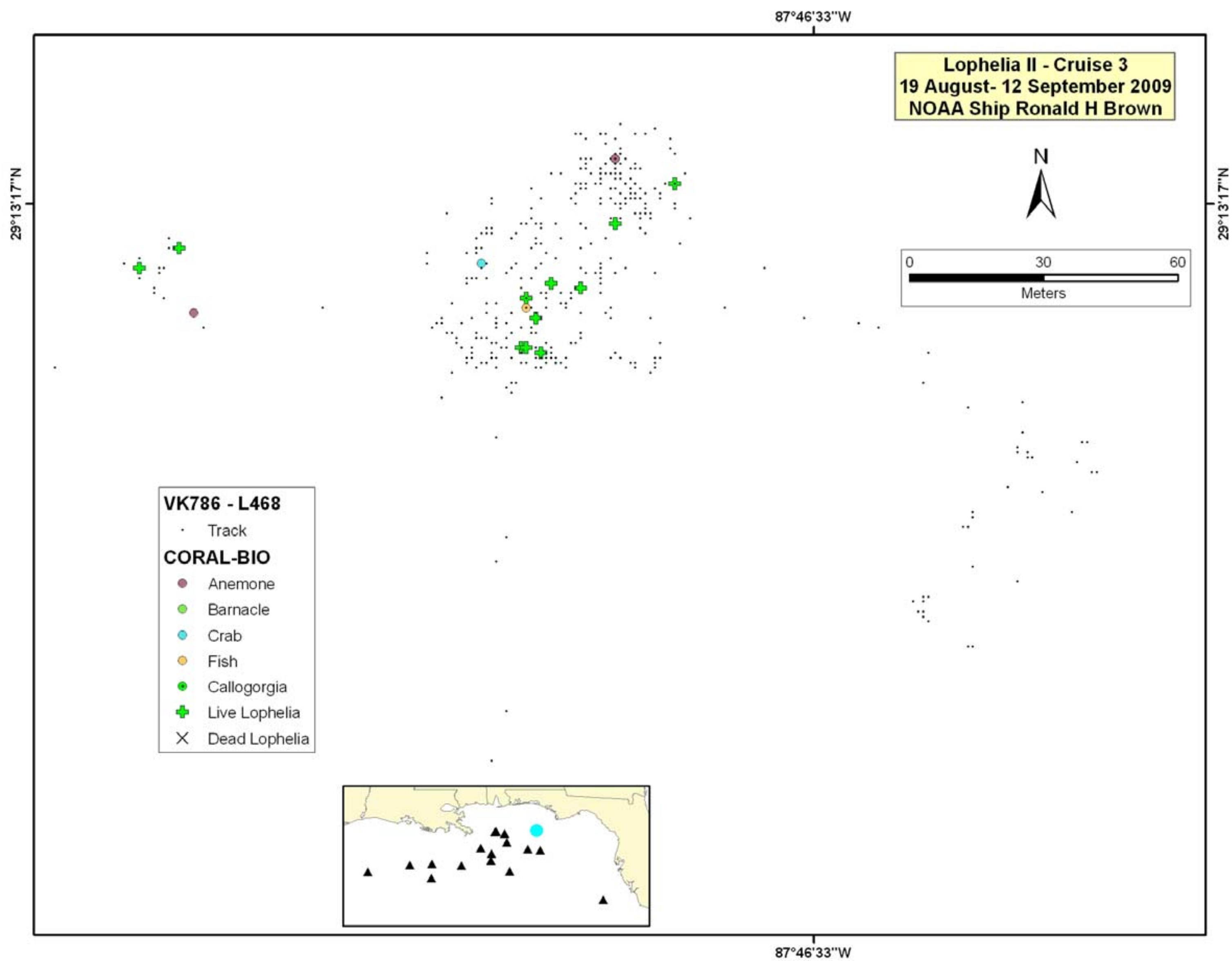


Figure 7-75. Coral-Biological events observed during lowering J2-468 at VK786 (inset).

MC657 - 7,000 Foot Wreck Archaeology Site Summary

Archaeological investigations of the 7,000 Foot wreck took place on September 6 and 7, 2009. *Jason* II (JII) entered the water at 19:56 hours on September 6 and began the 2,286 m descent, arriving at the wreck site at 21:14 hours. As at the VK wreck, the investigations commenced with a reconnaissance of the site. The reconnaissance survey began at 21:30 hours with JII imaging the beak remnants (**Figure 7-76**) then proceeding aft along the starboard side towards the stern. As JII moved down the side of the vessel, various debris and artifacts were noted by the science team members including wood and metal fragments, two anchors, and the ship's windlass which was upside down (**Figure 7-77**). Continuing aft near amidship, JII imaged part of the ship's water tank, main mast remnants, decking, and another anchor. Nearing the stern, the ship’s compass was observed near a hatchway. Further back of the hatchway, the remains of the ship's patent steering gear rise up from the seafloor (**Figure 7-78**). At the stern, the vessel's rudder was observed entangled with steering cables. After imaging the stern, JII then proceeded forward up the port side towards the bow. JII completed the reconnaissance at approximately 22:36 and began the mosaic survey.

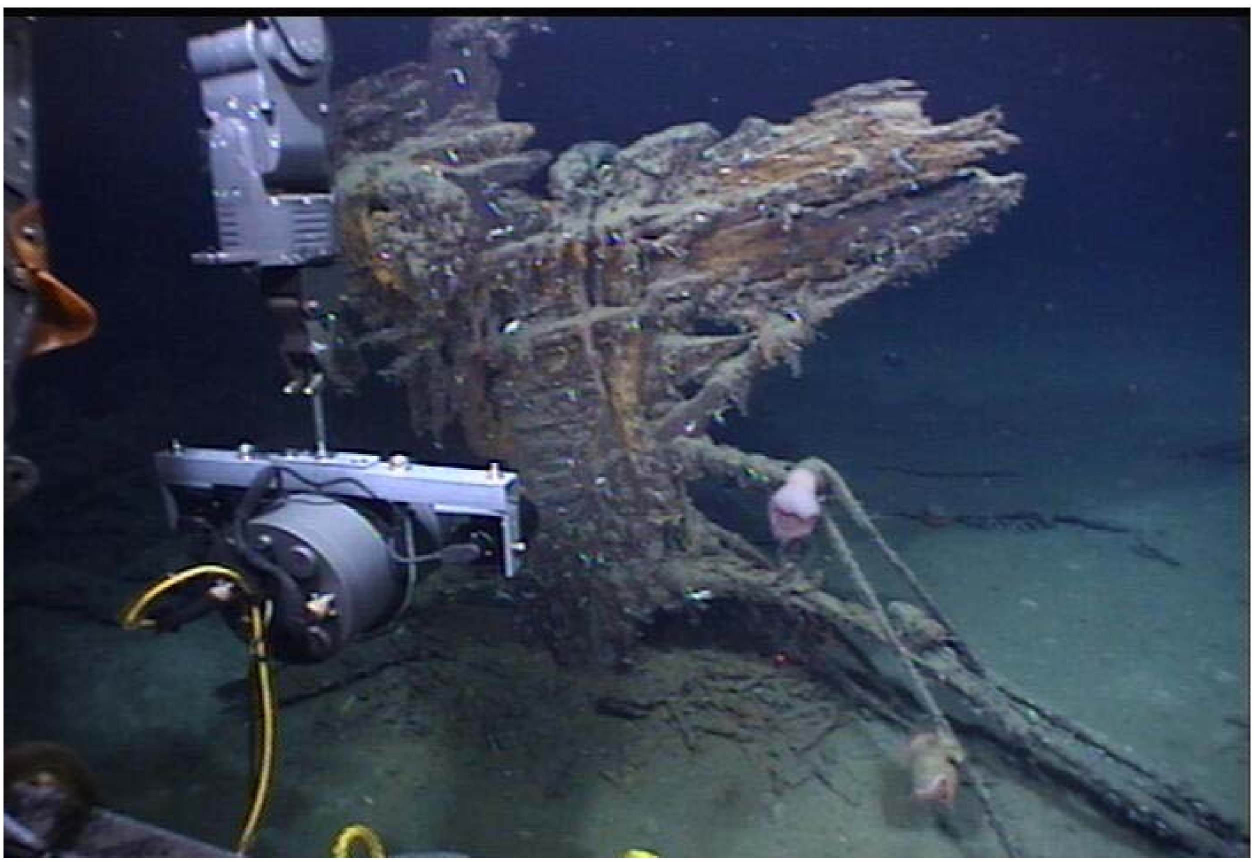


Figure 7-76. View of the beak remains on the 7,000 Foot Wreck.

Figure 7-77. View of windlass and anchors aft of the beak remnants on the 7,000 Foot Wreck.

Figure 7-78. Image of the intact steering mechanism on the 7,000 Foot Wreck.

The wreck mosaic survey at the 7,000 ft wreck was comprised of 12 lines run 6 m off the seafloor and approximately 1 m apart. The JII crew finished mosaicing the wreck at 00:19 hours on September 7, 2009. At 00:22 the collection of push core samples, rusticle retrieval, and deployment of microbiological experiments commenced. These operations were completed by 03:29 when close up examinations and photography of wreck details commenced (**Figure 7-79**). At 09:07 artifact retrieval began with recovery of the navigational compass (**Figure 7-80**). Next, the short-term bio experiment was retrieved. Finally, JII recovered a sample of hull sheathing before beginning the ascent to the surface at 10:56 hours on September 7.

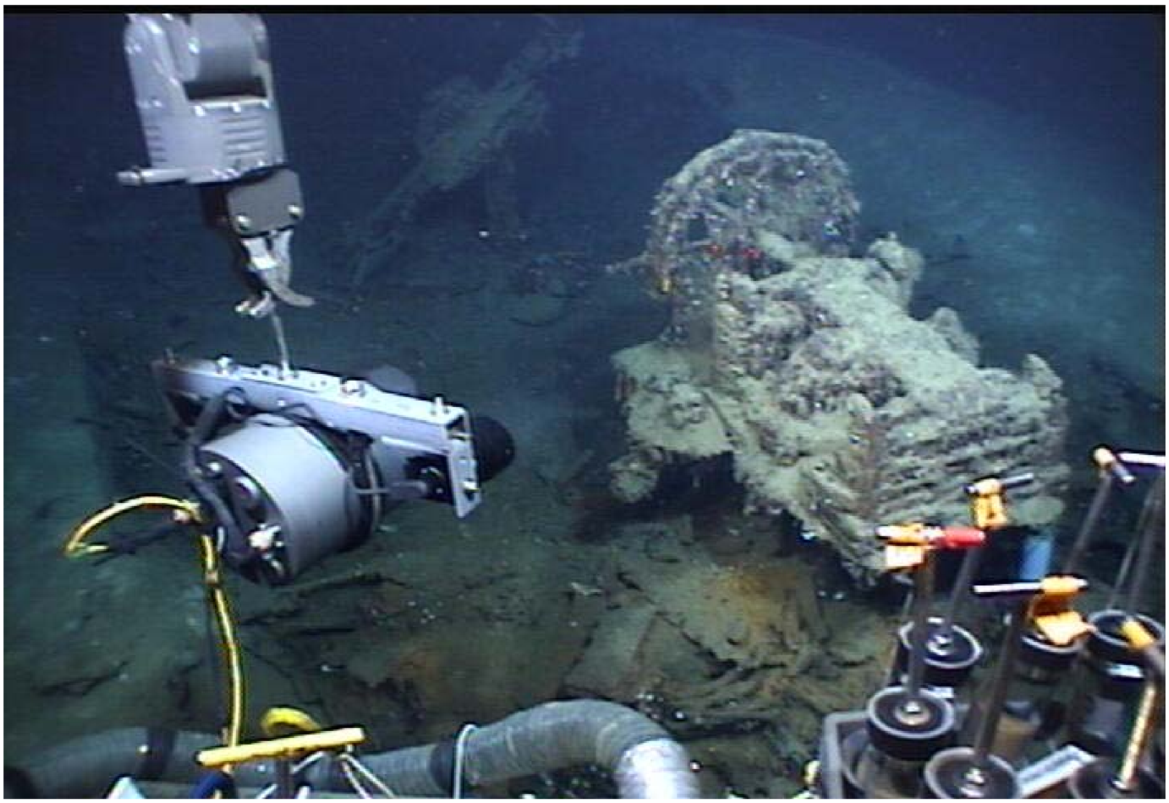


Figure 7-79. *Jason* II using the high-resolution digital camera to document the 7,000 Foot Wreck.

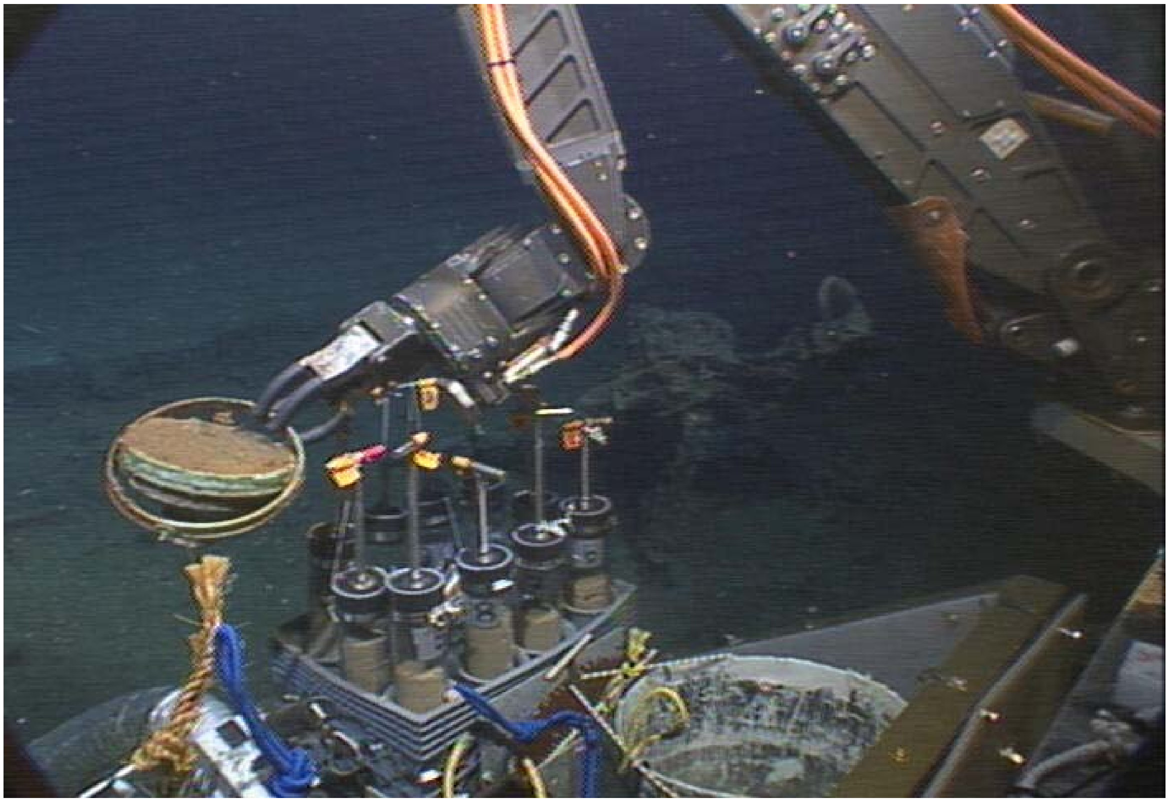


Figure 7-80. The navigational compass being recovered from the 7,000 Foot Wreck.

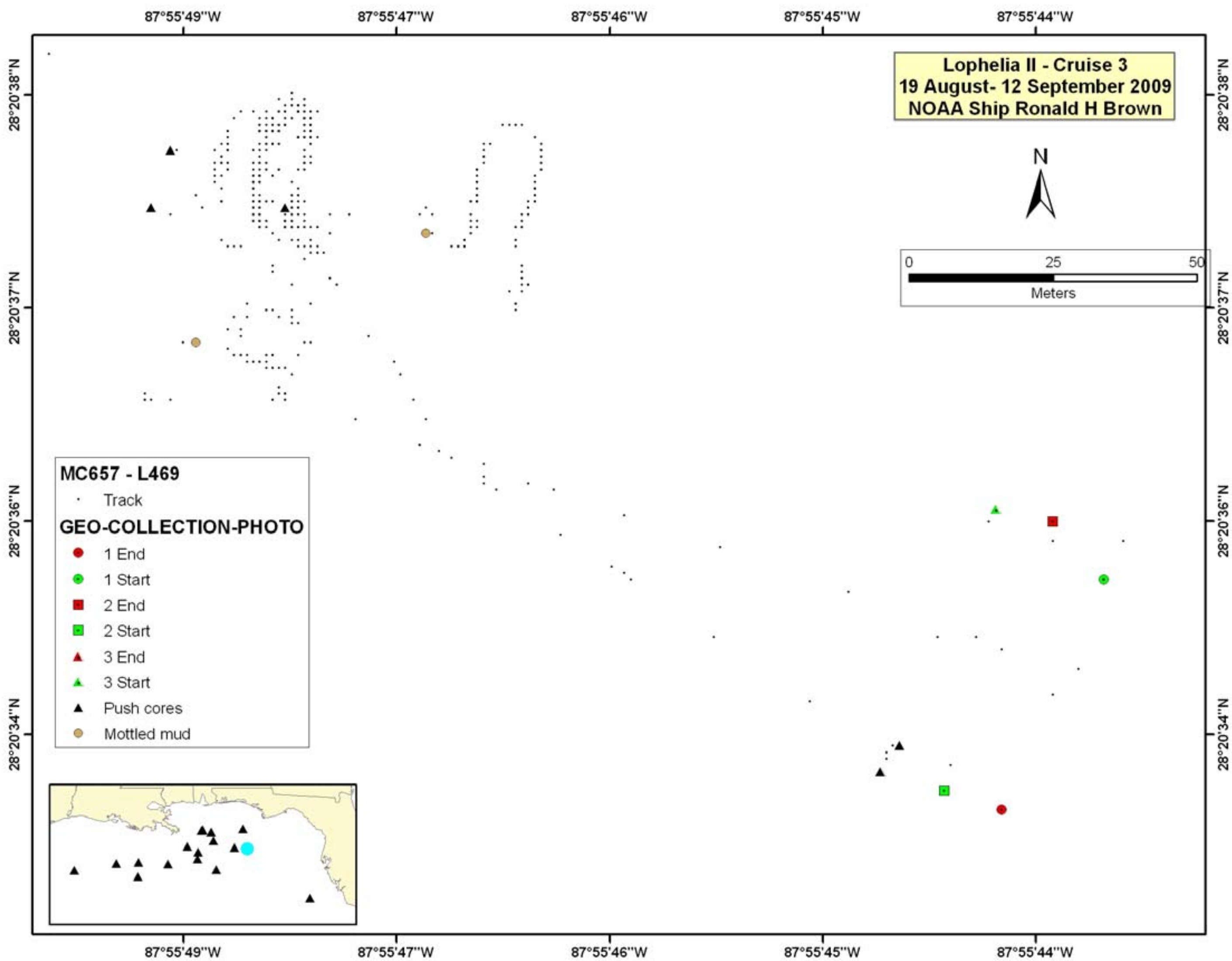


Figure 7-81. Geological-Collection-Photo events observed during lowering J2-469 at MC657 (inset).

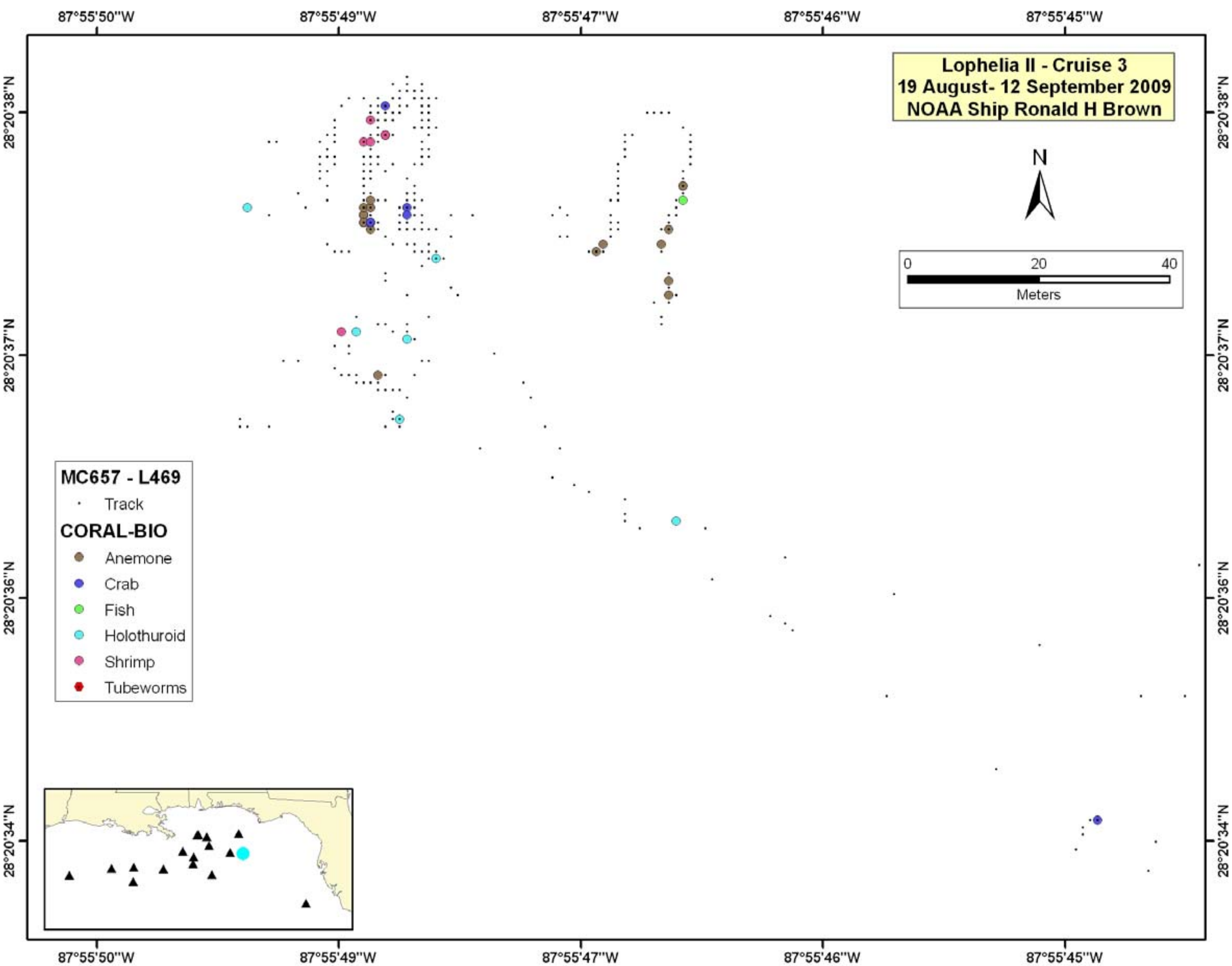


Figure 7-82. Coral-Biological events observed during lowering J2-469 at MC657 (inset).

EW1008 - Ewing Bank Wreck Archaeology Site Summary

Archaeological investigations of the Ewing Bank or EW wreck took place on September 7 and 8, 2009. *Jason* II (JII) entered the water at 23:56 hours on September 7 and began the 621 m descent, arriving at the wreck site at 00:28 hours on September 8, 2009. At 00:56 hours the reconnaissance survey started as JII imaged the stern of the wreck (**Figure 7-83**) and began moving up the starboard side of the wreck towards the bow. As JII moved up the wreck's starboard side, the science team was able to observe constructions aspects of the wreck as well as corals, vertebrates, and invertebrates (**Figure 7-84**). Moving amidships, JII imaged several sections of damaged hull sheathing that clearly showed fastener patterns (**Figure 7-85**). JII continued on to the bow to image the *Lophelia* colony on the stem post. The stem post extends approximately 2.4 m up from the seafloor and is home to the largest growth of *Lophelia* on the wreck (**Figure 7-86**). After imaging the bow of the EW wreck, JII moved aft down the vessel's port side. Investigations of the port side indicated that there are stratified hull and framing remnants along this side of the ship. Just forward of the stern, the team located the remains of shelf containing several pieces of ceramic. At 02:08 hours, JII moved inboard of the stern to document the wrecks interior. By 02:20 hours the reconnaissance was complete and the mosaic survey was started.

Figure 7-83. View of the sternpost showing the pintle and gudgeon remnants.

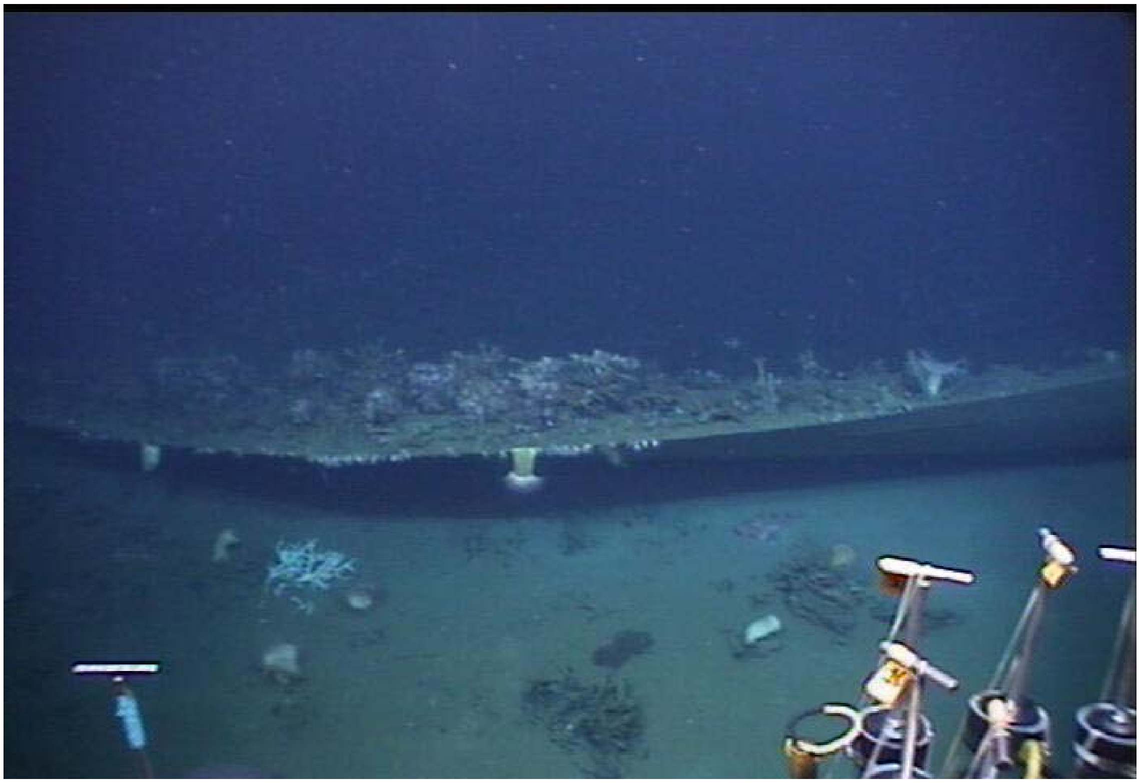


Figure 7-84. View of the starboard stern hull of the EW Wreck.

Figure 7-85. View of damaged sheathing and fastener patterns on the EW Wreck's starboard side.

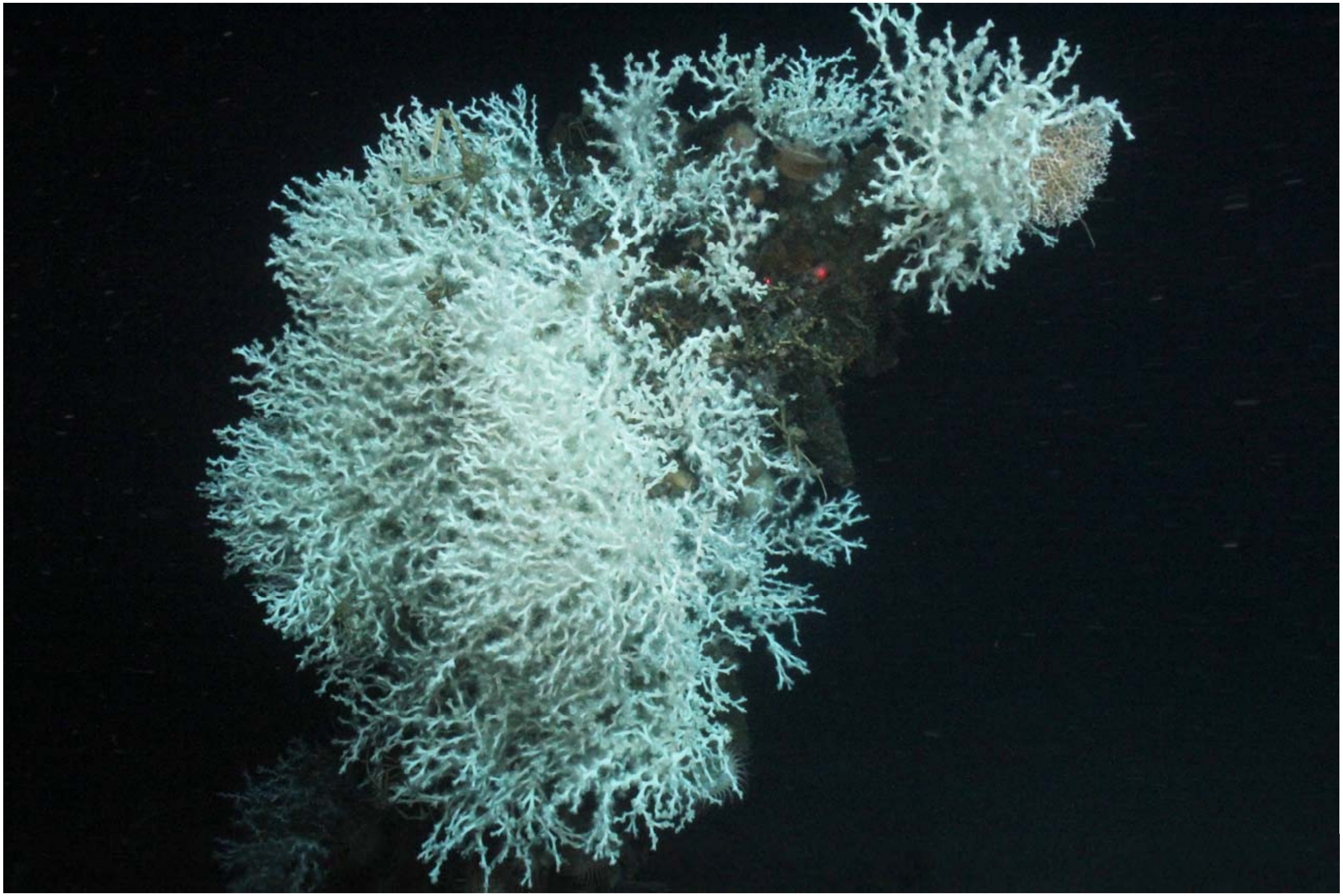


Figure 7-86. View of the *Lophelia* colony growing on the EW Wreck's stempost.

Since the EW Wreck had been previously image using an AUV mounted camera system, JII flew only 6 mosaic lines over the wreck. These lines were flown at roughly 5.5 to 6.5 m altitude at 1 m intervals. JII completed the mosaic survey at 03:50 hours. Between 03:57 and 06:19 the JII team collected 9 cores and deployed the long and short-term microbiological experiments. At 06:29 close up inspection and photography of wreck details was started. Because of the limited artifacts scheduled for recovery at this site, it was decided that artifact recovery would be done concurrently with the detailed inspections. Between 06:29 and 11:03, the JII crew took detailed images of wreck features and recovered 4 artifacts for study. The recovered materials included a sample of netting, a ballast stone, hull sheathing, and a part of an ironstone cup (**Figure 7-87**). The short-term microbiological experiment was also recovered during this period. Following the artifact recovery, rusticle and additional biological samples were collected before the JII completed survey operations and returned to the surface at 12:08 hours.

Figure 7-87. ***Jason*** **II recovering an ironstone cup or mug from the EW Wreck.**

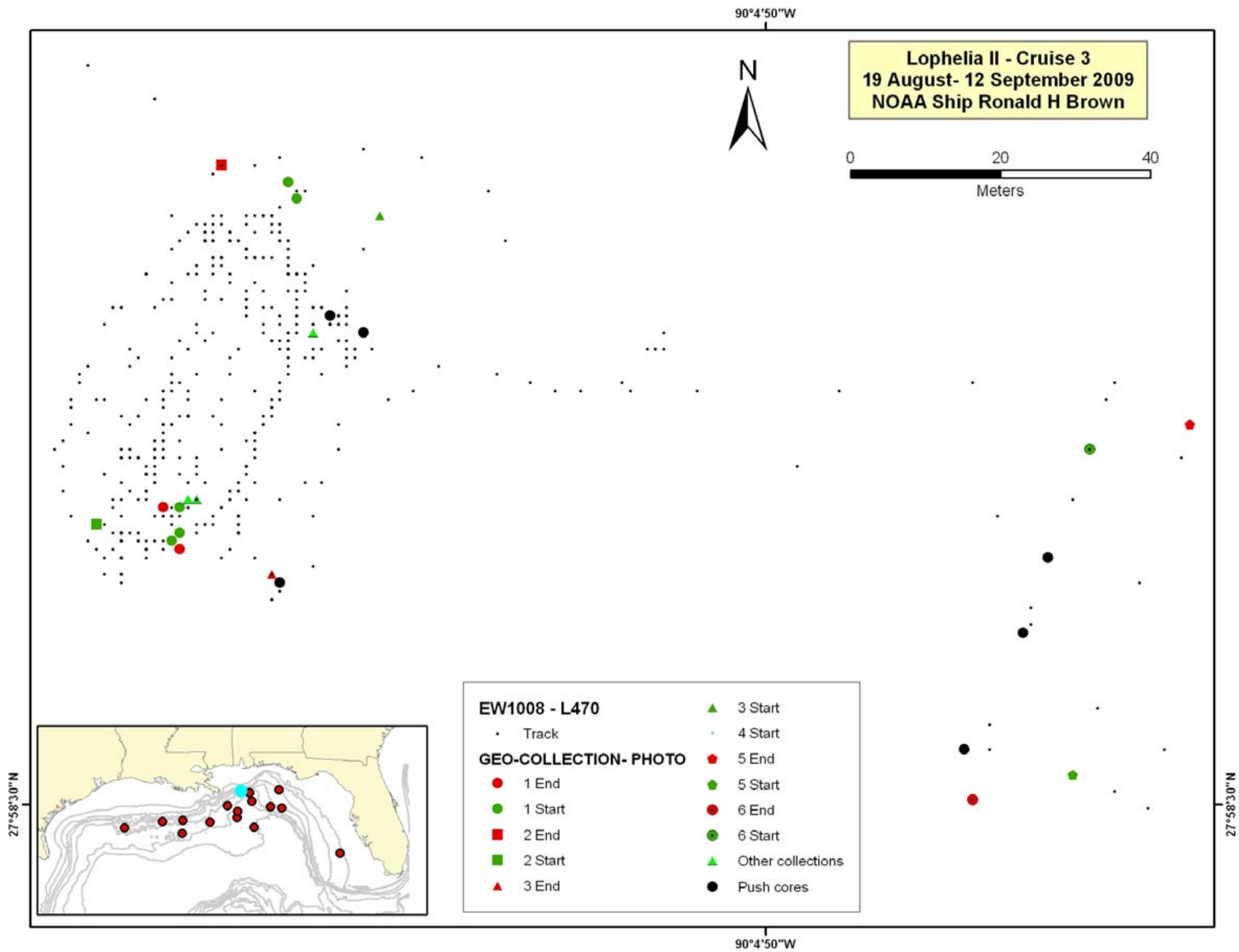


Figure 7-88. Geological-Collection-Photo events observed during lowering J2-470 at EW1008 (inset).

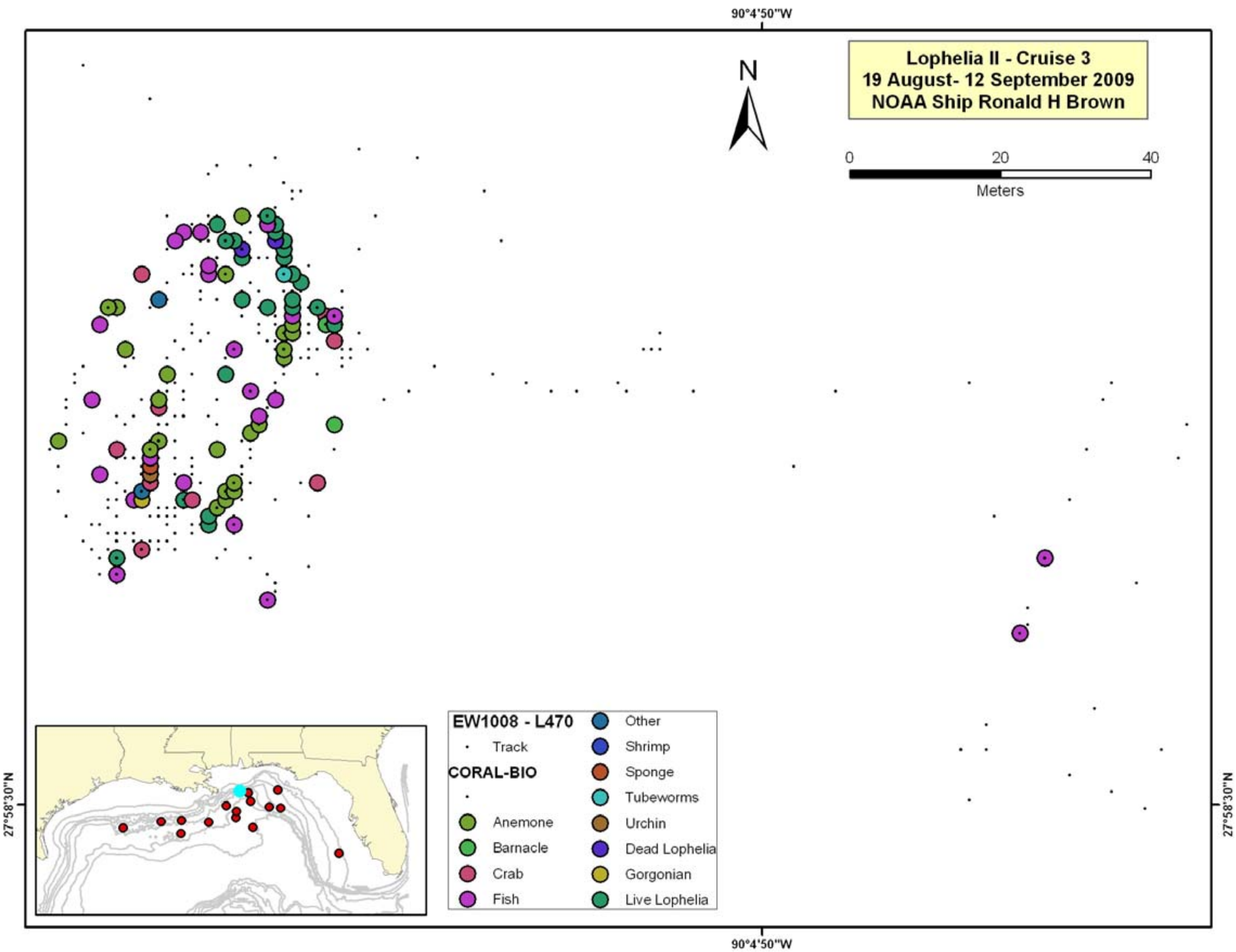


Figure 7-89. Coral-Biological events observed during lowering J2-470 at EW1008 (inset).

GC245 - Green Lantern Wreck Archaeology Site Summary

Archaeological investigations of the Green Lantern wreck took place on September 8 and 9, 2009. *Jason* II (JII) entered the water at 20:00 hours on September 8 and began the 944 m descent, arriving at the wreck site at 20:48 hours. At 21:00 hours the reconnaissance survey commenced at the stern. JII imaged the sternpost and rudder remains (**Figure 7-90**) then moved forward documenting remains along the vessels starboard side. Near the starboard stern a concentration of debris was observed. Within this debris was a large navigational lantern as well as rigging and hull remains (**Figure 7-91**). Continuing up the wreck's starboard side, the JII science crew imaged variety of biological species and ship related materials (**Figure 7-92**). At 21:48 hours JII arrived at the bow of the Green Lantern wreck and began imaging the forward portion of the hull. A key feature of the bow is the extant stem post with load level markings still intact (**Figure 7-93**). By 21:53 hours, imaging of the bow was completed and the JII crew continued the reconnaissance survey down the port side of the wreck. Along the port side, scientists noted a portion of hull ceiling planking, mast and spar rigging, and various personal artifacts. At 22:20 hours JII completed the port side examination then moved down the wreck’s centerline, completing the reconnaissance at 22:35 hours.

Figure 7-90. View of the Sternpost on the Green Lantern Wreck.

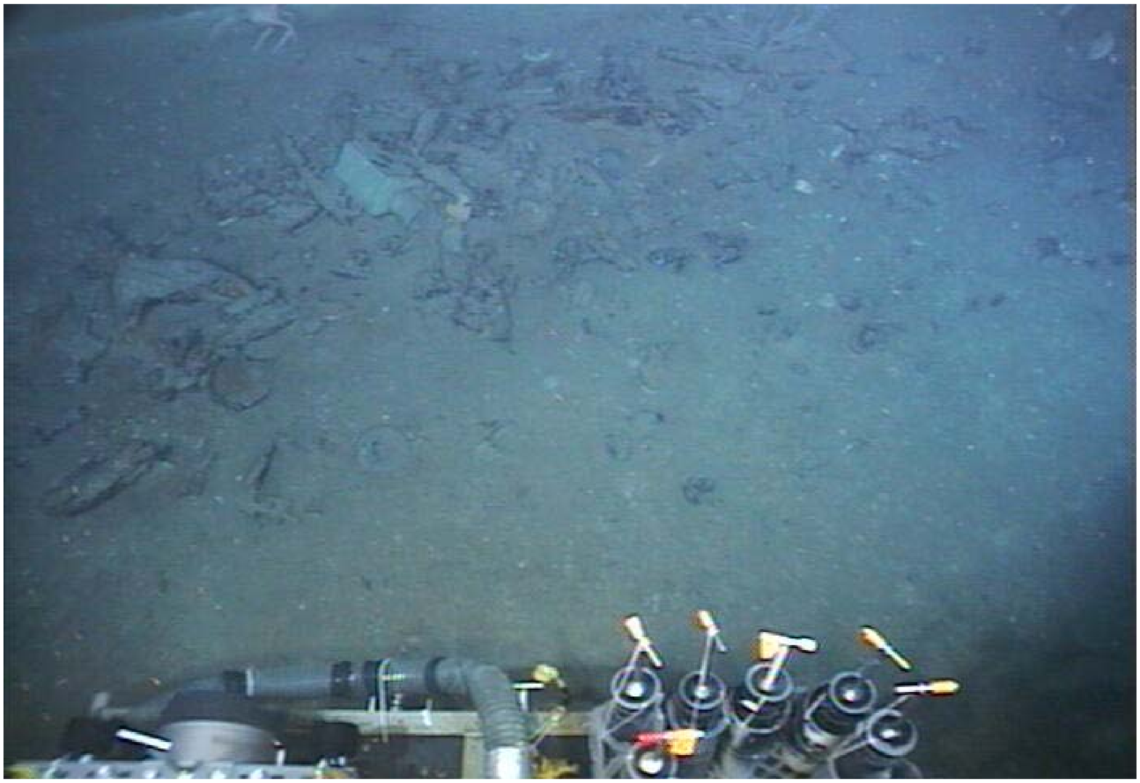


Figure 7-91. Debris field off starboard stern of the Green Lantern Wreck.

Figure 7-92. Crab, coral, and hull remains on the Green Lantern Wreck.

Figure 7-93. Stem post and bow remains at the Green Lantern Wreck.

At 22:36 hours, JII was positioned at the bow to fly mosaic lines over the Green Lantern wreck. The mosaic survey consisted of 14 lines flown at 5 m altitude and spaced 1 meter apart. Mosaicing the wreck was finished at 01:37 hours on September 9. Following the mosaic survey, photo transects, push core collection, and deployment of microbiological experiments was undertaken until 04:56 hours. At 06:29 hours close up inspection and photography of wreck details began. These investigations were completed at approximately 10:48 hours. Shortly thereafter, the short-term microbiological experiment was retrieve and artifact collection started. Artifact collection on the Green Lantern wreck was carried out between 11:09 and 15:32 hours. Six artifacts, the most from any site, were recovered. These artifacts included an eating fork, rigging sheave, ceramic plate, the ship's bell, one of the ship's lanterns (**Figure 7-94**), and a sealed box initially thought to be a lantern cap. Once all the artifacts were secured to JII, the vehicle moved away from the wreck site and began its ascent to the surface at 15:36 hours.

Figure 7-94. ***Jason*** **II recovering one of the ship's navigation lanterns from the Green Lantern Wreck. .**

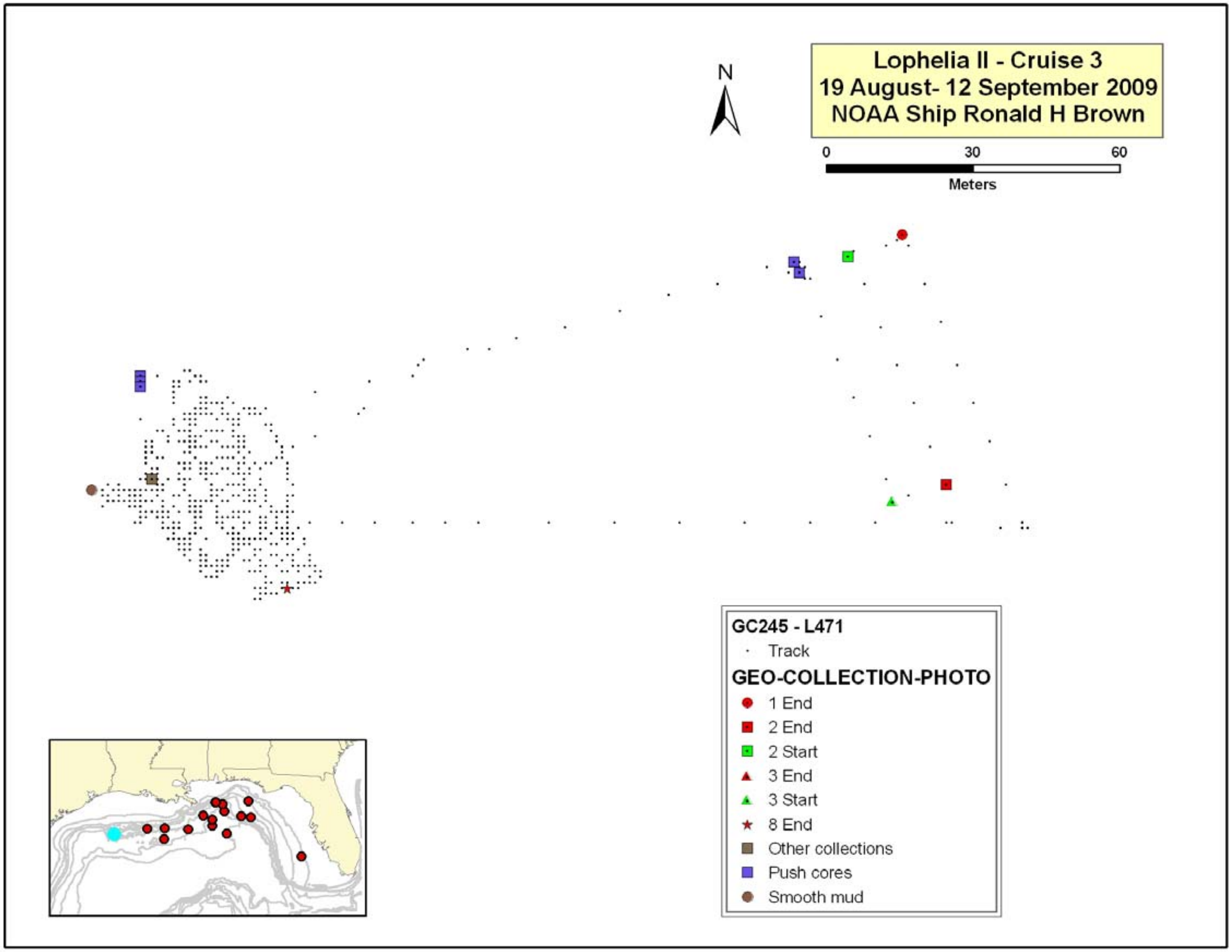


Figure 7-95. Geological-Collection-Photo events observed during lowering J2-471 at GC245 (inset).

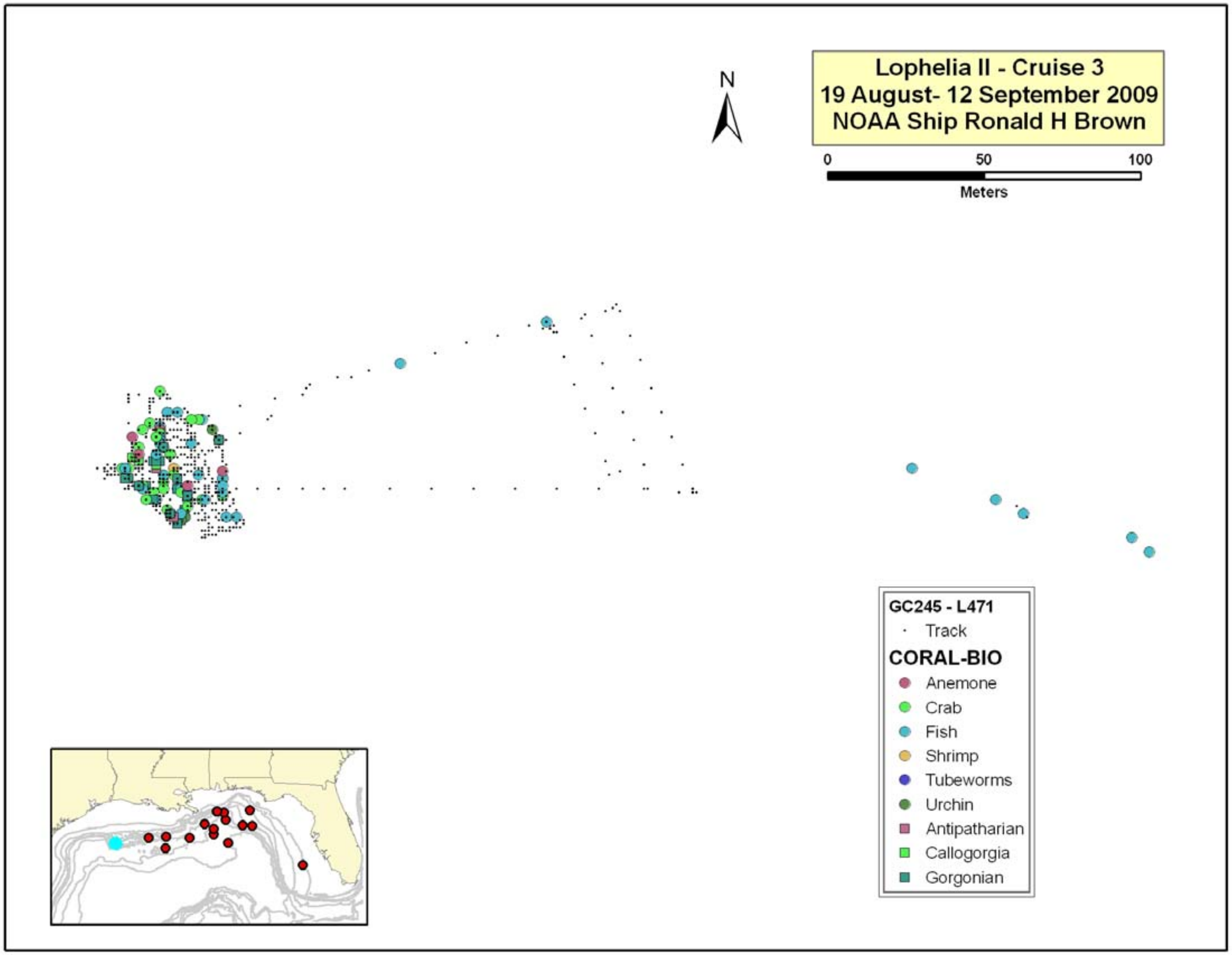


Figure 7-96. Coral-Biological events observed during lowering J2-471 at GC245 (inset)

MC497 - *GULFPENN* WRECK ARCHAEOLOGY SITE SUMMARY

The World War II-era oil tanker *Gulfpenn* (**Figure 7-97**) was one of six U-boat victims that were part of a previous deep-water shipwreck study. The *Gulfpenn* lies nearly 640 meters beneath the surface of the Gulf of Mexico; and marine archaeologists and biologists first investigated the wreck site in 2004 using a deep-sea remotely operated vehicle (ROV).

Figure 7-97. *Gulfpenn* wartime configuration.

Previous studies have shown that there is extensive coral colonization on the rails and superstructure of the wreck along with deep-water reef fishes. The site is currently the second best known *Lophelia* site in the Gulf of Mexico. The *Lophelia pertusa* colonies have been sampled previously and in some cases have been extensively imaged. Following the survey with the *Jason II*, the majority of the largest, intact colonies have now been imaged for future investigations of growth rates (**Figure 7-98**).

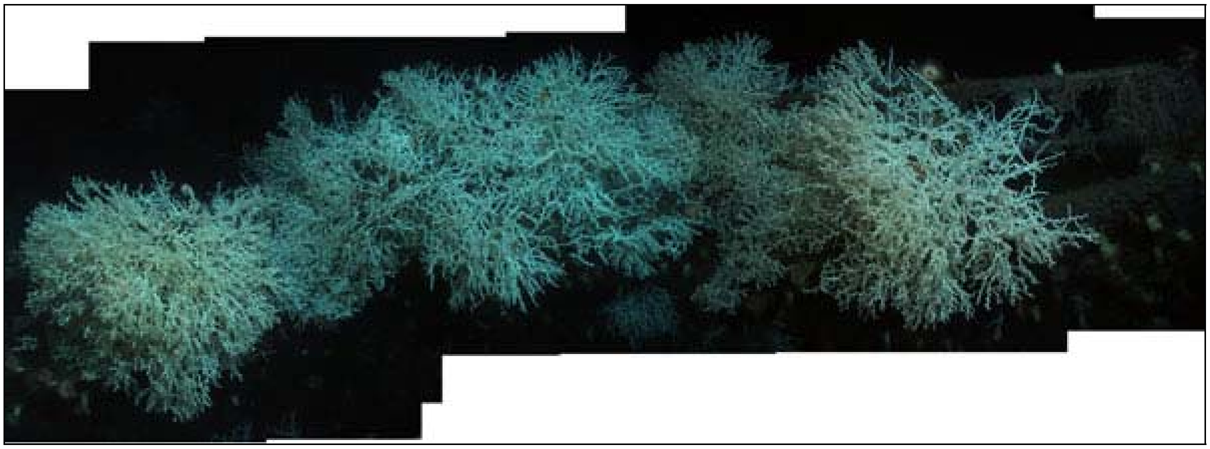


Figure 7-98. Mosaic of *Lophelia* colonies growing on the rails and superstructure of the *Gulfpenn.*

What had been overlooked in previous studies, which focused primarily on the archaeology of the wreck site, was the large number of *L. pertusa* colonies that have formed on the seafloor adjacent to the wreck. These are likely the result of extensive growth on the wreck and colony “failure” – essentially that the colonies are growing too large (and heavy) to be supported on the vertical wreck surface. These colonies break off and continue to grow on the seafloor. There were numerous colonies around the base of the wreck, especially along the starboard side. These areas are much easier to work on and sample because they are not on a vertical surface and the vehicle can safely land on the seafloor without damaging the structure of the wreck.

Overall, the abundance and density of live *L. pertusa* colonies on this discrete site, 135 m long (subtracting the stern which is detached) and 10 m high, makes this one of the larger coral sites in the Gulf, behind the VK 826 complex of sites, VK 906, and GB 535.

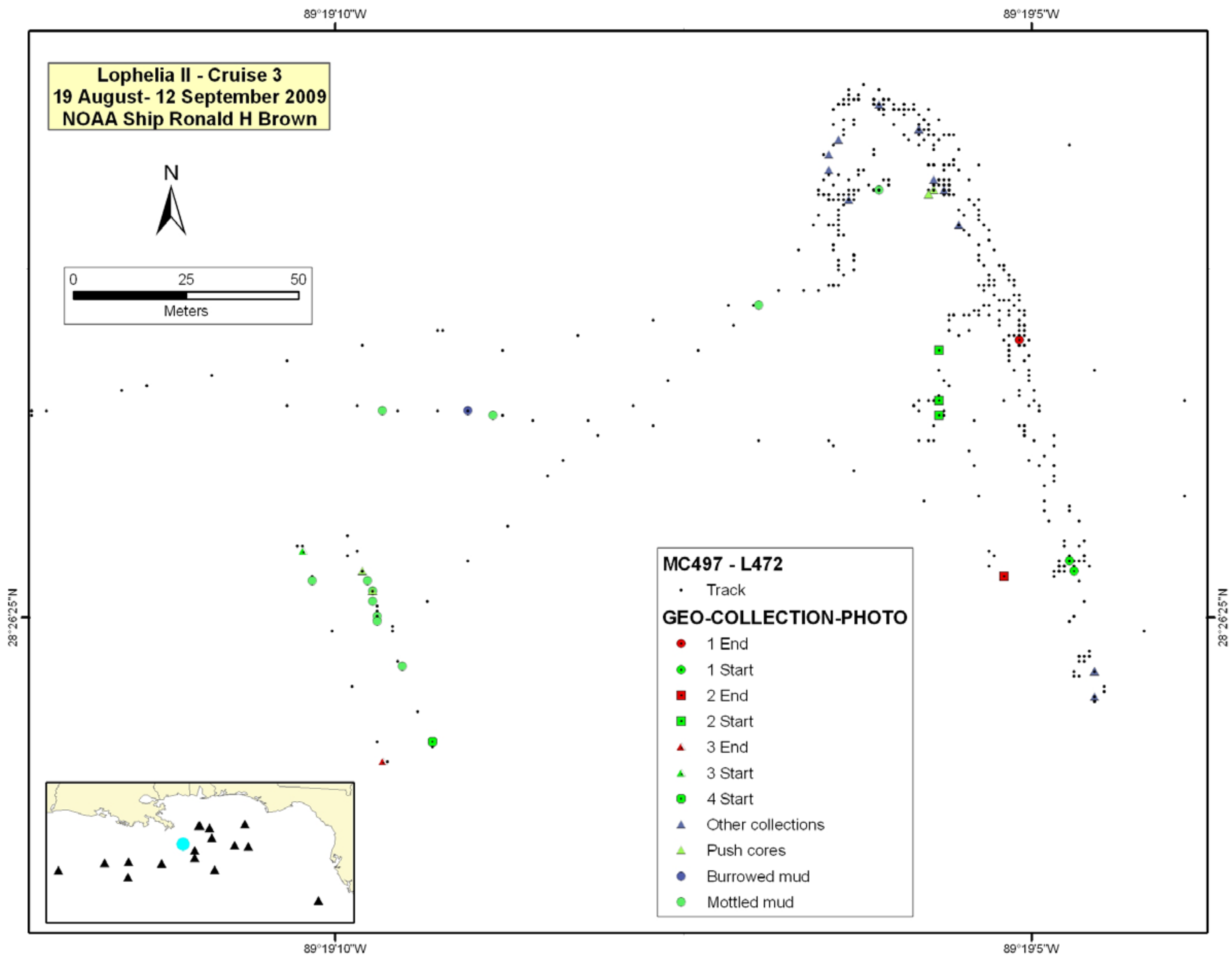


Figure 7-99. Geological-Collection-Photo events observed during lowering J2-472 at MC499 (inset).

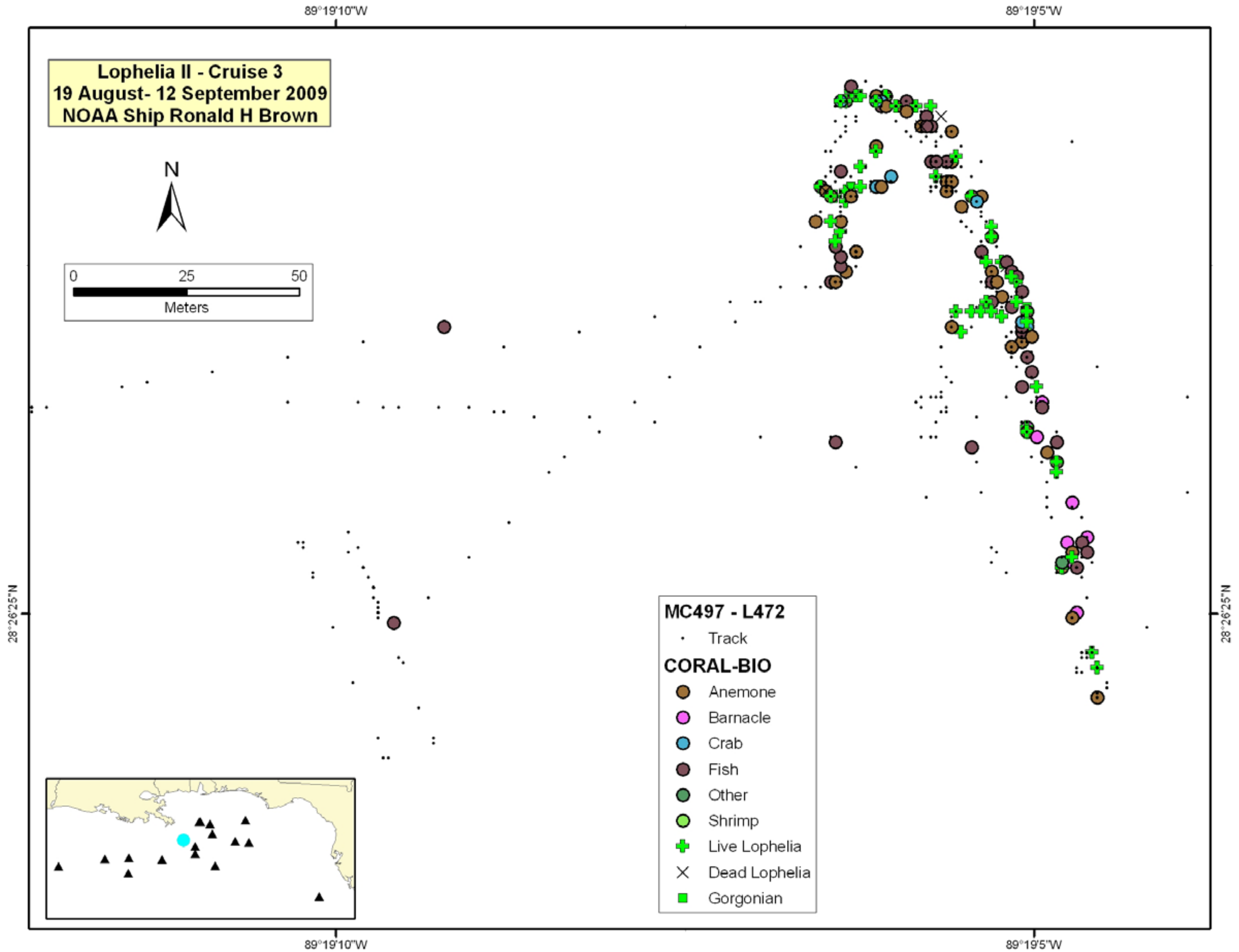


Figure 7-100. Coral-Biological events observed during lowering J2-472 at MC499 (inset).

DEPTH SUMMARY OF CORAL OBSERVATIONS

During each lowering of the *Jason II*, observations were recorded and marked in the dive log as events. A graphical representation of the coral observations and recorded depths is shown in **Figure 7-101.** The deepest observation of *Lophelia* was 622 meters recorded at EW1008 during the J2-470 lowering.

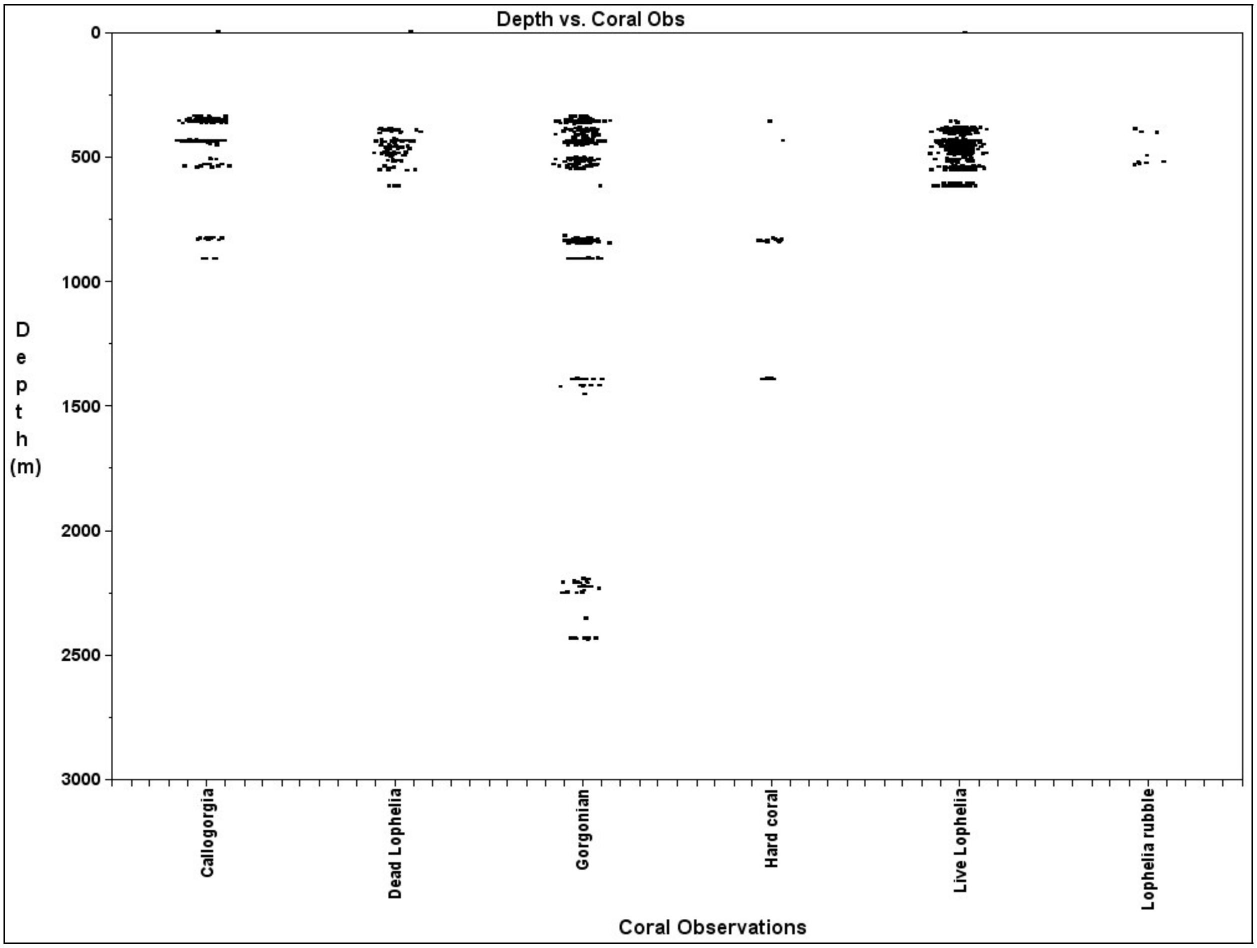


Figure 7-101. Corals observed vs. depth in meters for all *JasonII* lowerings.

APPENDIX 1 - DATA COLLECTION

The following are unedited collection logs.
Ron Brown/Jason II - Lophelia II Gulf of Mexico Cruise 3 - 2009

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-453	FLA-slope1 2009/08/20-2009/08/21	**Etnoyer**	Black Yellow Gorgonian						
J2-453	FLA-slope1 2009/08/20-2009/08/21		Amphilaphis sp	LII-09-100	PF	1496	26 10.840819	84 42.316827	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		Bamboo Coral	LII-09-101	Q 1B	320	26 10.932031	84 42.304279	444
J2-453	FLA-slope1 2009/08/20-2009/08/21		Amphilaphis sp	LII-09-102	Stbd	1202	26 11.430310	84 41.876272	399
J2-453	FLA-slope1 2009/08/20-2009/08/21		Octocoral	LII-09-103	Q 1A	241	26 10.875268	84 42.301027	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		Amphilaphis sp	LII-09-106	Q 4B	1504	26 10.840994	84 42.319202	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Amphilaphis sp	LII-09-108	Q 8A	1603	26 10.769646	84 42.304960	439
J2-453	FLA-slope1 2009/08/20-2009/08/21		Bamboo Coral	LII-09-113	Q 9A	1635	26 10.738021	84 42.303551	437
J2-453	FLA-slope1 2009/08/20-2009/08/21		Octocoral	LII-09-114	Q 9A	1635	26 10.738021	84 42.303551	437
J2-453	FLA-slope1 2009/08/20-2009/08/21		prminoid	LII-09-110	Q 10A	1659	26 10.728638	84 42.304509	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		gorgonian						
J2-453	FLA-slope1 2009/08/20-2009/08/21		Paramuriced						

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-453	FLA-slope1 2009/08/20-2009/08/21	**Cordes**	Amphilaphis sp	LII-09-100	PF	1496	26 10.840819	84 42.316827	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		Acanella	LII-09-101	Q 1B	320	26 10.932031	84 42.304279	444
J2-453	FLA-slope1 2009/08/20-2009/08/21		Amphilaphis sp	LII-09-102	Stbd	1202	26 11.430310	84 41.876272	399
J2-453	FLA-slope1 2009/08/20-2009/08/21		White octocoral sp 1	LII-09-104	PA				
J2-453	FLA-slope1 2009/08/20-2009/08/21		Amphilaphis sp	LII-09-106	Q 4B	1504	26 10.840994	84 42.319202	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Paramuricea sp. 2	LII-09-108	Q 8A	1603	26 10.769646	84 42.304960	439
J2-453	FLA-slope1 2009/08/20-2009/08/21		White octocoral sp 1	LII-09-110	Q 10A	1659	26 10.728638	84 42.304509	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		Amphilaphis sp	LII-09-112	Q 7A	1752	26 10.707600	84 42.284658	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		Acanella sp.	LII-09-113	Q 9A	1635	26 10.738021	84 42.303551	437
J2-453	FLA-slope1 2009/08/20-2009/08/21		Antipatheranan	LII-09-114	Q 9A	1635	26 10.738021	84 42.303551	437
J2-453	FLA-slope1 2009/08/20-2009/08/21	**Fisher**	Antipatheranan	LII-09-109	Q 6A	1703	26 10.717469	84 42.291676	438
J2-453	FLA-slope1 2009/08/20-2009/08/21		Antipatheranan	LII-09-111	Q 7B	1775	26 10.709078	84 42.283519	439
J2-453	FLA-slope1 2009/08/20-2009/08/21		leiopathes	LII-09-115	Q 2A	975	26 11.544792	84 41.961977	399

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-453	FLA-slope1 2009/08/20-2009/08/21		leiopathes	LII-09-103	Q 1A	241	26 10.875268	84 42.301027	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		Leiopathos	LII-09-105	Q 3B	1261	26 11.388620	84 41.871308	399
J2-453	FLA-slope1 2009/08/20-2009/08/21		Dead *Lophelia* (330mL)	LII-09-107	Q 3A	1166	26 11.433984	84 41.857364	398
J2-453	FLA-slope1 2009/08/20-2009/08/21		Live *Lophelia* (77mL)	1d-10d	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		sponge (3)	1l-10l	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		hydroids (3)	1	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		octocoral	2	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Munidopsis* sp. 3(?)	3	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Eunice*	4	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		shrimp (whole)	5	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Gastroptychus*	6	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia pertusa*	7	Slurp Green	266	26 10.874768	84 42.301852	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		hydroids	8	MP D	1468	26 10.841116	84 42.321506	442

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-453	FLA-slope1 2009/08/20-2009/08/21		amphipods & isopods	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		polychaetes	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		terebellid, foram, egg capsule	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Munidopsis* sp 3 (?)	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Munidopsis* sp (?)	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Eunice* sp.	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		shrimp	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		amphipod	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		octocoral	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		barnacle	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		sponge	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		1mm sieve remains	Isotopes	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Barnacle morph1	Isotopes	MP D	1468	26 10.841116	84 42.321506	442

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-453	FLA-slope1 2009/08/20-2009/08/21	**Shank**	Amphipod morph1	1633-Bar1	PA	1577	26 10.778923	84 42.306251	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Astrogomphus* sp.?	1633-Amp1	PA	1577	26 10.778923	84 42.306251	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		*B. serratipalma*?	1622-Oph2	PA	1577	26 10.778923	84 42.306251	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		Ophiuroid morph2	1554-Shi1	MP F	1432	26 10.851091	84 42.316051	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Nereid + unidentified worm	1633-Oph1	PA	1577	26 10.778923	84 42.306251	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		Polychaete moph1	1633-Wor1	PA	1577	26 10.778923	84 42.306251	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		Barnacle morph2	1636-Wor2	Q 4B	1504	26 10.840994	84 42.319202	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Eunice* sp.?	1554-Bar1	MP F	1432	26 10.851091	84 42.316051	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Zoanthid?	1554-Wor3	MP F	1432	26 10.851091	84 42.316051	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Stylasterid morph1	1554-Zoa1	MP F	1432	26 10.851091	84 42.316051	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Nereid morph2	1910-Sty1	Q 7A	1752	26 10.707600	84 42.284658	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		Glass sponges morph1 + Bryozoan?	1910-Wor4	Q 7A	1752	26 10.707600	84 42.284658	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		Misc. Polychaetes	1806-Spo1	Q 10A	1659	26 10.728638	84 42.304509	440

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-453	FLA-slope1 2009/08/20-2009/08/21		Amphipod morph2	1806-Wor5	Q 10A	1659	26 10.728638	84 42.304509	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		Stylasterid morph1	1806-Amp2	Q 10A	1659	26 10.728638	84 42.304509	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		Hydroid? Morph1	1034-Sty2	Q 2A	975	26 11.544792	84 41.961977	399
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia* pertusa	1633-Hyd1	PA	1577	26 10.778923	84 42.306251	441
J2-453	FLA-slope1 2009/08/20-2009/08/21	**Morrison**	Gastroptychus sp.	RB-09-GM-001	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia* pertusa	RB-09-GM-002	Slurp Green	266	26 10.874768	84 42.301852	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		Desmophyllum ?	RB-09-GM-003	PA	1577	26 10.778923	84 42.306251	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia* pertusa	RB-09-GM-004	PA	1577	26 10.778923	84 42.306251	441
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia* pertusa	RB-09-GM-005	Q 4A	1442	26 10.850490	84 42.317322	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Solitary coral	RB-09-GM-006	Q 4B	1504	26 10.840994	84 42.319202	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia* pertusa	RB-09-GM-007	Q 4B	1504	26 10.840994	84 42.319202	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Eunicid	RB-09-GM-008	Q 8A	1603	26 10.769646	84 42.304960	439
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia* pertusa	RB-09-GM-009	Q 10B	1676	26 10.730366	84 42.302262	440

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-453	FLA-slope1 2009/08/20-2009/08/21		Eunicid	RB-09-GM-010	Q 10B	1676	26 10.730366	84 42.302262	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia* pertusa	RB-09-GM-011	Q 10A	1659	26 10.728638	84 42.304509	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		Thecopsammia?	RB-09-GM-012	Q 10A	1659	26 10.728638	84 42.304509	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia* pertusa	RB-09-GM-013	Q 7A	1752	26 10.707600	84 42.284658	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		*Lophelia* pertusa	RB-09-GM-014	Q 7A	1752	26 10.707600	84 42.284658	440
J2-453	FLA-slope1 2009/08/20-2009/08/21		Cup coral-Tethocyathus	RB-09-GM-015	MP F	1432	26 10.851091	84 42.316051	442
J2-453	FLA-slope1 2009/08/20-2009/08/21		Meiofauna	RB-09-GM-044	Grab Rock	83	26 10.856426	84 42.387840	459
J2-453	FLA-slope1 2009/08/20-2009/08/21	**Demopoluos**		RB-2009-GOM-001	MP D	1468	26 10.841116	84 42.321506	442
J2-453	FLA-slope1 2009/08/20-2009/08/21			RB-2009-GOM-002	MP F	1432	26 10.851091	84 42.316051	442
J2-454	DC-358 2009/08/22-2009/08/23	**Etnoyer**	Chrysogorgia	LII-09-116	PA 2	2946	28 23.287820	87 22.795064	2197
J2-454	DC-358 2009/08/22-2009/08/23		Keratoisis	LII-09-117	PA 1	1953	28 23.13480	87 23.241563	2439
J2-454	DC-358 2009/08/22-2009/08/23		Sibogagorgia	LII-09-118	PA 2	2946	28 23.287820	87 22.795064	2197
J2-454	DC-358 2009/08/22-2009/08/23		Lepidisis	LII-09-119	PA 4	1861	28 23.151143	87 23.239072	2436

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-454	DC-358 2009/08/22-2009/08/23		Black Yellow Gorgonian	LII-09-120	PA 2	2946	28 23.287820	87 22.795064	2197
J2-454	DC-358 2009/08/22-2009/08/23		Yellow Gorgonian	LII-09-122	Q 4B	2522	28 23.086775	87 23.257287	2438
J2-454	DC-358 2009/08/22-2009/08/23		Keratoisis	LII-09-123	Q 4A	2014	28 23.144041	87 23.243383	2440
J2-454	DC-358 2009/08/22-2009/08/23		Keratoisis	LII-09-124	Q 6A	3069	28 23.224435	87 22.647446	2214
J2-454	DC-358 2009/08/22-2009/08/23		Isidella	LII-09-125	Q 6A	3069	28 23.224435	87 22.647446	2214
J2-454	DC-358 2009/08/22-2009/08/23	**Cordes**	Chrysogorgia	LII-09-116	PA 2	2946	28 23.287820	87 22.795064	2197
J2-454	DC-358 2009/08/22-2009/08/23		Keratoisis	LII-09-117	PA 1	1953	28 23.13480	87 23.241563	2439
J2-454	DC-358 2009/08/22-2009/08/23		Sibogagorgia	LII-09-118	PA 2	2946	28 23.287820	87 22.795064	2197
J2-454	DC-358 2009/08/22-2009/08/23		Lepidisis	LII-09-119	PA 4	1861	28 23.151143	87 23.239072	2436
J2-454	DC-358 2009/08/22-2009/08/23		paramuriceidea	LII-09-120	PA 3	2865	28 23.251912	87 22.809120	2256
J2-454	DC-358 2009/08/22-2009/08/23		bathypathes	LII-09-121	MP B	3285	28 23.040585	87 22.450363	2360
J2-454	DC-358 2009/08/22-2009/08/23		paramuriceidea	*LII-09-122*	Q 4B	2522	28 23.086775	87 23.257287	**2438**
J2-454	DC-358 2009/08/22-2009/08/23		*keratoisis*	*LII-09-123*	Q 4A	2014	28 23.144041	87 23.243383	**2440**

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-454	DC-358 2009/08/22-2009/08/23		*keratoisis*	Lll-09-124	Q 8A	1997	28 23.145554	87 23.244671	**2442**
J2-454	DC-358 2009/08/22-2009/08/23		Isidella sp.	*Lll-09-125*	Q 6A	3069	28 23.224435	87 22.647446	**2214**
J2-454	DC-358 2009/08/22-2009/08/23	**Shank**	*B. serratipalma?*	0442-Shi1	PA 3	2865	28 23.251912	87 22.809120	**2256**
J2-454	DC-358 2009/08/22-2009/08/23		Sibogagorgia sp.? (Quattrini; 118)	2036-Oct1	PA 2	2946	28 23.287820	87 22.795064	**2197**
J2-454	DC-358 2009/08/22-2009/08/23		Asterochema clavigerum?	0606-Oph1	PA 3	2865	28 23.251912	87 22.809120	**2256**
J2-454	DC-358 2009/08/22-2009/08/23		Alvinocaris muricola	2252-Shi1-4	Slurp Green	2253	28 23.128480	87 23.318217	**2454**
J2-454	DC-358 2009/08/22-2009/08/23		Amphipod morph3	2252-Amp1	Slurp Green	2253	28 23.128480	87 23.318217	**2454**
J2-454	DC-358 2009/08/22-2009/08/23		Cnidarian polyp	2252-Cni1	Slurp Green	2253	28 23.128480	87 23.318217	2454
J2-454	DC-358 2009/08/22-2009/08/23		Polychaete morph2	2252-Wor1	Slurp Green	2253	28 23.128480	87 23.318217	2454
J2-454	DC-358 2009/08/22-2009/08/23		Polychaete morph3	2252-Wor2	Slurp Green	2253	28 23.128480	87 23.318217	2454
J2-454	DC-358 2009/08/22-2009/08/23		Polychaete morph4	2252-Wor3	Slurp Green	2253	28 23.128480	87 23.318217	2454
J2-454	DC-358 2009/08/22-2009/08/23	**Fisher**	anemone	23	MP D	2465	28 23.094572	87 23.299226	2445
J2-454	DC-358 2009/08/22-2009/08/23		Chiridota	24	MP D	2465	28 23.094572	87 23.299226	2445

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-454	DC-358 2009/08/22-2009/08/23		Alvinocaris muricola	25	MP D	2465	28 23.094572	87 23.299226	2445
J2-454	DC-358 2009/08/22-2009/08/23		polynoids		MP D	2465	28 23.094572	87 23.299226	2445
J2-454	DC-358 2009/08/22-2009/08/23		Ophioctenella acies	26	MP D	2465	28 23.094572	87 23.299226	2445
J2-454	DC-358 2009/08/22-2009/08/23		gastropods		MP D	2465	28 23.094572	87 23.299226	2445
J2-454	DC-358 2009/08/22-2009/08/23		Mussels (32) B. brooksi and B. heckerae	J2-454 1-32	MP D	2465	28 23.094572	87 23.299226	2445
J2-454	DC-358 2009/08/22-2009/08/23		Branchipolynoe (32)	J2-454 1-32	MP D	2465	28 23.094572	87 23.299226	2445
J2-454	DC-358 2009/08/22-2009/08/23		Escarpia	Sample 9-17	Stbd	2051	28 23.151775	87 23.235786	2440
J2-454	DC-358 2009/08/22-2009/08/23		Lamellibrachia	18-23	Stbd	2051	28 23.151775	87 23.235786	2440
J2-454	DC-358 2009/08/22-2009/08/23	**Morrison**	No Samples Taken						
J2-454	DC-358 2009/08/22-2009/08/23	**Demopoulos**	background	RB-2009-GOM-003	PC2	2334	28 23.133709	87 23.317851	2460
J2-454	DC-358 2009/08/22-2009/08/23		background	RB-2009-GOM-004	PC2	2334	28 23.133709	87 23.317851	2460
J2-454	DC-358 2009/08/22-2009/08/23		background	RB-2009-GOM-005	PC2	2334	28 23.133709	87 23.317851	2460
J2-454	DC-358 2009/08/22-2009/08/23		background	RB-2009-GOM-006	PC2	2334	28 23.133709	87 23.317851	2460

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-454	DC-358 2009/08/22-2009/08/23		background	RB-2009-GOM-007	PC2	2334	28 23.133709	87 23.317851	2460
J2-454	DC-358 2009/08/22-2009/08/23		background	RB-2009-GOM-008	PC2	2334	28 23.133709	87 23.317851	2460
J2-454	DC-358 2009/08/22-2009/08/23		next to tube worms	RB-2009-GOM-009	PC5	2300	28 23.130733	87 23.312211	2449
J2-454	DC-358 2009/08/22-2009/08/23		next to tube worms	RB-2009-GOM-010	PC5	2300	28 23.130733	87 23.312211	2449
J2-454	DC-358 2009/08/22-2009/08/23		next to tube worms	RB-2009-GOM-011	PC5	2300	28 23.130733	87 23.312211	2449
J2-454	DC-358 2009/08/22-2009/08/23		next to tube worms	RB-2009-GOM-012	PC5	2300	28 23.130733	87 23.312211	2449
J2-454	DC-358 2009/08/22-2009/08/23		next to tube worms	RB-2009-GOM-013	PC5	2300	28 23.130733	87 23.312211	2449
J2-454	DC-358 2009/08/22-2009/08/23		next to tube worms	RB-2009-GOM-014	PC5	2300	28 23.130733	87 23.312211	2449
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms, mussels	RB-2009-GOM-015	PC 9	2480	28 23.095625	87 23.297144	2445
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms, mussels	RB-2009-GOM-016	PC 9	2480	28 23.095625	87 23.297144	2445
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms, mussels	RB-2009-GOM-017	PC 9	2480	28 23.095625	87 23.297144	2445
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms, mussels	RB-2009-GOM-018	PC 9	2480	28 23.095625	87 23.297144	2445
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms, mussels	RB-2009-GOM-019	PC 9	2480	28 23.095625	87 23.297144	2445

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms, mussels	RB-2009-GOM-020	PC6	2353	28 23.131905	87 23.303703	2451
J2-454	DC-358 2009/08/22-2009/08/23		background, but closer to tubeworms than other background cores	RB-2009-GOM-021	PC6	2353	28 23.131905	87 23.303703	2451
J2-454	DC-358 2009/08/22-2009/08/23		background, but closer to tubeworms than other background cores	RB-2009-GOM-022	PC6	2353	28 23.131905	87 23.303703	2451
J2-454	DC-358 2009/08/22-2009/08/23		background, but closer to tubeworms than other background cores	RB-2009-GOM-023	PC6	2353	28 23.131905	87 23.303703	2451
J2-454	DC-358 2009/08/22-2009/08/23		background, but closer to tubeworms than other background cores	RB-2009-GOM-024	PC6	2353	28 23.131905	87 23.303703	2451
J2-454	DC-358 2009/08/22-2009/08/23		background, but closer to tubeworms than other background cores	RB-2009-GOM-025	PC6	2353	28 23.131905	87 23.303703	2451
J2-454	DC-358 2009/08/22-2009/08/23		background, but closer to tubeworms than other background cores	RB-2009-GOM-026	PC6	2353	28 23.131905	87 23.303703	2451
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-027	PC 3				
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-028	PC3				
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-029	PC3				

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-030	PC3				
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-031	PC3				
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-032	PC3				
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-033	PC4	2306	28 23.129482	87 23.311934	2448
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-034	PC4	2306	28 23.129482	87 23.311934	2448
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-035	PC4	2306	28 23.129482	87 23.311934	2448
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-036	PC4	2306	28 23.129482	87 23.311934	2448
J2-454	DC-358 2009/08/22-2009/08/23		next to tubeworms	RB-2009-GOM-037	PC4	2306	28 23.129482	87 23.311934	2448
J2-454	DC-358 2009/08/2 -2009/08/23		next to tubeworms	RB-2009-GOM-038	PC4	2306	28 23.129482	87 23.311934	2448
J2-454	DC-358 2009/08/22-2009/08/23		background sediments	RB-2009-GOM-039	PC1	2338	28 23.133766	87 23.316785	2460
J2-454	DC-358 2009/08/22-2009/08/23		background sediments	RB-2009-GOM-040	PC1	2338	28 23.133766	87 23.316785	2460
J2-454	DC-358 2009/08/22-2009/08/23		background sediments	RB-2009-GOM-041	PC1	2338	28 23.133766	87 23.316785	2460
J2-454	DC-358 2009/08/22-2009/08/23		background sediments	RB-2009-GOM-042	PC1	2338	28 23.133766	87 23.316785	2460

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-454	DC-358 2009/08/22-2009/08/23		background sediments	RB-2009-GOM-043	PC1	2338	28 23.133766	87 23.316785	2460
J2-454	DC-358 2009/08/22-2009/08/23		background sediments	RB-2009-GOM-044	PC1	2338	28 23.133766	87 23.316785	2460
J2-454	DC-358 2009/08/22-2009/08/23		collection at mussel bed	RB-2009-GOM-045	MP D	2465	28 23.094572	87 23.299226	2445
J2-454	DC-358 2009/08/22-2009/08/23	**Roberts**	background		PC10	2347	28 23.132078	87 23.313773	2451
J2-454	DC-358 2009/08/22-2009/08/23		tubeworms		PC8	2297	28 23.130563	87 23.312797	2449
J2-456	MC-294 8/24/2009		No Samples Taken						
J2-457	AT-47 2009/08/24-2009/08/25								
J2-457	AT-47 2009/08/24-2009/08/25	**Morrison**	Madrepora oculata	RB-09-GM-016	Q 1A	4539	27 52.812698	89 47.328821	839
J2-457	AT-47 2009/08/24-2009/08/25		Munidopsis sp.	RB-09-GM-017	Q 1A	4539	27 52.812698	89 47.328821	839
J2-457	AT-47 2009/08/24-2009/08/25	**Cordes**	Paramuricea sp. 3	LII-09-126	PA 1	4495	27 52.801272	89 47.312776	853
J2-457	AT-47 2009/08/24-2009/08/25		Paramuricea sp. 3	LII-09-127	PA 1	4495	27 52.801272	89 47.312776	853
J2-457	AT-47 2009/08/24-2009/08/25		Swiftia sp.	LII-09-128	Q 1B	4800	27 52.845364	89 47.423704	849
J2-457	AT-47 2009/08/24-2009/08/25	**Fisher**	Astroschema on purple gorgonian	27	Q 1B	4800	27 52.845364	89 47.423704	849
J2-457	AT-47 2009/08/24-2009/08/25		Purple gorgonian	28	Q 1B	4800	27 52.845364	89 47.423704	849

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-457	AT-47 2009/08/24-2009/08/25		Astroschema	29	Q 1B	4800	27 52.845364	89 47.423704	849
J2-457	AT-47 2009/08/24-2009/08/25		Swiftia sp. cf.	30	Q 1B	4800	27 52.845364	89 47.423704	849
J2-457	AT-47 2009/08/24-2009/08/25		Leptochiton	32	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		Leptochiton	33	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		Leptochiton	34	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Methanoaricia dendrobranchiata*	35	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Bathynerita naticoidea*	36	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Bathynerita naticoidea*	37	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Bathynerita naticoidea*	38	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Cataegis meroglypta*	39	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Cataegis meroglypta*	40	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Cataegis meroglypta*	41	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Munidopsis* sp. 1 (tail)	42	MP D	4453	27 52.792955	89 47.302504	853

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-457	AT-47 2009/08/24-2009/08/25		*Munidopsis* sp. 1 (tail)	43	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Munidopsis* sp. 1 (whole indiv)	44	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Calyptogena ponderosa* (mantle)	45	grab				
J2-457	AT-47 2009/08/24-2009/08/25		*Calyptogena ponderosa* (gill)	46	grab				
J2-457	AT-47 2009/08/24-2009/08/25		Harmothoe	47	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		Branchinotogluma	48	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		Branchinotogluma	49	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		Branchinotogluma	50	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*Munidopsis* sp. 1	51	MP B	4632	27 52.814347	89 47.329278	839
J2-457	AT-47 2009/08/24-2009/08/25		*B. childressi*	52	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*B. childressi*	53	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*B. childressi*	54	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25		*B. childressi*	55	MP D	4453	27 52.792955	89 47.302504	853

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-457	AT-47 2009/08/24-2009/08/25		*B. childressi*	56	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25	**Shank**	*Asterochema* sp.?	2218-Oph1	PA 2	4504	27 52,799341	89 47.312687	851
J2-457	AT-47 2009/08/24-2009/08/25		*Asterochema* sp.?	2221-Oph2	PA 2	4504	27 52,799341	89 47.312687	851
J2-457	AT-47 2009/08/24-2009/08/25	**Etnoyer**	Purple Octocoral	LII-09-126	PA 1	4495	27 52.801272	89 47.312776	853
J2-457	AT-47 2009/08/24-2009/08/25		Purple Octocoral	LII-09-127	PA 1	4495	27 52.801272	89 47.312776	853
J2-457	AT-47 2009/08/24-2009/08/25		Swiftia sp. cf.	LII-09-128	Q 1B	4800	27 52.845364	89 47.423704	849
J2-457	AT-47 2009/08/24-2009/08/25	**Demopoulos**	sideways surface scoop of Beggiatoa, sorted animals	RB-2009-GOM-046	PC8	4484	27 52.797710	89 47.305400	853
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-047	PC3	4669	27 52.813469	89 47.328725	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-048	PC3	4669	27 52.813469	89 47.328725	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-049	PC3	4669	27 52.813469	89 47.328725	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-050	PC3	4669	27 52.813469	89 47.328725	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-051	PC3	4669	27 52.813469	89 47.328725	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-052	PC3	4669	27 52.813469	89 47.328725	839

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-053	PC4	4666	27 52.813145	89 47.328247	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-054	PC4	4666	27 52.813145	89 47.328247	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-055	PC4	4666	27 52.813145	89 47.328247	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-056	PC4	4666	27 52.813145	89 47.328247	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-057	PC4	4666	27 52.813145	89 47.328247	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-058	PC4	4666	27 52.813145	89 47.328247	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-059	PC5	4661	27 52.813270	89 47.328785	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-060	PC5	4661	27 52.813270	89 47.328785	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-061	PC5	4661	27 52.813270	89 47.328785	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-062	PC5	4661	27 52.813270	89 47.328785	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-063	PC5	4661	27 52.813270	89 47.328785	839
J2-457	AT-47 2009/08/24-2009/08/25		near madrepora	RB-2009-GOM-064	PC5	4661	27 52.813270	89 47.328785	839
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-065	PC6	5193	27 53.388466	89 47.666137	837

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-066	PC6	5193	27 53.388466	89 47.666137	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-067	PC6	5193	27 53.388466	89 47.666137	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-068	PC6	5193	27 53.388466	89 47.666137	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-069	PC6	5193	27 53.388466	89 47.666137	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-070	PC6	5193	27 53.388466	89 47.666137	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-071	PC9	5197	27 53.388287	89 47.666378	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-072	PC9	5197	27 53.388287	89 47.666378	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-073	PC9	5197	27 53.388287	89 47.666378	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-074	PC9	5197	27 53.388287	89 47.666378	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-075	PC9	5197	27 53.388287	89 47.666378	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-076	PC9	5197	27 53.388287	89 47.666378	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-077	PC10	5201	27 53.387586	89 47.666541	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-078	PC10	5201	27 53.387586	89 47.666541	837

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-079	PC10	5201	27 53.387586	89 47.666541	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-080	PC10	5201	27 53.387586	89 47.666541	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-081	PC10	5201	27 53.387586	89 47.666541	837
J2-457	AT-47 2009/08/24-2009/08/25		background near dead clams	RB-2009-GOM-082	PC10	5201	27 53.387586	89 47.666541	837
J2-457	AT-47 2009/08/24-2009/08/25		2 containers	RB-2009-GOM-412	MP D	4453	27 52.792955	89 47.302504	853
J2-457	AT-47 2009/08/24-2009/08/25			RB-2009-GOM-413	MP B	4632	27 52.814347	89 47.329278	839
J2-458	GC-235 2009/08/25-2009/08/26	**Morrison**	Javania cup coral	RB-09-GM-018	Slurp Black	6550	27 44.362467	91 11.654491	531
J2-458	GC-235 2009/08/25-2009/08/26	**Cordes**	Callogorgia sp.	LII-09-129	Stbd	6531	27 44.364382	91 11.654765	531
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp.	LII-09-130	Q 3B	6593	27 44.363590	91 11.650498	531
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp.	LII-09-131	Q 1B	6639	27 44.357434	91 11.665336	532
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia s.	LII-09-132	Q 1A	6629	27 44.357038	91 11.663601	532
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp.	LII-09-133	Q 2B	6578	27 44.361664	91 11.645642	531
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp.	LII-09-134	Q 3A	6575	27 44.363400	91 11.646517	531

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp.	LII-09-135	Q 2A	6537	27 44.362867	91 11.654515	531
J2-458	GC-235 2009/08/25-2009/08/26	**Shank**	Asterochema sp.?	0133-Oph1	Q 1A	6629	27 44.357038	91 11.663601	532
J2-458	GC-235 2009/08/25-2009/08/26		Ophiuroid morph3	0133-Oph7	Q 1A	6629	27 44.357038	91 11.663601	532
J2-458	GC-235 2009/08/25-2009/08/26		Asterochema sp.?	0139-Oph2	Q 1B	6639	27 44.357434	91 11.665336	532
J2-458	GC-235 2009/08/25-2009/08/26		Asterochema sp.?	0035-Oph3	Q 2A	6537	27 44.362867	91 11.654515	531
J2-458	GC-235 2009/08/25-2009/08/26		Asterochema sp.?	0103-Oph4	Q 2B	6578	27 44.361664	91 11.645642	531
J2-458	GC-235 2009/08/25-2009/08/26		Asterochema sp.?	0032-Oph5	Stbd	6531	27 44.364382	91 11.654765	531
J2-458	GC-235 2009/08/25-2009/08/26		Asterochema sp.?	0100-Oph8	Q 3A	6575	27 44.363400	91 11.646517	531
J2-458	GC-235 2009/08/25-2009/08/26	**Etnoyer**	Callogorgia sp.1	LII-09-129	Stbd	6531	27 44.364382	91 11.654765	531
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp.1	LII-09-130	Q 3B	6593	27 44.363590	91 11.650498	531
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp.1	LII-09-131	Q 1B	6639	27 44.357434	91 11.665336	532
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp. 2	LII-09-132	Q 1A	6629	27 44.357038	91 11.663601	532
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp. 1	LII-09-133	Q 2B	6578	27 44.361664	91 11.645642	531

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp. 1	LII-09-134	Q 3A	6575	27 44.363400	91 11.646517	531
J2-458	GC-235 2009/08/25-2009/08/26		Callogorgia sp. 1	LII-09-135	Q 2A	6537	27 44.362867	91 11.654515	531
J2-458	GC-235 2009/08/25-2009/08/26	**Dempoulos**	No Samples						
J2-458	GC-235 2009/08/25-2009/08/26	**Fisher**							
J2-459	GB-299 2009/08/26-2009/08/27	**Morrison**	Madrepora oculata	RB-09-GM-019	Q 6A	7095	27 41.387244 N	92 13.170780 W	337
J2-459	GB-299 2009/08/26-2009/08/27		Sea pen	RB-09-GM-020	Stbd	7008	27 41.337384 N	92 13.057194 W	364
J2-459	GB-299 2009/08/26-2009/08/27	**Cordes**	Paramuricea sp. 1	LII-09-136	Stbd	7008	27 41.337384 N	92 13.057194 W	364
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-137	PF	8050	27 41.195904 N	92 13.852627 W	362
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-138	PA	8051	27 41.195885 N	92 13.852617 W	362
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-139	PA	8051	27 41.195885 N	92 13.852617 W	362
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-140	Q 14A	9052	27 41.192997 N	92 13.845626 W	360
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-141	Q 15A	9048	27 41.194238	92 13.846025	360
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-142	Q 1A	9051	27 41.195469 N	92 13.844472 W	360

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-143	Q 2B	6883	27 41.350122 N	92 13.047156 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-144	Q 16A	9044	27 41.192718	92 13.845697	360
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-145	Q 3B	6869	27 41.335774	92 13.056630 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-146	Q 3A	6855	27 41.339724 N	92 13.056630 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Paramuricea	LII-09-147	Q 3A	6855	27 41.339724 N	92 13.056630 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-150	Q 9A	8039	27 41.194150 N	92 13.852490 W	361
J2-459	GB-299 2009/08/26-2009/08/27		Pennatulacean	LII-09-151	Stbd	7008	27 41.337384 N	92 13.057194 W	364
J2-459	GB-299 2009/08/26-2009/08/27		Stichopathes	LII-09-152	Q 5B	6917	27 41.351742 N	92 13.047420 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Keratosis	LII-09-153	Q 4A	6903	27 41.351622 N	92 13.047258 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Octocoral	LII-09-154	Q 4B	6926	27 41.351940 N	92 13.047120 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-155	Q 8A	6954	27 41.341944 N	92 13.067106 W	364
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-157	Q 8B	6963	27 41.339298 N	92 13.064664 W	364
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-158	Q 7A	7014	27 41.337372 N	92 13.057218 W	364

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-459	GB-299 2009/08/26-2009/08/27		Paramuricea	LII-09-159	Q 7B	7032	27 41.336544 N	92 13.057314 W	364
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-160	Q 10A	7627	27 40.963739 N	92 13.453307 W	337
J2-459	GB-299 2009/08/26-2009/08/27	**Shank**	Barnacle morph4	1449-Bar2	Q 4A	6903	27 41.351622 N	92 13.047258 W	365
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	1550-Oph11	Q 8B	6963	27 41.339298 N	92 13.064664 W	364
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	1617-Oph8	Q 7A	7014	27 41.337372 N	92 13.057218 W	364
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph4	1617-Oph9	Q 7A	7014	27 41.337372 N	92 13.057218 W	364
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	1630-Oph10	Q 7B	7032	27 41.336544 N	92 13.057314 W	364
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	2200-Oph13	Q 10A	7627	27 40.963739 N	92 13.453307 W	337
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph4	2200-Oph31	Q 10A	7627	27 40.963739 N	92 13.453307 W	337
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph4	2200-Oph32	Q 10A	7627	27 40.963739 N	92 13.453307 W	337
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	1614-Oph17	Stbd	7008	27 41.337384 N	92 13.057194 W	364
J2-459	GB-299 2009/08/26-2009/08/27		Snail morph1	1614-Sna1	Stbd	7008	27 41.337384 N	92 13.057194 W	364
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	0750-Oph19	PF	8050	27 41.195904 N	92 13.852627 W	362

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph4	0750-Oph21	PF	8050	27 41.195904 N	92 13.852627 W	362
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	2240-Oph18	PA	8051	27 41.195885 N	92 13.852617 W	362
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph5	2240-Oph23	PA	8051	27 41.195885 N	92 13.852617 W	362
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph3	0750-Oph22	PF	8050	27 41.195904 N	92 13.852627 W	362
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	0808-Oph14	Q 14A	9052	27 41.192997 N	92 13.845626 W	360
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph3	0808-Oph24	Q 14A	9052	27 41.192997 N	92 13.845626 W	360
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	0740-Oph15	Q 15A	9048	27 41.194238	92 13.846025	360
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	0801-Oph1	Q 1				
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph4	0801-Oph2, 25,26,27,28	Q 1				
J2-459	GB-299 2009/08/26-2009/08/27		Anemone "white sock"	0808-Ane1	Q 14A	9052	27 41.192997 N	92 13.845626 W	360
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph4	1439-Oph4	Q 2B	6883	27 41.350122 N	92 13.047156 W	365
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	0738-Oph16	Q 16A	9044	27 41.192718	92 13.845697	360
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph4	1421-Oph3	Q 2A	6874	27 41.350368 N	92 13.048482 W	365

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	1417-Oph5	Q 3B	6869	27 41.335774	92 13.056630 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Snail morph1	1401-Sna2	Q 3A	6855	27 41.339724 N	92 13.056630 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Anemone "white sock"	1443-Ane2	Q 5A	6889	27 41.350242 N	92 13.047264 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph6	1707-Oph29	Q 6A	7095	27 41.387244 N	92 13.170780 W	337
J2-459	GB-299 2009/08/26-2009/08/27		Barnacle morph3	1707-Bar1	Q 6A	7095	27 41.387244 N	92 13.170780 W	337
J2-459	GB-299 2009/08/26-2009/08/27		Anemone morph2 white	2211-Ane3	Q 9				
J2-459	GB-299 2009/08/26-2009/08/27		*Asterochema* sp.?	2211-Oph12	Q 9				
J2-459	GB-299 2009/08/26-2009/08/27		*Astrogomphus* sp.?	1449-Oph6	Q 4A	6903	27 41.351622 N	92 13.047258 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Ophiuroid morph4	1449-Oph30	Q 4A	6903	27 41.351622 N	92 13.047258 W	365
J2-459	GB-299 2009/08/26-2009/08/27	**Fisher**	Antipatharian	L11-09-149	Q 6A	7095	27 41.387244 N	92 13.170780 W	337
J2-459	GB-299 2009/08/26-2009/08/27		Leiopathes	Lll-09-148	Q 5A	6889	27 41.350242 N	92 13.047264 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Stichopathes	Lll-09-152	Q 5B	6917	27 41.351742 N	92 13.047420 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Leiopathes	Lll-09-156	Q 10B	8033	27 41.194158 N	92 13.854446 W	362

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-459	GB-299 2009/08/26-2009/08/27	**Etnoyer**	Paramuriceid	LII-09-136	Stbd	7008	27 41.337384 N	92 13.057194 W	364
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-137	PF	8050	27 41.195904 N	92 13.852627 W	362
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-138	PA	8051	27 41.195885 N	92 13.852617 W	362
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-139	PA	8051	27 41.195885 N	92 13.852617 W	362
J2-459	GB-299 2009/08/26-2009/08/27		Callogorgia sp.	LII-09-140	Q 14A	9052	27 41.192997 N	92 13.845626 W	360
J2-459	GB-299 2009/08/26-2009/08/27		Paramuricea	LII-09-147	Q 3A	6855	27 41.339724 N	92 13.056630 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Sea Pen	LII-09-151	Stbd	7008	27 41.337384 N	92 13.057194 W	364
J2-459	GB-299 2009/08/26-2009/08/27		Keratosis	LII-09-153	Q 4A	6903	27 41.351622 N	92 13.047258 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Octocoral	LII-09-154	Q 4B	6926	27 41.351940 N	92 13.047120 W	365
J2-459	GB-299 2009/08/26-2009/08/27		Paramuricea	LII-09-159	Q 7B	7032	27 41.336544 N	92 13.057314 W	364
J2-459	GB-299 2009/08/26-2009/08/27	**Demopoulos**	in Callogorgia field	RB-2009-GOM-083	PC1	8973	27 41.177392	92 13.845261	359
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-084	PC1	8973	27 41.177392	92 13.845261	359
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-085	PC1	8973	27 41.177392	92 13.845261	359

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-086	PC2	9212	27 41.171547	92 13.853700	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-087	PC2	9212	27 41.171547	92 13.853700	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-088	PC2	9212	27 41.171547	92 13.853700	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-089	PC3	9204	27 41.172025	92 13.852510	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-090	PC3	9204	27 41.172025	92 13.852510	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-091	PC3	9204	27 41.172025	92 13.852510	354
J2-459	GB-299 2009/08/26-2009/08/27		near Callogorgia, sorted 0-2, no animals	RB-2009-GOM-092	PC4	8148	27 41.198486	92 13.820366	362
J2-459	GB-299 2009/08/26-2009/08/27		near Callogorgia	RB-2009-GOM-093	PC4	8148	27 41.198486	92 13.820366	362
J2-459	GB-299 2009/08/26-2009/08/27		near Callogorgia	RB-2009-GOM-094	PC4	8148	27 41.198486	92 13.820366	362
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-095	PC5	9207	27 41.171827	92 13.853281	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-096	PC5	9207	27 41.171827	92 13.853281	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-097	PC5	9207	27 41.171827	92 13.853281	354
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-098	PC6				

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-099	PC6				
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-100	PC6				
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-101	PC7	8982	27 41.176985	92 13.843771	359
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-102	PC7	8982	27 41.176985	92 13.843771	359
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-103	PC7	8982	27 41.176985	92 13.843771	359
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-104	PC8	8979	27 41.178869	92 13.842420	359
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-105	PC8	8979	27 41.178869	92 13.842420	359
J2-459	GB-299 2009/08/26-2009/08/27		in Callogorgia field	RB-2009-GOM-106	PC8	8979	27 41.178869	92 13.842420	359
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-107	PC9	9200	27 41.171513	92 13.853449	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-108	PC9	9200	27 41.171513	92 13.853449	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-109	PC9	9200	27 41.171513	92 13.853449	354
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-110					
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-111					

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-459	GB-299 2009/08/26-2009/08/27		background sediments	RB-2009-GOM-112					
J2-460	GB535 2009/08/27-2009/08/28	**Fisher**	Hydroids	57	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		sipunculid	58	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		amphinomid (whole)	59	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		glycerid (whole)	60	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		ophiuroid morph 7	61	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		ophuroid morph 3	62	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		glycerid	63	MP F	11269	27 25.810986	93 34.654230	511
J2-460	GB535 2009/08/27-2009/08/28		galatheid	64	MP F	11269	27 25.810986	93 34.654230	511
J2-460	GB535 2009/08/27-2009/08/28		sponge	65	MP F	11269	27 25.810986	93 34.654230	511
J2-460	GB535 2009/08/27-2009/08/28		sponge	66	MP F	11269	27 25.810986	93 34.654230	511
J2-460	GB535 2009/08/27-2009/08/28		*Eunice*	67	MP D	10896	27 25.679166	93 35.025096	515
J2-460	GB535 2009/08/27-2009/08/28		sponge	68	MP D	10896	27 25.679166	93 35.025096	515

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-460	GB535 2009/08/27-2009/08/28		glycerid	69	MP D	10896	27 25.679166	93 35.025096	515
J2-460	GB535 2009/08/27-2009/08/28		hydroids	70	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		sipunculid	71	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		sponge	72	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		Antipatharian	LII-09-172	Q 10A	10691	27 25.676604	93 35.009688	515
J2-460	GB535 2009/08/27-2009/08/28		ophiuroid morph ?	73	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28		Antipatharian	LII-09-162	Q 2B	9581	27 25.465068	93 35.630844	538
J2-460	GB535 2009/08/27-2009/08/28		Stichopathes	LII-09-161	PA	9966	27 25.560762	93 35.546262	545
J2-460	GB535 2009/08/27-2009/08/28		Stichopathes	LII-09-163	Q 3B	9802	27 25.548876	93 35.573502	550
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	1d-10d	MP F	11269	27 25.810986	93 34.654230	511
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	1d-10d	MP D	10896	27 25.679166	93 35.025096	515
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	1d-10d	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28	**Morrison**	*Lophelia* pertusa	RB-09-GM-021	Q 11A	11225	27 25.804364	93 34.710434	510

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-022	PA	9966	27 25.560762	93 35.546262	545
J2-460	GB535 2009/08/27-2009/08/28		Munidopsis sp.	RB-09-GM-023	PA	9966	27 25.560762	93 35.546262	545
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-024	PA	9966	27 25.560762	93 35.546262	545
J2-460	GB535 2009/08/27-2009/08/28		Lithodid- Paralomis sp.	RB-09-GM-025	Q 2A	9491	27 25.424700	93 35.640288	537
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-026	Q 9A	10497	27 25636680	93 35.133330	518
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-027	Q 9B	10828	27 25.681686	93 35.01088	515
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-028	Q 4B	10384	28 25.638840	94 35.124192	518
J2-460	GB535 2009/08/27-2009/08/28		cup coral- broken	RB-09-GM-029	Q 4B	10384	28 25.638840	94 35.124192	518
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-030	Q 8B	11116	27 25.73 2212	93 34.906542	507
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-031	Q 8A	10941	27 25.678830	93 35.021742	514
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-032	Q 7B	10277	27 25.632360	93 35.136425	522
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-033	Q 6B	10917	27 25.678062	93 35.024370	514
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-034	PA	9966	27 25.560762	93 35.546262	545

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-460	GB535 2009/08/27-2009/08/28		Caryophyllia cup coral	RB-09-GM-035	Rock btw push cores				
J2-460	GB535 2009/08/27-2009/08/28		Munida sp.	RB-09-GM-036	Slurp Black	11285	27 25.810860	93 34.654164	511
J2-460	GB535 2009/08/27-2009/08/28		Munidopsis	RB-09-GM-037	Slurp Black	11285	27 25.810860	93 34.654164	511
J2-460	GB535 2009/08/27-2009/08/28		Munidopsis	RB-09-GM-038	Slurp Black	11285	27 25.810860	93 34.654164	511
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-039	Slurp Black	11285	27 25.810860	93 34.654164	511
J2-460	GB535 2009/08/27-2009/08/28		Eumunida picta	RB-09-GM-040	Slurp Black	11285	27 25.810860	93 34.654164	511
J2-460	GB535 2009/08/27-2009/08/28		Caryophyllia cup coral	RB-09-GM-041	Slurp Blue	9504	27 25.424676	93 35.640372	537
J2-460	GB535 2009/08/27-2009/08/28		*Lophelia* pertusa	RB-09-GM-042	Stbd	10793	27 25.680888	93 35.010504	516
J2-460	GB535 2009/08/27-2009/08/28		Munidopsis sp.	RB-09-GM-043	MP F	11269	27 25.810986	93 34.654230	511
J2-460	GB535 2009/08/27-2009/08/28	**Cordes**	Scleracis	LII-09-164	Q 1A	9600	27 25.465284	93 35.630832	538
J2-460	GB535 2009/08/27-2009/08/28		Antipatharian	LII-09-162	Q 2B	9581	27 25.465068	93 35.630844	538
J2-460	GB535 2009/08/27-2009/08/28		Stichopathes	LII-09-161	PA	9966	27 25.560762	93 35.546262	545
J2-460	GB535 2009/08/27-2009/08/28		Stichopathes	LII-09-163	Q 3A	9786	27 25.547940	93 35.574498	550

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-460	GB535 2009/08/27- 2009/08/28		Nicella	LII-09-165	Q 1B	9617	27 25.465398	93 35.630562	538
J2-460	GB535 2009/08/27- 2009/08/28		Octocoral white	LII-09-166	Q 1B	9617	27 25.465398	93 35.630562	538
J2-460	GB535 2009/08/27- 2009/08/28		Nicella	LII-09-167	Q 4B	10384	28 25.638840	94 35.124192	518
J2-460	GB535 2009/08/27- 2009/08/28		Scleracis	LII-09-168	Q 4B	10384	28 25.638840	94 35.124192	518
J2-460	GB535 2009/08/27- 2009/08/28		Narella	LII-09-169	Q 5A	9661	27 25.466160	93 35.630640	538
J2-460	GB535 2009/08/27- 2009/08/28		Nicella	LII-09-170	Q 3A	9786	27 25.547940	93 35.574498	550
J2-460	GB535 2009/08/27- 2009/08/28		Narella w/ egg case	LII-09-171	Q 7A	10070	27 25.572222	93 35.435610	531
J2-460	GB535 2009/08/27- 2009/08/28	**Shank**	Ophiuroid morph7	1129-Oph1	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27- 2009/08/28		Aplacophoran morph1	2245-Wor1	Q 1B	9617	27 25.465398	93 35.630562	538
J2-460	GB535 2009/08/27- 2009/08/28		Polyp morph1	2233-Polyp	Q 1A	9600	27 25.465284	93 35.630832	538
J2-460	GB535 2009/08/27- 2009/08/28		Zoanthid? Octocoral?	2245-Zoa1	Q 1B	9617	27 25.465398	93 35.630562	538
J2-460	GB535 2009/08/27- 2009/08/28		Pycnogonid morph1	1339-Pyc1	Q 8B	11116	27 25.73 2212	93 34.906542	507
J2-460	GB535 2009/08/27- 2009/08/28		Catshark egg case	0231-Sha1	Q 7A	10070	27 25.572222	93 35.435610	531

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-460	GB535 2009/08/27-2009/08/28		Barnacle morph3	0854-Bar1	Q 10				
J2-460	GB535 2009/08/27-2009/08/28		Decorator crab morph1	0231-Cra1	Q 7A	10070	27 25.572222	93 35.435610	531
J2-460	GB535 2009/08/27-2009/08/28		Shrimp morph1	1514-Shi1	Slurp Black	11285	27 25.810860	93 34.654164	511
J2-460	GB535 2009/08/27-2009/08/28		Shrimp morph2	1514-Shi2	Slurp Black	11285	27 25.810860	93 34.654164	511
J2-460	GB535 2009/08/27-2009/08/28		Shrimp morph3	2141-Shi3	Slurp Blue	9504	27 25.424676	93 35.640372	537
J2-460	GB535 2009/08/27-2009/08/28		Amphipod morph4	2141-Amp1	Slurp Blue	9504	27 25.424676	93 35.640372	537
J2-460	GB535 2009/08/27-2009/08/28		Bivalve morph1	1514-Biv1	Slurp Black	11285	27 25.810860	93 34.654164	511
J2-460	GB535 2009/08/27-2009/08/28		Glass sponge morph1	2141Spo1	Slurp Blue	9504	27 25.424676	93 35.640372	537
J2-460	GB535 2009/08/27-2009/08/28		*Eumunida picta*	1514-Cra2	Slurp Black	11285	27 25.810860	93 34.654164	511
J2-460	GB535 2009/08/27-2009/08/28	**Etnoyer**	Scleracis	Lll-09-164	Q 1A	9600	27 25.465284	93 35.630832	538
J2-460	GB535 2009/08/27-2009/08/28		Nicella	Lll-09-165	Q 1B	9617	27 25.465398	93 35.630562	538
J2-460	GB535 2009/08/27-2009/08/28		Octocoral white	Lll-09-166	Q 1B	9617	27 25.465398	93 35.630562	538
J2-460	GB535 2009/08/27-2009/08/28		Nicella	Lll-09-167	Q 4B	10384	28 25.638840	94 35.124192	518

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-460	GB535 2009/08/27-2009/08/28		Scleracis	LII-09-168	Q 4B	10384	28 25.638840	94 35.124192	518
J2-460	GB535 2009/08/27-2009/08/28		Narella	LII-09-169	Q 5A	9661	27 25.466160	93 35.630640	538
J2-460	GB535 2009/08/27-2009/08/28		Nicella	LII-09-170	Q 3A	9786	27 25.547940	93 35.574498	550
J2-460	GB535 2009/08/27-2009/08/28		Narella	LII-09-171	Q 7A	10070	27 25.572222	93 35.435610	531
J2-460	GB535 2009/08/27-2009/08/28	**Demopoulos**	3 bottles	RB-2009-GOM-113	MP B	10463	27 25.637532	93 35.131806	515
J2-460	GB535 2009/08/27-2009/08/28			RB-2009-GOM-114	MP D	10896	27 25.679166	93 35.025096	515
J2-460	GB535 2009/08/27-2009/08/28			RB-2009-GOM-115	MP F	11269	27 25.810986	93 34.654230	511
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-116	PC 1	10550	27 25.644678	93 35.114070	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-117	PC 1	10550	27 25.644678	93 35.114070	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-118	PC 1	10550	27 25.644678	93 35.114070	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments, sorted 0-2 into vial	RB-2009-GOM-119	PC 2	10552	27 25.644540	93 35.113914	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-120	PC 2	10552	27 25.644540	93 35.113914	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-121	PC 2	10552	27 25.644540	93 35.113914	520

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*, sorted 0-2 cm into vial	RB-2009-GOM-122	PC 3	10510	27 25.636752	93 35.132856	519
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-123	PC 3	10510	27 25.636752	93 35.132856	519
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-124	PC 3	10510	27 25.636752	93 35.132856	519
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-125	PC 4	10511	27 25.636752	93 35.132856	519
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-126	PC 4	10511	27 25.636752	93 35.132856	519
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-127	PC 4	10511	27 25.636752	93 35.132856	519
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-128	PC 5	10524	27 25.638882	93 35.134230	517
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-129	PC 5	10524	27 25.638882	93 35.134230	517
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-130	PC 5	10524	27 25.638882	93 35.134230	517
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-131	PC 6	10541	27 25.642314	93 35.116668	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-132	PC 6	10541	27 25.642314	93 35.116668	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-133	PC 6	10541	27 25.642314	93 35.116668	520
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-134	PC 7	10525	27 25.638810	93 35.134302	517

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-135	PC 7	10525	27 25.638810	93 35.134302	517
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-136	PC 7	10525	27 25.638810	93 35.134302	517
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-137	PC 8	10526	27 25.638396	93 35.134950	517
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-138	PC 8	10526	27 25.638396	93 35.134950	517
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-139	PC 8	10526	27 25.638396	93 35.134950	517
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-140	PC 9	10546	27 25.644492	93 35.114232	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-141	PC 9	10546	27 25.644492	93 35.114232	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-142	PC 9	10546	27 25.644492	93 35.114232	520
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-143					
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-144					
J2-460	GB535 2009/08/27-2009/08/28		background sediments	RB-2009-GOM-145					
J2-460	GB535 2009/08/27-2009/08/28		by *Lophelia*	RB-2009-GOM-146	Slurp Green	10530	27 25.637412	93 35.133702	519
J2-461	GC-852 2009/08/29-2009/08/30	**Shank**	Barnacle morph3?	1056-Bar1	Q 1A	11792	27 7.185792	91 9.881196	1426

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-461	GC-852 2009/08/29-2009/08/30		Anemone morph3	1553-Ane1	PA	12170	27 6.622543	91 9.61225	1396
J2-461	GC-852 2009/08/29-2009/08/30		Paramuricea sp.? (182; Quattrini)	1553-Oct1	PA	12170	27 6.622543	91 9.61225	1396
J2-461	GC-852 2009/08/29-2009/08/30		Asterochema sp.?	1553-Oph1	PA	12170	27 6.622543	91 9.61225	1396
J2-461	GC-852 2009/08/29-2009/08/30		Anemone morph3	1553-Ane2	PA	12170	27 6.622543	91 9.61225	1396
J2-461	GC-852 2009/08/29-2009/08/30		Shrimp morph4	1126-Shi1	Slurp Red	11832	27 7.196310	91 9.873684	1422
J2-461	GC-852 2009/08/29-2009/08/30		Sergestid?	1126-Shi2	Slurp Red	11832	27 7.196310	91 9.873684	1422
J2-461	GC-852 2009/08/29-2009/08/30		Ophiuroid morph9	1600-Oph2	PF	12167	27 6.622550	91 9.961233	1396
J2-461	GC-852 2009/08/29-2009/08/30		Purple sorft coral (Quattrini; 185)	1600-Oct2	PF	12167	27 6.622550	91 9.961233	1396
J2-461	GC-852 2009/08/29-2009/08/30		Hermit crab morph1	1126-Cra1	Slurp Red	11832	27 7.196310	91 9.873684	1422
J2-461	GC-852 2009/08/29-2009/08/30		Amphipods	1126-Amp1	Slurp Red	11832	27 7.196310	91 9.873684	1422
J2-461	GC-852 2009/08/29-2009/08/30		Zoanthid morph2	1600-Zoa1	PF	12167	27 6.622550	91 9.961233	1396
J2-461	GC-852 2009/08/29-2009/08/30	**Etnoyer**	Swiftia	LII-09-174	Q 1A	11792	27 7.185792	91 9.881196	1426
J2-461	GC-852 2009/08/29-2009/08/30		Narella	LII-09-175	Q 4A	12234	27 6.600602	91 9.963835	1397

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-461	GC-852 2009/08/29-2009/08/30		Irigorgia	Lll-09-176	Q 6A	11876	27 7.193136	91 9.867480	1421
J2-461	GC-852 2009/08/29-2009/08/30			Lll-09-176	Q 2A	11877	27 7.196370	91 9.867679	1422
J2-461	GC-852 2009/08/29-2009/08/30			Lll-09-176	Q 8A	11878	27 7.206690	91 9.877074	1422
J2-461	GC-852 2009/08/29-2009/08/30		Keratoisis	Lll-09-178	Q 1B	11843	27 7.196292	91 9.873684	1421
J2-461	GC-852 2009/08/29-2009/08/30		Keratoisis	Lll-09-179	Q 2C	12230	27 6.601436	91 9.63734	1398
J2-461	GC-852 2009/08/29-2009/08/30		Corallium	Lll-09-180	Q 5B	12507	27 6.603630	91 9.962418	1396
J2-461	GC-852 2009/08/29-2009/08/30		Paramuricea sp.? (182; Quattrini)	Lll-09-182	PA	12170	27 6.622543	91 9.61225	1396
J2-461	GC-852 2009/08/29-2009/08/30		Paramuricea sp.? (182; Quattrini)	Lll-09-183	PA	12170	27 6.622543	91 9.61225	1396
J2-461	GC-852 2009/08/29-2009/08/30		Purple soft coral	Lll-09-185	PF	12167	27 6.622550	91 9.961233	1396
J2-461	GC-852 2009/08/29-2009/08/30		Swiftia	Lll-09-184	Q 3A	12212	27 6.612600	91 9.960834	1395
J2-461	GC-852 2009/08/29-2009/08/30	**Cordes**	Bathypathes sp.	LII-09-173	Q 2B	12203	27 6.612554	91 9.960991	1396
J2-461	GC-852 2009/08/29-2009/08/30		Swiftia sp.	LII-09-174	Q 1A	11792	27 7.185792	91 9.881196	1426
J2-461	GC-852 2009/08/29-2009/08/30		Narella sp. 2	LII-09-175	Q 4A	12234	27 6.600602	91 9.963835	1397

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-461	GC-852 2009/08/29-2009/08/30		Iridigorgia sp.	LII-09-176	Q 6A	11876	27 7.193136	91 9.867480	1421
J2-461	GC-852 2009/08/29-2009/08/30		Iridigorgia sp.	LII-09-176	Q 8A	11878	27 7.206690	91 9.877074	1422
J2-461	GC-852 2009/08/29-2009/08/30		Iridigorgia sp.	LII-09-176	Q 2A	11877	27 7.196370	91 9.867679	1422
J2-461	GC-852 2009/08/29-2009/08/30		Isididae	LII-09-177	Q 6A	11876	27 7.193136	91 9.867480	1421
J2-461	GC-852 2009/08/29-2009/08/30		Isididae	LII-09-177	Q 8A	11878	27 7.206690	91 9.877074	1422
J2-461	GC-852 2009/08/29-2009/08/30		Keratoisis sp.-White	LII-09-178*	Q 1B	11843	27 7.196292	91 9.873684	1421
J2-461	GC-852 2009/08/29-2009/08/30		Keratoisis sp.-Orange	LII-09-179	Q 2C	12230	27 6.601436	91 9.63734	1398
J2-461	GC-852 2009/08/29-2009/08/30		Corallium sp.	LII-09-180	Q 5B	12507	27 6.603630	91 9.962418	1396
J2-461	GC-852 2009/08/29-2009/08/30		Keratoisis sp.-White	LII-09-181*	Q 5A	11851	27 7.196304	91 9.873762	1421
J2-461	GC-852 2009/08/29-2009/08/30		Paramuricea sp. 1	LII-09-182	PA	12170	27 6.622543	91 9.61225	1396
J2-461	GC-852 2009/08/29-2009/08/30		Paramuricea sp. 1	LII-09-183	PA	12170	27 6.622543	91 9.61225	1396
J2-461	GC-852 2009/08/29-2009/08/30		Swiftia sp.	LII-09-184	Q 3A	12212	27 6.612600	91 9.960834	1395
J2-461	GC-852 2009/08/29-2009/08/30		Alcyonacean-Purple	LII-09-185	PF	12167	27 6.622550	91 9.961233	1396

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-461	GC-852 2009/08/29-2009/08/30	**Morrison**	Madrepora oculata-pink	RB-09-GM-045	Q 10A	12742	27 6.588498	91 9.970176	1399
J2-461	GC-852 2009/08/29-2009/08/30		Madrepora oculata-yellow	RB-09-GM-046	Q 10A	12742	27 6.588498	91 9.970176	1399
J2-461	GC-852 2009/08/29-2009/08/30		Enallopsammia rostrata	RB-09-GM-047	Q 7A	12730	27 6.588516	91 9.69990	1398
J2-461	GC-852 2009/08/29-2009/08/30		Pink film on dead M. oculata	RB-09-GM-048	Q 10A	12742	27 6.588498	91 9.970176	1399
J2-461	GC-852 2009/08/29-2009/08/30		Munida sp. Red eggs	RB-09-GM-049	Slurp Red	11832	27 7.196310	91 9.873684	1422
J2-461	GC-852 2009/08/29-2009/08/30		Munida sp. Red eggs	RB-09-GM-050	Slurp Red	11832	27 7.196310	91 9.873684	1422
J2-461	GC-852 2009/08/29-2009/08/30		Uroptychus sp.	RB-09-GM-051	Slurp Red	11832	27 7.196310	91 9.873684	1422
J2-461	GC-852 2009/08/29-2009/08/30	**Demopoulos**		RB-2009-GOM-147	PC 1	12378	27 6.611880	91 9.823326	1447
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-148	PC 1	12378	27 6.611880	91 9.823326	1447
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-149	PC 1	12378	27 6.611880	91 9.823326	1447
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-150	PC 2	12382	27 6.611874	91 9.823326	1447
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-151	PC 2	12382	27 6.611874	91 9.823326	1447
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-152	PC 2	12382	27 6.611874	91 9.823326	1447

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-461	GC-852 2009/08/29-2009/08/30		split for sediments and macro iso	RB-2009-GOM-153	PC 3	12385	27 6.611874	91 9.823326	1447
J2-461	GC-852 2009/08/29-2009/08/30		split for sediments and macro iso	RB-2009-GOM-154	PC 3	12385	27 6.611874	91 9.823326	1447
J2-461	GC-852 2009/08/29-2009/08/30		split for sediments and macro iso	RB-2009-GOM-155	PC 3	12385	27 6.611874	91 9.823326	1447
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-156	PC 4	12440	27 6.613224	91 9.912582	1401
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-157	PC 4	12440	27 6.613224	91 9.912582	1401
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-158	PC 4	12440	27 6.613224	91 9.912582	1401
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-159	PC 5	12443	27 6.613398	91 9.913236	1401
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-160	PC 5	12443	27 6.613398	91 9.913236	1401
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-161	PC 5	12443	27 6.613398	91 9.913236	1401
J2-461	GC-852 2009/08/29-2009/08/30		processed for isotopes	RB-2009-GOM-162	PC 7	12453	27 6.611028	91 9.916194	1401
J2-461	GC-852 2009/08/29-2009/08/30		processed for isotopes	RB-2009-GOM-163	PC 7	12453	27 6.611028	91 9.916194	1401
J2-461	GC-852 2009/08/29-2009/08/30		processed for isotopes	RB-2009-GOM-164	PC 7	12453	27 6.611028	91 9.916194	1401
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-165	PC 8	12450	27 6.611154	91 9.916146	1401

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-166	PC 8	12450	27 6.611154	91 9.916146	1401
J2-461	GC-852 2009/08/29-2009/08/30			RB-2009-GOM-167	PC 8	12450	27 6.611154	91 9.916146	1401
J2-461	GC-852 2009/08/29-2009/08/30	**MacDonald/Joy**	Microbial Mat		PC 6	12456	27 6.611052	91 9.916308	1401
J2-461	GC-852 2009/08/29-2009/08/30		Microbial Mat		PC 9	12458	27 6.611202	91 9.916386	1401
J2-461	GC-852 2009/08/29-2009/08/30		Microbial Mat		PC 10	12461	27 6.611184	91 9.916464	1401
J2-462	GC-388 2009/08/30-2009/08/	**Shank**	Paramuricea	1634-Oph1	Q 14A	13126	27 40.346832	90 28.572936	836
J2-462	GC-388 2009/08/30-2009/08/		Paramuricea	1634-Oph2	Q 14A	13126	27 40.346832	90 28.572936	836
J2-462	GC-388 2009/08/30-2009/08/		Paramuricea	1634-Wor1	Q 14A	13126	27 40.346832	90 28.572936	836
J2-462	GC-388 2009/08/30-2009/08/		Callogorgia	1742-Oph1	Q 2A	13250	27 40.370262	90 28.570320	829
J2-462	GC-388 2009/08/30-2009/08/		Callogorgia	1624-Oph1	PA 1	13111	27 40.345560	90 28.574190	836
J2-462	GC-388 2009/08/30-2009/08/		Callogorgia	1624-Oph2	PA 1	13111	27 40.345560	90 28.574190	836
J2-462	GC-388 2009/08/30-2009/08/		Callogorgia	1730-Oph1	Q 3A	13225	27 40.370142	90 28.573320	829
J2-462	GC-388 2009/08/30-2009/08/	**Etnoyer**	Paramuricea	LII-09-187	Q 14A	13126	27 40.346832	90 28.572936	836

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-462	GC-388 2009/08/30-2009/08/		Purple Gorgonian	Lll-09-189	Q 1A	13447	27 40.529652	90 28.732572	820
J2-462	GC-388 2009/08/30-2009/08/		Callogorgia	Lll-09-190	Q 2A	13250	27 40.370262	90 28.570320	829
J2-462	GC-388 2009/08/30-2009/08/		Callogorgia	Lll-09-191	Q 3A	13225	27 40.370142	90 28.573320	829
J2-462	GC-388 2009/08/30-2009/08/		Iridogorgia	Lll-09-192	PA 2	13110	27 40.345656	90 28.574208	836
J2-462	GC-388 2009/08/30-2009/08/	**Cordes**	Callogorgia sp.	LII-09-186	Q 15A	13193	27 40.366500	90 28.576506	829
J2-462	GC-388 2009/08/30-2009/08/		Paramuricea sp. 5	LII-09-187	Q 14A	13126	27 40.346832	90 28.572936	836
J2-462	GC-388 2009/08/30-2009/08/		Bathypathes sp.	LII-09-188	Q 16A	13710	27 40.567380	90 28.58194	842
J2-462	GC-388 2009/08/30-2009/08/		Paramuricea sp. 6	LII-09-189	Q 1A	13447	27 40.529652	90 28.732572	820
J2-462	GC-388 2009/08/30-2009/08/		Callogorgia sp.	LII-09-190	Q 2A	13250	27 40.370262	90 28.570320	829
J2-462	GC-388 2009/08/30-2009/08/		Callogorgia sp.	LII-09-191	Q 3A	13225	27 40.370142	90 28.573320	829
J2-462	GC-388 2009/08/30-2009/08/		Chrysogorgia sp. 2	LII-09-192	PA 2	13110	27 40.345656	90 28.574208	836
J2-462	GC-388 2009/08/30-2009/08/		Callogorgia sp.	LII-09-193	PA 1	13111	27 40.345560	90 28.574190	836
J2-462	GC-388 2009/08/30-2009/08/	**Morrison**	Munidopsis sp. Lg orange eggs	RB-09-GM-052	PA 2	13110	27 40.345656	90 28.574208	836

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-462	GC-388 2009/08/30-2009/08/		Cup coral-Tethocyathus?	RB-09-GM-053	Rock	13755	27 40.569570	90 28.539930	843
J2-462	GC-388 2009/08/30-2009/08/		Cup coral-Tethocyathus?	RB-09-GM-054	Rock	13755	27 40.569570	90 28.539930	843
J2-462	GC-388 2009/08/30-2009/08/	**Demopoulos**	No Samples						
J2-464	MC-751 2009/08/31-2009/09/01	**Cordes**	Paramuricea	LII-09-194	Q 1A	16073	28 11.678082	89 47.940162	437
J2-464	MC-751 2009/08/31-2009/09/01		Paragorgia	LII-09-195	Q 2B	15690	28 11.645562	89 47.940474	438
J2-464	MC-751 2009/08/31-2009/09/01		White Octocoral	LII-09-196	Q 9B	15636	28 11.647902	89 47.949768	432
J2-464	MC-751 2009/08/31-2009/09/01		Callogorgia	LII-09-197	Q 2B	15690	28 11.645562	89 47.940474	438
J2-464	MC-751 2009/08/31-2009/09/01		Callogorgia w/ ophuriod	LII-09-198	Q 1A	16073	28 11.678082	89 47.940162	437
J2-464	MC-751 2009/08/31-2009/09/01		callogorgia	LII-09-199	Q 8A	15436	28 11.634126	89 47.919102	440
J2-464	MC-751 2009/08/31-2009/09/01		Paramuricea	LII-09-200	Q 5A	15363	28 11.638464	89 47.917008	439
J2-464	MC-751 2009/08/31-2009/09/01		callogorgia	LII-09-201	Q 5A	15363	28 11.638464	89 47.917008	439
J2-464	MC-751 2009/08/31-2009/09/01		Paramuricea	LII-09-202	Q 6B	15682	28 11.645754	89 47.940936	438
J2-464	MC-751 2009/08/31-2009/09/01		Callogorgia w/ ophuriod	LII-09-203	Q 6A	15384	28 11.636838	89 47.886558	439

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-464	MC-751 2009/08/31-2009/09/01		Callogorgia w/ ophuriod	LII-09-204	Q 5B	16160	28 11.706732	89 48.008736	437
J2-464	MC-751 2009/08/31-2009/09/01		Callogorgia w/ ophuriod	LII-09-205	Q 10A	15277	28 11.621292	89 47.908776	440
J2-464	MC-751 2009/08/31-2009/09/01		Callogorgia w/ ophuriod	LII-09-206	Q 10B	15524	28 11.617422	89 47.889798	441
J2-464	MC-751 2009/08/31-2009/09/01		callogorgia	LII-09-207	Q 4B	15513	28 11.612388	89 47.894250	440
J2-464	MC-751 2009/08/31-2009/09/01		Callogorgia w/ ophuriod	LII-09-208	Q 4A	15445	28 11.633400	89 47.919990	440
J2-464	MC-751 2009/08/31-2009/09/01		Callogorgia w/ ophuriod	LII-09-209	Q 2A	15298	28 11.619348	89 47.916846	437
J2-464	MC-751 2009/08/31-2009/09/01		callogorgia	LII-09-210	Q 3A	15353	28 11.638158	89 47.917410	439
J2-464	MC-751 2009/08/31-2009/09/01		callogorgia	LII-09-211	Q 9A	15280	28 11.619432	89 47.912310	440
J2-464	MC-751 2009/08/31-2009/09/01		callogorgia	LII-09-212	Q 3B	15525	28 11.673498	89 47.873154	441
J2-464	MC-751 2009/08/31-2009/09/01		Callogorgia w/ ophuriod	LII-09-213	Q 7A	15291	28 11.619888	89 47.916798	439
J2-464	MC-751 2009/08/31-2009/09/01	**Etnoyer**	paramoricea 3	LII-09-194	Q 1A	16073	28 11.678082	89 47.940162	437
J2-464	MC-751 2009/08/31-2009/09/01		paragorgia	LII-09-195	Q 2B	15690	28 11.645562	89 47.940474	438
J2-464	MC-751 2009/08/31-2009/09/01		Octocoral White	LII-09-196	Q 9B	15636	28 11.647902	89 47.949768	432

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-464	MC-751 2009/08/31-2009/09/01		Octocoral White	LII-09-197	Q 2B	15690	28 11.645562	89 47.940474	438
J2-464	MC-751 2009/08/31-2009/09/01		Octocoral White	LII-09-198	Q 1A	16073	28 11.678082	89 47.940162	437
J2-464	MC-751 2009/08/31-2009/09/01		Octocoral White	LII-09-199	Q 8A	15436	28 11.634126	89 47.919102	440
J2-464	MC-751 2009/08/31-2009/09/01		Paramueicea 3	LII-09-200	Q 5A	15363	28 11.638464	89 47.917008	439
J2-464	MC-751 2009/08/31-2009/09/01		Paramueicea 3	LII-09-201	Q 5A	15363	28 11.638464	89 47.917008	439
J2-464	MC-751 2009/08/31-2009/09/01		Paramueicea 3	LII-09-202	Q 6A	15384	28 11.636838	89 47.886558	439
J2-464	MC-751 2009/08/31-2009/09/01	**Shank**	Asterochema sp.?	1323-Oph1	Q 1A	16073	28 11.678082	89 47.940162	437
J2-464	MC-751 2009/08/31-2009/09/01		Snail morph2	1323-Sna1	Q 1A	16073	28 11.678082	89 47.940162	437
J2-464	MC-751 2009/08/31-2009/09/01		Paragorgia sp. (Quattrini; 195)	0909-Oct1	Q 2A	15298	28 11.619348	89 47.916846	437
J2-464	MC-751 2009/08/31-2009/09/01		Snail morph2	1414-Sna1	Q 5B	16160	28 11.706732	89 48.008736	437
J2-464	MC-751 2009/08/31-2009/09/01		Ophiuroid morph4	1417-Oph1	Q 5B	16160	28 11.706732	89 48.008736	437
J2-464	MC-751 2009/08/31-2009/09/01		Asterochema sp.?	0613-Oph1	Q 6A	15384	28 11.636838	89 47.886558	439
J2-464	MC-751 2009/08/31-2009/09/01		Astrogomphus sp.?	0845-Oph1	Q 10B	15524	28 11.617422	89 47.889798	441

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-464	MC-751 2009/08/31-2009/09/01		Asterochema sp.?	0749-Oph1	Q 10B	15524	28 11.617422	89 47.889798	441
J2-464	MC-751 2009/08/31-2009/09/01		Astrogomphus sp.?	0735-Oph1	Q 4B	15513	28 11.612388	89 47.894250	440
J2-464	MC-751 2009/08/31-2009/09/01		Asterochema sp.?	0651-Oph1	Q 4A	15445	28 11.633400	89 47.919990	440
J2-464	MC-751 2009/08/31-2009/09/01		Asterochema sp.?	0525-Oph1	Q 2A	15298	28 11.619348	89 47.916846	437
J2-464	MC-751 2009/08/31-2009/09/01		Asterochema sp.?	0759-Oph1	Q 3B	15525	28 11.673498	89 47.873154	441
J2-464	MC-751 2009/08/31-2009/09/01		Astrogomphus sp.?	0542-Oph1	Q 7A	15291	28 11.619888	89 47.916798	439
J2-464	MC-751 2009/08/31-2009/09/01		Asterochema sp.?	0520-Oph1	Q 7A	15291	28 11.619888	89 47.916798	439
J2-464	MC-751 2009/08/31-2009/09/01		Shrimp morph5	0507-Shi1	Slurp Blue	15261	28 11.623482	89 47.885004	440
J2-464	MC-751 2009/08/31-2009/09/01		Zoanthid morph1	0507-Zoa1	Slurp Blue	15261	28 11.623482	89 47.885004	440
J2-464	MC-751 2009/08/31-2009/09/01	**Morrison**	*Lophelia* pertusa	RB-09-GM-055	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-056	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-057	Q 1A	16073	28 11.678082	89 47.940162	437
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-058	Q 8A	15436	28 11.634126	89 47.919102	440

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-059	Q 5B	16160	28 11.706732	89 48.008736	437
J2-464	MC-751 2009/08/31-2009/09/01		Eumunida picta Juvenile	RB-09-GM-060	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-061	Q 10B	15524	28 11.617422	89 47.889798	441
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-062	Q 4B	15513	28 11.612388	89 47.894250	440
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-063	Q 2A	15298	28 11.619348	89 47.916846	437
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-064	Q 3A	15353	28 11.638158	89 47.917410	439
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-065	Q 7A	15291	28 11.619888	89 47.916798	439
J2-464	MC-751 2009/08/31-2009/09/01		Eumunida picta	RB-09-GM-066	Slurp Red	15485	28 11.644500	89 47.897538	439
J2-464	MC-751 2009/08/31-2009/09/01		Hermit crab in tubeworm tube	RB-09-GM-067	Slurp Red	15485	28 11.644500	89 47.897538	439
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-068	Slurp Red	15485	28 11.644500	89 47.897538	439
J2-464	MC-751 2009/08/31-2009/09/01		Munidopsis sp.	RB-09-GM-069	Slurp Orange				
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	RB-09-GM-070	Slurp Blue	15261	28 11.623482	89 47.885004	440
J2-464	MC-751 2009/08/31-2009/09/01		Zoanthids	RB-09-GM-071	Slurp Blue	15261	28 11.623482	89 47.885004	440

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-464	MC-751 2009/08/31-2009/09/01	**Fisher**	*Lophelia*	74	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia*	75	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia*	76	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia*	77	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		Eumunida picta	78	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		Lamellibrachia (vest.)	79	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		Lamellibrachia (vest.)	80	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		Lamellibrachia (vest.)	81	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia*	82	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia*	83	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		hydroids	84	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia*	85	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia*	86	MP B	15102	28 11.631564	89 47.928806	440

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-464	MC-751 2009/08/31-2009/09/01		hydroids	87	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		hydroids	88	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		hydroids	89	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		hydroids	90	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		hydroids	91	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		hydroids	92	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		zoanthid	93	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		zoanthid	94	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		zoanthid	95	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		zoanthid	96	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		zoanthid	97	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		zoanthid	98	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		Eunice	99	MP B	15102	28 11.631564	89 47.928806	440

Lowering #	**Site ID**	**LAB**	**Sample**	**Sample ID**	**Collection Equipment**	**Event Number**	**Lat**	**Long**	**Depth (m)**
J2-464	MC-751 2009/08/31-2009/09/01		Phascolosoma	100	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		Eunice	101	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		Coralliophila	102	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		Munidopsis sp. 3	103	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		Munidopsis sp. ? (a)	104	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		Munidopsis sp. ? (b)	105	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	1l	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	1d-10d	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	1d-10d	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	1d-10d	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01		*Lophelia* pertusa	1l-10l	MP B	15102	28 11.631564	89 47.928806	440
J2-464	MC-751 2009/08/31-2009/09/01	**Demopoulos**		RB-2009-GOM-168	PC 1	15187	28 11.666298	89 47.907426	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-169	PC 1	15187	28 11.666298	89 47.907426	439

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-170	PC 1	15187	28 11.666298	89 47.907426	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-171	PC 2	15179	28 11.667648	89 47.906184	438
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-172	PC 2	15179	28 11.667648	89 47.906184	438
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-173	PC 2	15179	28 11.667648	89 47.906184	438
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-174	PC 3	15160	28 11.665140	89 47.90 2452	440
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-175	PC 3	15160	28 11.665140	89 47.90 2452	440
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-176	PC 4	14954	28 11.628090	89 47.907000	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-177	PC 4	14954	28 11.628090	89 47.907000	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-178	PC 4	14954	28 11.628090	89 47.907000	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-179	PC 5	15161	28 11.664690	89 47.902542	440
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-180	PC 5	15161	28 11.664690	89 47.902542	440
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-181	PC 5	15161	28 11.664690	89 47.902542	440
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-182	PC 6	14922	28 11.634282	89 47.899392	439

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-183	PC 6	14922	28 11.634282	89 47.899392	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-184	PC 6	14922	28 11.634282	89 47.899392	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-185	PC 7	14930	28 11.634282	89 47.899392	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-186	PC 7	14930	28 11.634282	89 47.899392	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-187	PC 7	14930	28 11.634282	89 47.899392	439
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-188	PC 8	16252	28 11.923476	89 48.061026	432
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-189	PC 8	16252	28 11.923476	89 48.061026	432
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-190	PC 8	16252	28 11.923476	89 48.061026	432
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-191	PC 9	16250	28 11.923476	89 48.060990	432
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-192	PC 9	16250	28 11.923476	89 48.060990	432
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-193	PC 9	16250	28 11.923476	89 48.060990	432
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-194					
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-195					

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-464	MC-751 2009/08/31-2009/09/01			RB-2009-GOM-196					
J2-464	MC-751 2009/08/31-2009/09/01		slurp connected at base of live *Lophelia*	RB-2009-GOM-197	Slurp Red	15485	28 11.644500	89 47.897538	439
J2-464	MC-751 2009/08/31-2009/09/01		> 45 um, < 1mm	RB-2009-GOM-198	MP D	14907	28 11.633088	89 47.899704	439
J2-464	MC-751 2009/08/31-2009/09/01		3 bottles, 1 in EtOH	RB-2009-GOM-199	MP B	15102	28 11.631564	89 47.928806	440
J2-465	VK-906 2009/09/01-2009/09/02	**Cordes**	Callogorgia	LII-09-214	Q 16B	18634	29 5.153418	88 23.287848	369
J2-465	VK-906 2009/09/01-2009/09/02		Isidisae	LII-09-217	Q 15B	18319	29 4.432764	88 22.807188	391
J2-465	VK-906 2009/09/01-2009/09/02	**Fisher**	White Leiopathes	LII-09-215	Q 15B	18319	29 4.432764	88 22.807188	391
J2-465	VK-906 2009/09/01-2009/09/02		Red Leiopathes	LII-09-216	Q 15B	18319	29 4.432764	88 22.807188	391
J2-465	VK-906 2009/09/01-2009/09/02		Red Leiopathes	LII-09-218	Q 16A	18276	29 4.423842	88 22.783452	399
J2-465	VK-906 2009/09/01-2009/09/02		White Leiopathes	LII-09-219	Q 2A	17230	29 4.176990	88 22.630560	388
J2-465	VK-906 2009/09/01-2009/09/02		White Leiopathes	LII-09-220	Q 3A	17270	29 4.181712	88 22.631184	389
J2-465	VK-906 2009/09/01-2009/09/02		White Leiopathes	LII-09-221	Q 1B	17207	29 4.161432	88 22.643670	391
J2-465	VK-906 2009/09/01-2009/09/02		Red Leiopathes	LII-09-222	Q 5A	17393	29 4.142496	88 22.637154	390

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-465	VK-906 2009/09/01-2009/09/02		White Leiopathes	LlI-09-223	Q 7B	17491	29 4.136340	88 22.614300	393
J2-465	VK-906 2009/09/01-2009/09/02		White Leiopathes	LlI-09-224	Q 4B	17344	29 4.166370	88 22.633818	389
J2-465	VK-906 2009/09/01-2009/09/02		Red Leiopathes	LlI-09-225	Q 6B	17448	29 4.146048	88 22.619214	392
J2-465	VK-906 2009/09/01-2009/09/02		White Leiopathes	LlI-09-226	Q 7A	17449	29 4.146960	88 22.619976	392
J2-465	VK-906 2009/09/01-2009/09/02		Red Leiopathes	LlI-09-227	Q 9A	17713	29 4.043472	88 22.788726	427
J2-465	VK-906 2009/09/01-2009/09/02		Red Leiopathes	LlI-09-228	Q 10B	17622	29 4.133364	88 22.649208	397
J2-465	VK-906 2009/09/01-2009/09/02		White Leiopathes	LlI-09-229	Q 9B	17893	29 4.141518	88 22.653918	393
J2-465	VK-906 2009/09/01-2009/09/02		White Leiopathes	LlI-09-230	Q 8B	17906	29 4.148226	88 22.659426	393
J2-465	VK-906 2009/09/01-2009/09/02		Red Leiopathes	LlI-09-231	Q 8A	17723	29 4.046292	88 22.784766	427
J2-465	VK-906 2009/09/01-2009/09/02		White Leiopathes	LlI-09-232	Q 10A	17597	29 4.132896	88 22.649238	398
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia*	106	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia*	107	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia*	108	MP F	16985	29 4.179252	88 22.622892	388

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia*	109	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia*	110	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia*	111	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia*	112	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		anemone (whole)	113	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		anemone (whole)	114	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		anemone	115	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		anemone (whole)	116	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		zoanthid (whole)	117	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		zoanthid (whole)	118	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		zoanthid (whole)	119	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		Eumunida picta	120	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Coralliophila	121	MP F	16985	29 4.179252	88 22.622892	388

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-465	VK-906 2009/09/01-2009/09/02		Coralliophila	122	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		Phascolosoma	123	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		Phascolosoma	124	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		Euratella	125	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		sponge	126	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		sponge	127	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		sponge	128	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		sponge	129	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		sponge	130	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		sponge	131	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		Eumunida picta	132	Slurp Black	17453	29 4.143714	88 22.615506	392
J2-465	VK-906 2009/09/01-2009/09/02		Leiogalathea	133	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Munidopsis sp. 3	134	MP F	16985	29 4.179252	88 22.622892	388

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-465	VK-906 2009/09/01-2009/09/02		Echinus	135	Biobox	17838	29 4.140462	88 22.656432	394
J2-465	VK-906 2009/09/01-2009/09/02		Lollipop sponge	136	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Lollipop sponge	137	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Lollipop sponge	138	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Lollipop sponge	139	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Lollipop sponge	140	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Lollipop sponge	141	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Eunice	142	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Eunice	143	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Eunice	144	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Eunice	145	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		Amphipod (2 whole)	146	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		hydroids	147	MP D	17108	29 4.155792	88 22.651434	393

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	1l-5l	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	1d-10d	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	1d-10d	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	1l-4l	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02	**Morrison**	*Lophelia* pertusa	RB-09-GM-074	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-075	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-076	Q 15B	18319	29 4.432764	88 22.807188	391
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-077	Q 14A	18735	29 5.086270	88 23.262718	368
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-078	Q 16A	18276	29 4.423842	88 22.783452	399
J2-465	VK-906 2009/09/01-2009/09/02		Eunicid	RB-09-GM-079	Q 14A	18735	29 5.086270	88 23.262718	368
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-080	Biobox	17838	29 4.140462	88 22.656432	394
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-081	Q 3A	17270	29 4.181712	88 22.631184	389
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-082	Q 2A	17230	29 4.176990	88 22.630560	388

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-083	Q 1B	17207	29 4.161432	88 22.643670	391
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-084	Q 1A	17172	29 4.161738	88 22.644276	392
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-085	Q 7B	17491	29 4.136340	88 22.614300	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-086	Q 4A	17324	29 4.165764	88 22.634334	389
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-087	Q 6A	17418	29 4.115664	88 22.633584	390
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-088	Q 3B	17294	29 4.182726	88 22.631526	389
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-089	Q 10B	17622	29 4.133364	88 22.649208	397
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-090	Q 8B	17906	29 4.148226	88 22.659426	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-091	Q 8A	17723	29 4.046292	88 22.784766	427
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-092	Q 9A	17713	29 4.043472	88 22.788726	427
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-093	Q 6B	17448	29 4.146048	88 22.619214	392
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-094	Q 9B	17893	29 4.141518	88 22.653918	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-095	Q 5B	17397	29 4.130400	88 22.641582	390

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-465	VK-906 2009/09/01-2009/09/02		Eumunida picta	RB-09-GM-096	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-097	Q 4B	17344	29 4.166370	88 22.633818	389
J2-465	VK-906 2009/09/01-2009/09/02		*Lophelia* pertusa	RB-09-GM-098	Q 10A	17597	29 4.132896	88 22.649238	398
J2-465	VK-906 2009/09/01-2009/09/02		Eumunida picta	RB-09-GM-099	Slurp Black	17453	29 4.143714	88 22.615506	392
J2-465	VK-906 2009/09/01-2009/09/02		Munidopsis sp.	RB-09-GM-100	Slurp Black	17453	29 4.143714	88 22.615506	392
J2-465	VK-906 2009/09/01-2009/09/02		Echinus tylodes	RB-09-GM-101	Port Biobox	17247	29 4.176324	88 22.630404	387
J2-465	VK-906 2009/09/01-2009/09/02	**Demopoulos**		RB-2009-GOM-200	PC 1	17007	29 4.182180	88 22.621218	388
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-201	PC 1	17007	29 4.182180	88 22.621218	388
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-202	PC 1	17007	29 4.182180	88 22.621218	388
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-203	PC 2	17009	29 4.182474	88 22.619628	388
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-204	PC 2	17009	29 4.182474	88 22.619628	388
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-205	PC 2	17009	29 4.182474	88 22.619628	388
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-206	PC 3	17022	29 4.182258	88 22.619118	388

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-207	PC 3	17022	29 4.182258	88 22.619118	388
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-208	PC 3	17022	29 4.182258	88 22.619118	388
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-209	PC 4	17125	29 4.121334	88 22.625622	393
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-210	PC 4	17125	29 4.121334	88 22.625622	393
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-211	PC 4	17125	29 4.121334	88 22.625622	393
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-212	PC 5	17122	29 4.125168	88 22.621554	393
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-213	PC 5	17122	29 4.125168	88 22.621554	393
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-214	PC 5	17122	29 4.125168	88 22.621554	393
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-215	PC 6	17685	29 4.035444	88 22.811310	432
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-216	PC 6	17685	29 4.035444	88 22.811310	432
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-217	PC 6	17685	29 4.035444	88 22.811310	432
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-218	PC 7	17687	29 4.035354	88 22.811340	432
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-219	PC 7	17687	29 4.035354	88 22.811340	432

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-220	PC 7	17687	29 4.035354	88 22.811340	432
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-221	PC 8	17692	29 4.035588	88 22.811286	432
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-222	PC 8	17692	29 4.035588	88 22.811286	432
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-223	PC 8	17692	29 4.035588	88 22.811286	432
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-224					
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-225					
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-226					
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-227	MP D	17108	29 4.155792	88 22.651434	393
J2-465	VK-906 2009/09/01-2009/09/02			RB-2009-GOM-228	MP F	16985	29 4.179252	88 22.622892	388
J2-465	VK-906 2009/09/01-2009/09/02		rough sorted, base of live *Lophelia*	RB-2009-GOM-229	Slurp Red	17485	29 4.140348	88 22.614306	392
J2-466	VK-826 2009/09/03-2009/09/04	**Cordes**	callogorgia w/oph	LII-09-233	Biochamber Right	20646	29 9l849779	88 0.696068	459
J2-466	VK-826 2009/09/03-2009/09/04		Paragorgia	LII-09-237	Q 9A	19192	29 9.4402	88 0.978252	476
J2-466	VK-826 2009/09/03-2009/09/04	**Fisher**	Red Leiopathes	LII-09-234	Q 2A	19120	29 9.393024	88 0.982308	486

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-235	Q 3B	19108	29 9.395910	88 0.983280	486
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-236	Q 3A	19094	29 9.389064	88 0.985218	489
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-238	Q 9B	19217	29 9.447096	88 0.970770	476
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-239	Q 9A	19192	29 9.4402	88 0.978252	476
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-240	Q 5B	19166	29 9.424656	88 0.978738	479
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-241	Q 5A	19147	29 9.412908	88 0.978852	482
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-242	Q 6A	19129	29 9.402660	88 0.979260	484
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-243	Q 6B	19136	29 9.405126	88 0.979284	484
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-244	Q 10B	19004	29 9.362520	88 0.969468	500
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-245	Q 10A	18997	29 9.362514	88 0.969456	500
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-246	Q 7A	19035	29 9.367680	88 0.985824	498
J2-466	VK-826 2009/09/03-2009/09/04		Red Leiopathes	LII-09-247	Q 7B	19072	29 9.381684	88 0.979872	492
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	1d-10d	MP B	20370	29 9.890106	88 0.696684	462

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	1l-10l	MP B	20370	29 9.890106	88 0.696684	462
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	1d-10d	MP D	19361	29 9.463374	88 0.965880	475
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	148	MP B	20370	29 9.890106	88 0.696684	462
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	149	MP B	20370	29 9.890106	88 0.696684	462
J2-466	VK-826 2009/09/03-2009/09/04		galatheid	150	MP B	20370	29 9.890106	88 0.696684	462
J2-466	VK-826 2009/09/03-2009/09/04		Beryx splendors	151	on *Jason*	#N/A	#N/A	#N/A	#N/A
J2-466	VK-826 2009/09/03-2009/09/04		Beryx splendors (SI 151, 152 from same indiv)	152	on *Jason*	#N/A	#N/A	#N/A	#N/A
J2-466	VK-826 2009/09/03-2009/09/04		Munidopsis sp. 2 (?)	153	MP D	19361	29 9.463374	88 0.965880	475
J2-466	VK-826 2009/09/03-2009/09/04	**Shank**	Astrogomphus sp.?	0839-Oph2	Biochamber Right	20646	29 9l849779	88 0.696068	459
J2-466	VK-826 2009/09/03-2009/09/04		Ophiuroid morph4	0839-Oph3	Biochamber Right	20646	29 9l849779	88 0.696068	459
J2-466	VK-826 2009/09/03-2009/09/04		Callogorgia sp. (Quattrini; 233)	0839-Oct1	Biochamber Right	20646	29 9l849779	88 0.696068	459
J2-466	VK-826 2009/09/03-2009/09/04		Astrogomphus sp.?	0822-Oph	Q 13A	20626	29 9.858396	88 0.699840	456
J2-466	VK-826 2009/09/03-2009/09/04		Astrogomphus sp.?	0827-Oph	Biochamber Left	20631	29 9.859508	88 0.690576	456

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-466	VK-826 2009/09/03-2009/09/04		Paragorgia sp. (Quattrini; 237)	1710-OCt1	Q 9A	19192	29 9.4402	88 0.978252	476
J2-466	VK-826 2009/09/03-2009/09/04	**Morrison**	*Lophelia* pertusa	RB-09-GM-102	Q 11B	20572	29 9.876510	88 0.703344	458
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-103	Q 11A	20555	29 9.884304	88 0.699054	460
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-104	Q 12A	20589	29 9.859782	88 0.699840	457
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-105	Q 13A	20626	29 9.858396	88 0.699840	456
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-106	MP B	20370	29 9.890106	88 0.696684	462
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-107	Biochamber Left	20631	29 9.859508	88 0.690576	456
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-108	Q 2A	19120	29 9.393024	88 0.982308	486
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-109	Q 3A	19094	29 9.389064	88 0.985218	489
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-110	Q 3B	19108	29 9.395910	88 0.983280	486
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-111	Q 8A	20546	29 9.885238	88 0.703560	460
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-112	Q 5A	19147	29 9.412908	88 0.978852	482
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-113	Q 4A	20506	29 9.892974	88 0.702192	462

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-114	Q 9B	19217	29 9.447096	88 0.970770	476
J2-466	VK-826 2009/09/03-2009/09/04		Eunicid	RB-09-GM-115	Q 9B	19217	29 9.447096	88 0.970770	476
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-116	Q 5A	19147	29 9.412908	88 0.978852	482
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-117	Q 6B	19136	29 9.405126	88 0.979284	484
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-118	Q 1B	20519	29 9.901230	88 0.708564	462
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-119	Q 4B	20524	29 9.900966	88 0.708258	461
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-120	Q 6A	19129	29 9.402660	88 0.979260	484
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-121	Q 1A	20496	29 9.888588	88 0.700830	461
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-122	Q 5B	19166	29 9.424656	88 0.978738	479
J2-466	VK-826 2009/09/03-2009/09/04		Munida micropthalma?	RB-09-GM-123	MP B	20370	29 9.890106	88 0.696684	462
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-124	Q 10A	18997	29 9.362514	88 0.969456	500
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-125	Q 10B	19004	29 9.362520	88 0.969468	500
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-126	Q 7A	19035	29 9.367680	88 0.985824	498

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-466	VK-826 2009/09/03-2009/09/04		*Lophelia* pertusa	RB-09-GM-127	Q 7B	19072	29 9.381684	88 0.979872	492
J2-466	VK-826 2009/09/03-2009/09/04		Echinus tylodes	RB-09-GM-146	Port	20743	29 9.755442	88 0.703578	458
J2-466	VK-826 2009/09/03-2009/09/04	**Demopoulos**		RB-2009-GOM-230	PC 1	19380	29 9.462588	88 0.964980	475
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-231	PC 1	19380	29 9.462588	88 0.964980	475
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-232	PC 1	19380	29 9.462588	88 0.964980	475
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-233	PC 2	19385	29 9.463614	88 0.966144	474
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-234	PC 2	19385	29 9.463614	88 0.966144	474
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-235	PC 2	19385	29 9.463614	88 0.966144	474
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-236	PC 3	19391	29 9.463566	88 0.967314	474
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-237	PC 3	19391	29 9.463566	88 0.967314	474
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-238	PC 3	19391	29 9.463566	88 0.967314	474
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-239	PC 4	19545	29 9.490200	88 1.005312	469
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-240	PC 4	19545	29 9.490200	88 1.005312	469

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-241	PC 4	19545	29 9.490200	88 1.005312	469
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-242	PC 5	19551	29 9.489996	88 1.003962	469
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-243	PC 5	19551	29 9.489996	88 1.003962	469
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-244	PC 5	19551	29 9.489996	88 1.003962	469
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-245	PC 6	19553	29 9.490014	88 1.003932	469
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-246	PC 6	19553	29 9.490014	88 1.003932	469
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-247	PC 6	19553	29 9.490014	88 1.003932	469
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-248	PC 7				
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-249	PC 7				
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-250	PC 7				
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-251	PC 8				
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-252	PC 9				
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-253	PC 9				

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-254	PC 9				
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-255					
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-256					
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-257					
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-258	MP B	20370	29 9.890106	88 0.696684	462
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-259	MP D	19361	29 9.463374	88 0.965880	475
J2-466	VK-826 2009/09/03-2009/09/04			RB-2009-GOM-260	MP F	19520	29 9.489870	88 1.004856	469
J2-467	VK-826 2009/09/04-2009/09/05	**Cordes**	Callogorgia	LII-09-249	Q 2A	22516	29 9.771222	88 0.890298	456
J2-467	VK-826 2009/09/04-2009/09/05		Callogorgia	LII-09-250	Q 2B	22530	29 9.769098	88 0.891024	457
J2-467	VK-826 2009/09/04-2009/09/05		Callogorgia	LII-09-257	Q 7A	22478	29 9.772944	88 0.891234	456
J2-467	VK-826 2009/09/04-2009/09/05		Callogorgia	LII-09-258	Q 7B	22489	29 9.772956	88 0.891270	456
J2-467	VK-826 2009/09/04-2009/09/05		Callogorgia	LII-09-259	Q 3B	22505	29 9.773190	88 0.892038	455
J2-467	VK-826 2009/09/04-2009/09/05		Callogorgia	LII-09-260	Q 3A	22222	29 9.431154	88 0.883152	482

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-467	VK-826 2009/09/04-2009/09/05		Nicella	LII-09-266	Q 8B	21027	29 9.462096	88 0.646476	497
J2-467	VK-826 2009/09/04-2009/09/05		Nicella	LII-09-267	Q 8A	20987	29 9.436422	88 0.644280	504
J2-467	VK-826 2009/09/04-2009/09/05		Uknown Unbranched	LII-09-268	Q 8A	20987	29 9.436422	88 0.644280	504
J2-467	VK-826 2009/09/04-2009/09/05		Sclerasis	LII-09-269	Q 9B	21530	29 9.285066	88 0.866586	526
J2-467	VK-826 2009/09/04-2009/09/05		Uknown Unbranched	LII-09-271	Q 9A	21501	29 9.268950	88 0.872238	537
J2-467	VK-826 2009/09/04-2009/09/05	**Fisher**							
J2-467	VK-826 2009/09/04-2009/09/05		Red Leiopathes	LII-09-251	Q 5B	22201	29 9.434046	88 0.879720	481
J2-467	VK-826 2009/09/04-2009/09/05		Orange Leiopahtes	LII-09-252	Q 5A	22188	29 9.432222	88 0.878082	481
J2-467	VK-826 2009/09/04-2009/09/05		Salmon Leiopathes	LII-09-253	Q 4B	22219	29 9.431136	88 0.883170	482
J2-467	VK-826 2009/09/04-2009/09/05		Red Leiopathes	LII-09-254	Q 1A	22153	29 9.432450	88 0.876960	481
J2-467	VK-826 2009/09/04-2009/09/05		Red Leiopathes	LII-09-255	Q 1B	22162	29 9.432444	88 0.876972	481
J2-467	VK-826 2009/09/04-2009/09/05		White Leiopathes	LII-09-256	Q 1B	22162	29 9.432444	88 0.876972	481
J2-467	VK-826 2009/09/04-2009/09/05		Red Leiopathes	LII-09-261	Q 3A	22222	29 9.431154	88 0.883152	482

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-467	VK-826 2009/09/04-2009/09/05		White Leiopathes	LII-09-262	Q 6A	22116	29 9.430296	88 0.874944	482
J2-467	VK-826 2009/09/04-2009/09/05		Red Leiopathes	LII-09-263	Q 10A	21600	29 9.317934	88 0.866604	505
J2-467	VK-826 2009/09/04-2009/09/05		Orange Leiopahtes	LII-09-264	Q 4A	22204	29 9.434016	88 0.879696	481
J2-467	VK-826 2009/09/04-2009/09/05		Orange Leiopahtes	LII-09-265	Q 6A	22116	29 9.430296	88 0.874944	482
J2-467	VK-826 2009/09/04-2009/09/05		Red Leiopathes	LII-09-270	Q 9A	21501	29 9.268950	88 0.872238	537
J2-467	VK-826 2009/09/04-2009/09/05		*Lophelia* pertusa	154	MP F	21158	29 9.521292	88 0.626232	478
J2-467	VK-826 2009/09/04-2009/09/05		*Lophelia* pertusa	155	MP F	21158	29 9.521292	88 0.626232	478
J2-467	VK-826 2009/09/04-2009/09/05		*Lophelia* pertusa	156	MP F	21158	29 9.521292	88 0.626232	478
J2-467	VK-826 2009/09/04-2009/09/05		*Lophelia* pertusa	157	MP F	21158	29 9.521292	88 0.626232	478
J2-467	VK-826 2009/09/04-2009/09/05		*Lophelia* pertusa	158	MP F	21158	29 9.521292	88 0.626232	478
J2-467	VK-826 2009/09/04-2009/09/05		*Lophelia* pertusa	159	MP F	21158	29 9.521292	88 0.626232	478
J2-467	VK-826 2009/09/04-2009/09/05		Munidopsis sp.	154/160	MP F	21158	29 9.521292	88 0.626232	478
J2-467	VK-826 2009/09/04-2009/09/05		Red Leiopathes	LII-09-248	biochamber	22107	29 9.430296	88 0.874944	482

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-467	VK-826 2009/09/04-2009/09/05	**Morrison**	*Lophelia* pertusa	RB-09-GM-128	MP F	21158	29 9.521292	88 0.626232	478
J2-467	VK-826 2009/09/04-2009/09/05		*Lophelia* pertusa	RB-09-GM-129	Q 10A	21600	29 9.317934	88 0.866604	505
J2-467	VK-826 2009/09/04-2009/09/05		Eumunida picta Juvenile	RB-09-GM-130	Q 10A	21600	29 9.317934	88 0.866604	505
J2-467	VK-826 2009/09/04-2009/09/05		*Lophelia* pertusa	RB-09-GM-131	Q 8B	21027	29 9.462096	88 0.646476	497
J2-467	VK-826 2009/09/04-2009/09/05		*Lophelia* pertusa	RB-09-GM-132	Q 8A	20987	29 9.436422	88 0.644280	504
J2-467	VK-826 2009/09/04-2009/09/05	**Demopoulos**		RB-2009-GOM-261	PC 1	21217	29 9.522504	88 0.622674	475
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-262	PC 2	21234	29 9.529668	88 0.618762	479
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-263	PC 2	21234	29 9.529668	88 0.618762	479
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-264	PC 2	21234	29 9.529668	88 0.618762	479
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-265	PC 3	21236	29 9.529068	88 0.620136	479
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-266	PC 5	21242	29 9.529434	88 0.620568	479
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-267	PC 5	21242	29 9.529434	88 0.620568	479
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-268	Slurp Red	21481	29 9.269022	88 0.872286	538

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-269	Slurp Green	21262	29 9.519918	88 0.629826	478
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-270	Slurp Blue	21277	29 9.519432	88 0.634722	478
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-295	MP F	21158	29 9.521292	88 0.626232	478
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-296	PC 3	21236	29 9.529068	88 0.620136	479
J2-467	VK-826 2009/09/04-2009/09/05			RB-2009-GOM-297	PC 5	21242	29 9.529434	88 0.620568	479
J2-467	VK-826 2009/09/04-2009/09/05		shrimp, refer to paper log for more notes,	RB-2009-GOM-397	Slurp Red	21481	29 9.269022	88 0.872286	538
J2-467	VK-826 2009/09/04-2009/09/05		shrimp, refer to paper log for more notes,	RB-2009-GOM-398	Slurp Blue	21277	29 9.519432	88 0.634722	478
J2-467	VK-826 2009/09/04-2009/09/05	**Etnoyer**	Nicella	LII-09-266	Q 8B	21027	29 9.462096	88 0.646476	497
J2-467	VK-826 2009/09/04-2009/09/05		Sclerasis	LII-09-269	Q 9B	21530	29 9.285066	88 0.866586	526
J2-467	VK-826 2009/09/04-2009/09/05	**Shank**	No Samples						
J2-468	VK-76 2009/09/05-2009/09/06	**Bratten**	Stoneware Water Filter	MMS09.15303.C.001	Gear Canister	448	29 13.289442	87 46.582992	608
J2-468	VK-76 2009/09/05-2009/09/06		Copper Sheathing	MMS09.15303.M.002	PA	474	29 13.283082	87 46.579044	608
J2-468	VK-76 2009/09/05-2009/09/06	**Demopoulos**	background	RB-2009-GOM-271	PC 1	311	29 13.246770	87 46.537596	619

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-272	PC 1	311	29 13.246770	87 46.537596	619
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-273	PC 1	311	29 13.246770	87 46.537596	619
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-274	PC 2	314	29 13.247628	87 46.536798	619
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-275	PC 2	314	29 13.247628	87 46.536798	619
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-276	PC 2	314	29 13.247628	87 46.536798	619
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-277	PC 4	319	29 13.255254	87 46.531422	618
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-278	PC 4	319	29 13.255254	87 46.531422	618
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-279	PC 4	319	29 13.255254	87 46.531422	618
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-280	PC 5	331	29 13.267662	87 46.584906	613
J2-468	VK-76 2009/09/05-2009/09/06		wreck	RB-2009-GOM-281	PC 5	331	29 13.267662	87 46.584906	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-282	PC 5	331	29 13.267662	87 46.584906	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-283	PC 6	332	29 13.267662	87 46.584906	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-284	PC 6	332	29 13.267662	87 46.584906	613

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-285	PC 6	332	29 13.267662	87 46.584906	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-286	PC 7	613	29 13.267662	87 46.584348	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-287	PC 7	613	29 13.267662	87 46.584348	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-288	PC 7	613	29 13.267662	87 46.584348	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-289	PC 8	339	29 13.268634	87 46.584348	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-290	PC 8	339	29 13.268634	87 46.584348	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-291	PC 8	339	29 13.268634	87 46.584348	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-292	PC 9	343	29 13.268628	87 46.584348	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-293	PC 9	343	29 13.268628	87 46.584348	613
J2-468	VK-76 2009/09/05-2009/09/06			RB-2009-GOM-294	PC 9	343	29 13.268628	87 46.584348	613
J2-468	VK-76 2009/09/05-2009/09/06								
J2-469	MC 657 2009/09/06-2009/09/07	**Bratten**	Compass	MMS09.15373.CO.001	BioChamber	1433	28 20.625984	87 55.087686	2267
J2-469	MC 657 2009/09/06-2009/09/07		Copper Sheathing	MMS09.15373.M.002	BioBox	1449	28 20.632854	87 55.806246	2265

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-469	MC 657 2009/09/06-2009/09/07		Wood with copper sheathing	MMS09.15373.M.003	Bucket	1368	28 20.631504	87 55.805796	2267
J2-469	MC 657 2009/09/06-2009/09/07	**Demopoulos**		RB-2009-GOM-298	PC 1	819	28 20.574252	87 55.747428	2267
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-299	PC 1	819	28 20.574252	87 55.747428	2267
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-300	PC 1	819	28 20.574252	87 55.747428	2267
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-301	PC 2	891	28 20.629626	87 55.815432	2269
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-302	PC 2	891	28 20.629626	87 55.815432	2269
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-303	PC 2	891	28 20.629626	87 55.815432	2269
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-304	PC 5	895	28 20.624412	87 55.817442	2268
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-305	PC 5	895	28 20.624412	87 55.817442	2268
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-306	PC 5	895	28 20.624412	87 55.817442	2268
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-307	PC 6	894	28 20.624412	87 55.817436	2268
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-308	PC 6	894	28 20.624412	87 55.817436	2268
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-309	PC 6	894	28 20.624412	87 55.817436	2268

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-310	PC 7	890	28 20.629626	87 55.815426	2269
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-311	PC 7	890	28 20.629626	87 55.815426	2269
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-312	PC 7	890	28 20.629626	87 55.815426	2269
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-313	PC 8	827	28 20.574240	87 55.747494	2267
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-314	PC 8	827	28 20.574240	87 55.747494	2267
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-315	PC 8	827	28 20.574240	87 55.747494	2267
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-316	PC 9	823	28 20.574240	87 55.747482	2267
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-317	PC 9	823	28 20.574240	87 55.747482	2267
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-318	PC 9	823	28 20.574240	87 55.747482	2267
J2-469	MC 657 2009/09/06-2009/09/07			RB-2009-GOM-400	Flush				
J2-470	EW 1008 2009/09/07-2009/09/08	**Bratten**		MMS09.15401.C.001	Stbd	2159	27 58.529454	90 4.882998	621
J2-470	EW 1008 2009/09/07-2009/09/08			MMS09.15401.M.002	PC Basket	2215	27 58.545102	90 4.874988	620
J2-470	EW 1008 2009/09/07-2009/09/08			MMS09.15401.I.003	MP	2190	27 58.533606	90 4.880046	621

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-470	EW 1008 2009/09/07-2009/09/08			MMS09.15401.O.004	Slurp Red	2139	27 58.524780	90 4.884612	621
J2-470	EW 1008 2009/09/07-2009/09/08	**Morrison**	*Lophelia* pertusa	RB-09-GM-136	Biochamber 1	2013	27 58.539804	90 4.870980	619
J2-470	EW 1008 2009/09/07-2009/09/08		*Lophelia* pertusa	RB-09-GM-137	Biochamber 2	2041	27 58.527594	90 4.879524	621
J2-470	EW 1008 2009/09/07-2009/09/08		*Lophelia* pertusa	RB-09-GM-138	Q 12A				
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp.	RB-09-GM-139	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp.	RB-09-GM-140	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp.	RB-09-GM-141	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp.	RB-09-GM-142	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp.	RB-09-GM-143	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp. Juv.	RB-09-GM-144	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08		shrimp	RB-09-GM-145	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08	**Demopoulos**		RB-2009-GOM-322	PC 1	1828	27 58.509888	90 4.824006	620
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-323	PC 1	1828	27 58.509888	90 4.824006	620

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-324	PC 1	1828	27 58.509888	90 4.824006	620
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-325	PC 2	1836	27 58.517910	90 4.819860	619
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-326	PC 2	1836	27 58.517910	90 4.819860	619
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-327	PC 2	1836	27 58.517910	90 4.819860	619
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-328	PC 3	1846	27 58.523226	90 4.818198	619
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-329	PC 3	1846	27 58.523226	90 4.818198	619
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-330	PC 3	1846	27 58.523226	90 4.818198	619
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-331	PC 4	1857	27 58.523214	90 4.818180	619
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-332	PC 4	1857	27 58.523214	90 4.818180	619
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-333	PC 4	1857	27 58.523214	90 4.818180	619
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-334	PC 7	1930	27 58.521498	90 4.873392	621
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-335	PC 7	1930	27 58.521498	90 4.873392	621
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-336	PC 7	1930	27 58.521498	90 4.873392	621

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-337	PC 8	1929	27 58.521456	90 4.873404	621
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-338	PC 8	1929	27 58.521456	90 4.873404	621
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-339	PC 8	1929	27 58.521456	90 4.873404	621
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-340	PC 9	1889	27 58.540632	90 4.869618	620
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-341	PC 9	1889	27 58.540632	90 4.869618	620
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-342	PC 9	1889	27 58.540632	90 4.869618	620
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-343		#N/A	#N/A	#N/A	#N/A
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-344		#N/A	#N/A	#N/A	#N/A
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-345		#N/A	#N/A	#N/A	#N/A
J2-470	EW 1008 2009/09/07-2009/09/08			RB-2009-GOM-399	Slurp Blue	1894	27 58.540482	90 4.869690	620
J2-470	EW 1008 2009/09/07-2009/09/08	**Fisher**	Munidopsis sp.	161	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp.	162	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp.	163	Slurp Black	1899	27 58.540416	90 4.869684	620

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp.	164	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-470	EW 1008 2009/09/07-2009/09/08		Munidopsis sp.	165	Slurp Black	1899	27 58.540416	90 4.869684	620
J2-471	GC245 2009/09/08-2009/09/09		Lantern	MMS09.373.CO.001	bucket	3777	27 43.415509	90 42.967753	912
J2-471	GC245 2009/09/08-2009/09/09		Fork	MMS09.373.M.002	biochamber 2	3541	27 43.413911	90 42.958097	911
J2-471	GC245 2009/09/08-2009/09/09		Cupreous Container	MMS09.373.M.003	biochamber 2_A	3830	27 43.416512	90 42.964831	911
J2-471	GC245 2009/09/08-2009/09/09		Sheave	MMS09.373.W.004	Port Biobox	3579	27 43.420551	90 42.963215	911
J2-471	GC245 2009/09/08-2009/09/09		Bell	MMS09.373.M.005	Stbd	3684	27 43.415370	90 42.967379	912
J2-471	GC245 2009/09/08-2009/09/09		Plate	MMS09.373.C.006	Port Biobox 2	3620	27 43.414972 N	90 42.964191	911
J2-471	GC245 2009/09/08-2009/09/09	**Cordes**	callogorgia	LII-09-272	Q 14A	3003	27 43.417609	90 42.963463	911
J2-471	GC245 2009/09/08-2009/09/09		paramuriciea	LII-09-273	Q 14B	#N/A	#N/A	#N/A	#N/A
J2-471	GC245 2009/09/08-2009/09/09		chrysogorgia	LII-09-274	Q 15A	#N/A	#N/A	#N/A	#N/A

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-471	GC245 2009/09/08-2009/09/09		paramuriciea	LII-09-275	Q 14A	3003	27 43.417609	90 42.963463	911
J2-471	GC245 2009/09/08-2009/09/09	**Etnoyer**	callogorgia	LII-09-272	Q 14A	3003	27 43.417609	90 42.963463	911
J2-471	GC245 2009/09/08-2009/09/09		paramuriciea	LII-09-273	Q 14B	#N/A	#N/A	#N/A	#N/A
J2-471	GC245 2009/09/08-2009/09/09		chrysogorgia	LII-09-274	Q 15A	#N/A	#N/A	#N/A	#N/A
J2-471	GC245 2009/09/08-2009/09/09		paramuriciea	LII-09-275	Q 14A	3003	27 43.417609	90 42.963463	911
J2-471	GC245 2009/09/08-2009/09/09	**Demopoulos**	mud from bell- biobox, 4: 500 ml containers	RB-2009-GOM-346	Stbd	3684	27 43.415370	90 42.967379	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-347	bucket	3777	27 43.415509	90 42.967753	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-348	PC 1	2834	27 43.442094	90 42.892338	913
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-349	PC 1	2834	27 43.442094	90 42.892338	913
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-350	PC 1	2834	27 43.442094	90 42.892338	913
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-351	PC 4	2800	27 43.440852	90 42.891432	913

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-352	PC 4	2800	27 43.440852	90 42.891432	913
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-353	PC 4	2800	27 43.440852	90 42.891432	913
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-354	PC 5	2826	27 43.442094	90 42.892344	913
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-355	PC 5	2826	27 43.442094	90 42.892344	913
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-356	PC 5	2826	27 43.442094	90 42.892344	913
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-357	PC 6	0	0	0	0
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-358	PC 6	0	0	0	0
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-359	PC 6	0	0	0	0
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-360	PC 7	2917	27 43.428209	90 42.964274	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-361	PC 7	2917	27 43.428209	90 42.964274	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-362	PC 7	2917	27 43.428209	90 42.964274	912

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-363	PC 8	2910	27 43.428497	90 42.964327	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-364	PC 8	2910	27 43.428497	90 42.964327	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-365	PC 8	2910	27 43.428497	90 42.964327	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-366	PC 9	2902	27 43.428762	90 42.964302	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-367	PC 9	2902	27 43.428762	90 42.964302	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-368	PC 9	2902	27 43.428762	90 42.964302	912
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-369		#N/A	#N/A	#N/A	#N/A
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-370		#N/A	#N/A	#N/A	#N/A
J2-471	GC245 2009/09/08-2009/09/09			RB-2009-GOM-371		#N/A	#N/A	#N/A	#N/A
J2-472	MC497 2009/09/09-2009/09/10	**Morrison**	*Lophelia* pertusa	RB-09-GM-147	Biochamber 1	#N/A	#N/A	#N/A	#N/A
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-148	Biochamber 2	4761	28 26.467890	89 19.093560	547

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-149	Q 4A	4777	28 26.463582	89 19.092006	548
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-150	Q 1A	4851	28 26.409966	89 19.075860	551
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-151	Q 6A	4619	29 26.477454	90 19.101114	541
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-152	Q 10A	4418	28 26.466396	89 19.105116	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-153	Q 10B	4606	28 26.477910	89 19.101708	540
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-154	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-155	Q 9A	4441	28 26.472222	89 19.107552	545
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-156	Q 9B	4696	28 26.474838	89 19.096530	542
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia* pertusa	RB-09-GM-157	Q 8B	4657	28 26.478012	89 19.102104	542
J2-472	MC497 2009/09/09-2009/09/10		Munidopsis sp.	RB-09-GM-158	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		Munidopsis sp.	RB-09-GM-159	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10	**Cordes**	Octocoral	LII-09-276	Q 8A	4619	28 26.477454	89 19.101114	541
J2-472	MC497 2009/09/09-2009/09/10	**Etnoyer**	Octocoral	LII-09-276	Q 8A	4619	28 26.477454	89 19.101114	541

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-472	MC497 2009/09/09-2009/09/10	**Demopoulos**		RB-2009-GOM-372	PC 1	4319	28 26.422170	89 19.163328	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-373	PC 1	4319	28 26.422170	89 19.163328	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-374	PC 1	4319	28 26.422170	89 19.163328	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-375	PC 3	4333	28 26.419692	89 19.162296	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-376	PC 3	4333	28 26.419692	89 19.162296	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-377	PC 3	4333	28 26.419692	89 19.162296	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-378	PC 4	4338	28 26.419704	89 19.162296	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-379	PC 4	4338	28 26.419704	89 19.162296	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-380	PC 4	4338	28 26.419704	89 19.162296	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-381	PC 5	4346	28 26.416848	89 19.161570	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-382	PC 5	4346	28 26.416848	89 19.161570	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-383	PC 5	4346	28 26.416848	89 19.161570	561
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-384	PC 6	4935	28 26.467008	89 19.095696	557

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-385	PC 6	4935	28 26.467008	89 19.095696	557
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-386	PC 6	4935	28 26.467008	89 19.095696	557
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-387	PC 8	4935	28 26.467008	89 19.095696	557
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-388	PC 8	4935	28 26.467008	89 19.095696	557
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-389	PC 8	4935	28 26.467008	89 19.095696	557
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-390	PC 9	4933	28 26.467986	89 19.094916	557
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-391	PC 9	4933	28 26.467986	89 19.094916	557
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-392	PC 9	4933	28 26.467986	89 19.094916	557
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-393		#N/A	#N/A	#N/A	#N/A
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-394		#N/A	#N/A	#N/A	#N/A
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-395		#N/A	#N/A	#N/A	#N/A
J2-472	MC497 2009/09/09-2009/09/10			RB-2009-GOM-396	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10	**Fisher**	shrimp (whole)	166	MP D	4906	28 26.468772	89 19.094892	557

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-472	MC497 2009/09/09-2009/09/10		shrimp (whole)	167	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		shrimp (whole)	168	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		anemone (whole)	169	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		anemone (whole)	170	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		anemone (whole)	171	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		hydroid	172	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		hydroid	173	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		polynoid polychaete	174	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		polynoid polychaete	175	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		polynoid polychaete	176	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		Coralliophila	177	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		barnacle	178	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		barnacle	179	MP D	4906	28 26.468772	89 19.094892	557

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-472	MC497 2009/09/09- 2009/09/10		barnacle	180	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		Munidopsis sp.1	181	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		Munidopsis sp.1	182	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		Munidopsis sp.1	183	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		Munidopsis sp.3	184	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		*Lophelia pertusa*	185	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		*Lophelia pertusa*	186	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		*Lophelia pertusa*	187	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		*Lophelia pertusa*	1d	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		*Lophelia pertusa*	2d	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		*Lophelia pertusa*	3d	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		*Lophelia pertusa*	4d	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09- 2009/09/10		*Lophelia pertusa*	5d	MP D	4906	28 26.468772	89 19.094892	557

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	6d	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	7d	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	8d	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	9d	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	10d	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	1l	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	2l	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	3l	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	4l	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	5l	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	6l	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	7l	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	8l	MP D	4906	28 26.468772	89 19.094892	557

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	9l	MP D	4906	28 26.468772	89 19.094892	557
J2-472	MC497 2009/09/09-2009/09/10		*Lophelia pertusa*	10l	MP D	4906	28 26.468772	89 19.094892	557
J2-473	VK906 9/10-9/11		near coral	PC 1	PC	23134	29 4.142736	88 22.627302	393
J2-473	VK906 9/10-9/11		near coral	PC 2	PC	23138	29 4.142670	88 22.627464	393
J2-473	VK906 9/10-9/11			PC 3	PC				
J2-473	VK906 9/10-9/11			PC 4	PC				
J2-473	VK906 9/10-9/11			PC 5	PC				
J2-473	VK906 9/10-9/11			PC 6	PC				
J2-473	VK906 9/10-9/11			PC 7	PC				
J2-473	VK906 9/10-9/11			PC 8	PC				
J2-473	VK906 9/10-9/11			PC 9	PC				
J2-473	VK906 9/10-9/11			PC 10	PC				
J2-473	VK906 9/10-9/11		*Lophelia*	MP D		23115	29 4.142664	88 22.627068	393
J2-473	VK906 9/10-9/11		Leiopathes white/salmon	Q 10A		22953	29 4.115262	88 22.653768	402
J2-473	VK906 9/10-9/11		*Lophelia*/Leiopathes orange	Q 10A_2		22931	29 4.115472	88 22.653768	402
J2-473	VK906 9/10-9/11		*Lophelia*/Antipatharian	Q 4B		22894	29 4.086510	88 22.652568	423
J2-473	VK906 9/10-9/11		carbonate	Q6		22707	29 3.878328	88 22.853346	483
J2-473	VK906 9/10-9/11		carbonate	Q2		22704	29 3.878520	88 22.853316	483
J2-473	VK906 9/10-9/11		carbonate	Q5		22704	29 3.878520	88 22.853316	484

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-473	VK906 9/10-9/11		*Lophelia*	Q 4A		22699	29 3.878538	88 22.853868	483
J2-473	VK906 9/10-9/11		water	Niskin	Niskin	22665	29 3.894948	88 22.889928	483
J2-473	VK906 9/10-9/11		carbonate	Q 4A		22660	29 3.894534	88 22.889244	485
J2-473	VK906 9/10-9/11		*Lophelia*	Q 8A		22657	29 3.894624	88 22.889310	485
J2-473	VK906 9/10-9/11		antipatharian/ white	Q 8B		23210	29 4.158684	88 22.606290	394
J2-473	VK906 9/10-9/11		antipatharian/ orange, *Lophelia*	Q 7A		23226	29 4.158846	88 22.620522	392
J2-473	VK906 9/10-9/11		antipatharian/ white	Q 7A_2		23228	29 4.158834	88 22.620528	392
J2-473	VK906 9/10-9/11		antipatharian/ orange	Q 7B		23245	29 4.168494	88 22.628904	390
J2-473	VK906 9/10-9/11		antipatharian/ white	Q 6A		23253	29 4.168482	88 22.628832	390
J2-473	VK906 9/10-9/11		antipatharian/ white	Q 9B		23171	29 4.156266	88 22.620504	392
J2-473	VK906 9/10-9/11		antipatharian orange, lopehlia	Q 9A		23170	29 4.157232	88 22.619688	392
J2-473	VK906 9/10-9/11		antipatharian	BioChamber 1	BioChamber 1	23190	29 4.158576	88 22.614420	392
J2-473	VK906 9/10-9/11		live *Lophelia*	Port Biobox	Port Biobox	23521	29 4.302204	88 22.495890	400
J2-473	VK906 9/10-9/11			Slurp Green	Slurp Green	23152	29 4.142220	88 22.626906	393
J2-473	VK906 9/10-9/11			T:3 Deploy			29 4.117902	88 22.671648	
J2-473	VK906 9/10-9/11			T:2 Deploy			29 4.159110	88 22.664922	
J2-473	VK906 9/10-9/11			T:1 Deploy			29 4.173084	88 22.622988	
J2-473	VK906 9/10-9/11			Marker:23			29 4.142736	88 22.627302	
J2-473	VK906 9/10-9/11			Marker: 1			29 4.115004	88 22.653768	
J2-473	VK906 9/10-9/11			Marker: 19			29 4.156146	88 22.620798	

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-473	VK906 9/10-9/11			Marker: 7			29 4.158690	88 22.606290	
J2-474	VK826 9/11/2009		tubeworms	PC 1	PC	23863	29 9.465582	88 1.181904	513
J2-474	VK826 9/11/2009		bubbles	PC 2	PC	23865	29 9.465576	88 1.181880	513
J2-474	VK826 9/11/2009			PC 3	PC	23868	29 9.465582	88 1.181886	513
J2-474	VK826 9/11/2009			PC 4	PC	23871	29 9.465588	88 1.181892	513
J2-474	VK826 9/11/2009			PC 5	PC				
J2-474	VK826 9/11/2009			PC 6	PC				
J2-474	VK826 9/11/2009			PC 7	PC				
J2-474	VK826 9/11/2009			PC 8	PC				
J2-474	VK826 9/11/2009			PC 9	PC				
J2-474	VK826 9/11/2009			PC 10	PC				
J2-474	VK826 9/11/2009			MP D					
J2-474	VK826 9/11/2009		callogorgia	Q 10A		23558	29 9.271260	88 1.389732	543
J2-474	VK826 9/11/2009		callogorgia/ophuroid arm	Q 10B		23566	29 9.271476	88 1.389330	543
J2-474	VK826 9/11/2009		callogorgia	Q 7A		23568	29 9.271458	88 1.389330	543
J2-474	VK826 9/11/2009		callogorgia	Q 10B_2		23633	29 9.281286	88 1.366164	540
J2-474	VK826 9/11/2009		callogorgia	Q 9A		23636	29 9.281274	88 1.366152	540
J2-474	VK826 9/11/2009		callogorgia	Q 7B		23642	29 9.281226	88 1.366230	540
J2-474	VK826 9/11/2009		carbonate	Q 6A		23657	29 9.281322	88 1.366872	539
J2-474	VK826 9/11/2009		callogorgia	Q 4A		24122	29 9.641436	88 1.129710	454

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-474	VK826 9/11/2009		callogorgia	Q 6A_2		23894	29 9.460758	88 1.176810	511
J2-474	VK826 9/11/2009		callogorgia	Q 6B		23899	29 9.460638	88 1.175790	511
J2-474	VK826 9/11/2009		*Lophelia*	Q 10B_3		23947	29 9.493584	88 1.150512	490
J2-474	VK826 9/11/2009		leiopathes	Q 8A		24071	29 9.588096	88 1.129440	454
J2-474	VK826 9/11/2009		antipatharian	Q 9B		24080	29 9.591666	88 1.128054	453
J2-474	VK826 9/11/2009		antipatharian	Q 4B		24180	29 9.692178	88 0.952380	451
J2-474	VK826 9/11/2009		antipatharian salmon	Q 1A		24194	29 9.710778	88 0.941496	452
J2-474	VK826 9/11/2009		antipatharian red/*Lophelia*	Q 5A		24201	29 9.718416	88 0.938238	451
J2-474	VK826 9/11/2009		antipatharian salmon	Q 5B		24217	29 9.718890	88 0.937866	451
J2-474	VK826 9/11/2009		antipatharian red	Q 3A		24219	29 9.718878	88 0.937878	451
J2-474	VK826 9/11/2009		antipatharian orange/ leiopathes	Q 2B		24336	29 9.790026	88 0.704550	461
J2-474	VK826 9/11/2009		carbonate	Rock		23879	29 9.465294	88 1.181466	513
J2-474	VK826 9/11/2009		*Lophelia*	biobox	biobox	24000	29 9.545916	88 1.103538	465
J2-474	VK826 9/11/2009		*Lophelia*	biochamber 1	biochamber 1	24037	29 9.560472	88 1.124322	460
J2-474	VK826 9/11/2009		*Lophelia*	biochamber 2	biochamber 2	24051	29 9.568284	88 1.129962	458
J2-474	VK826 9/11/2009								
J2-474	VK826 9/11/2009			T:3 Deploy			29 9.794238	89 0.695190	
J2-474	VK826 9/11/2009			T:2 Deploy			29 9.493164	88 1.150494	
J2-474	VK826 9/11/2009			T:1 Deploy			29 9.365502	88 1.283154	
J2-474	VK826 9/11/2009			Marker: 20			29 9.271158	88 1.389192	

Lowering #	Site ID	LAB	Sample	Sample ID	Collection Equipment	Event Number	Lat	Long	Depth (m)
J2-474	VK826 9/11/2009			Marker: 30			29 9.281322	88 1.366680	
J2-474	VK826 9/11/2009			Marker: 24			29 9.460650	88 1.175802	

APPENDIX 2 - NOAA OFFICE OF OCEAN EXPLORATION QUICK LOOK REPORT

EXPLORE

NOAA Office of Ocean Exploration Quick Look Report

Expedition Title: *Lophelia* II: Reefs, Rigs, and Wrecks

Results (please check all disciplines in which this cruise collected data)	Details (please describe any novel discoveries in the discipline, answers such as "possible, awaiting data analysis" and "no apparent discoveries" are acceptable)
Bathymetric Mapping x Yes ☐ No	(please note total area mapped and technology employed, e.g. multibeam, side scan, etc.) 20 km2 using ship's Seabeam multibeam system, <1 km2 highresolution multibeam (SM2K) from *Jason* II
New Species Discovered ☐ Yes ☐ No	(please note number, type, and significance ,i.e. radically new vs. slight adaptation of known species) Unsure at this time, awaits further taxonomic resolution
Bio-prospecting ☐ Yes x No	(please note number, type, and potential use of new compounds discovered)
Habitat Range Extended x Yes ☐ No	(please note species discovered in new habitats and how far from previous range were they found) *Lophelia* pertusa was confirmed from Garden Banks 535, over 100 miles further west than it has been reported in the Gulf of Mexico. One genus of gorgonian was tentatively identified, and would be a range extension of this species from its previously known distribution in the South Pacific. Additional range extensions await further taxonomic research.
Chemical Processes x Yes ☐ No	(please note new or unusual chemical properties such as methane seeps, hypersaline pools, vents, etc. observed) Push cores were obtained in coral, seep, and background areas; water samples were obtained from CTD rosette and submersible deployed Niskin bottles for determination of alkalinity and pH.
Geologic Processes x Yes ☐ No	(please note new or unusual geologic processes that may impact scientific understanding of the region) The first cold-water carbonate mounds in the Gulf of Mexico were discovered.
Physical Processes x Yes ☐ No	(please note new or unusual oceanographic processes that may impact scientific understanding of the region) Elevated alkalinity was detected over one of the newly discovered *Lophelia* pertusa reefs. The mechanism generating this local phenomenon is still unknown.
Sub/ROV/AUV Dives x Yes ☐ No	(please note name, type, and cumulative hours of bottom time for each platform / if available please provide average working time per dive for each platform / please note if new depth records were set) A total of 22 lowerings of the ROV *Jason* II were completed. Two of these were aborted prematurely due to technical issues (including one resulting from a jellyfish hitting the down-looking still camera upon launch). A total of 356 hours of bottom time, or approximately 18 hours per full-length dive, were completed.
New Technology ☐ Yes x No	(please note any new tools developed for or during this cruise, also identify first use of an existing technology in a new application) There was no new technology developed for this cruise. However, new configurations of the long-term camera deployment and the in situ hand-held macro camera were used very successfully.
Maritime Cultural Heritage x Yes ☐ No	(please note discoveries impacting knowledge of the past, i.e. number and type of shipwrecks) Five shipwrecks were investigated ranging from 19th century to mid-20th century. We were able to more closely date the wrecks and understand their cultural significance, and developed a better understanding of the trade and commerce networks of the Gulf of Mexico.
Outreach x Yes ☐ No	(please describe outreach channels, e.g. Web, port call, etc., used in this project) First, the cruise was covered as a "Signature Expedition" on the NOAA Ocean Explorer web site. Liz Goehring was our education and outreach coordinator for the first leg and developed ideas for new lesson plans related to deep-sea coral to be used in the near future. On the second leg, Sheli Smith was the E&O coordinator for the second leg and arranged for seven High School engineering classes to follow the expedition to study ROV construction techniques.
Students Involved x Yes ☐ No	(please note the number and level of students on the expedition) There were a total of 7 graduate students (including an exchange of students between IFREMER in France and Penn State) and 2 undergraduate students on the

	cruise.
Multidisciplinary x Yes ☐ No	(please identify the formal disciplines represented in the science party) Biology, Ecology, Genetics, Geology, Geography, Geophysics, Archaeology, Education and Outreach,
Exploration of New Regions x Yes ☐ No	(please note if the area of operations had been previously studied, if so please check no and approximate as slight, moderate or significant, the level of knowledge before the cruise) Of the 17 different sites visited, 10 had never been dove on before. We had multibeam maps for all but 2 of the sites, but obtained these during the cruise. Of the 7 sites that had been previously visited, we explored new areas of each of the sites, including finding a large coral reef on an edge of our primary site, VK826, that had not been previously known.

Ocean Exploration Quick Look Report Required Elements

The Office of Ocean Exploration (OE) does not require a specific Quick Look Report format. Reports submitted under other requirements (e.g. Cruise Summary Report (CSR)) or Fisheries-Oceanography Coordinated Investigations (FOCI)) are acceptable. In all cases Quick Look Reports submitted to OE should contain the following elements:

Project title: Deepwater Program: Exploration and Research of Northern Gulf of Mexico Deepwater Natural and Artificial Hard Bottom Habitats with Emphasis on Coral Communities: Reef, Rigs and Wrecks "*Lophelia* II"

Principal Investigator and institution:
James M. Brooks, TDI-BI
Charles Fisher, PSU
Erik Cordes, Temple
Bernie Bernard, TDI-BI
Robert Church, C&C
Chris German, WHOI
Elizabeth Goehring, PSU
Ian MacDonald, FSU
Harry Roberts, LSU
Dan Warren, C&C
Gary Wolff, TDI-BI

Expedition title: *Lophelia* II Cruise3

Expedition dates and itinerary: (a simple table is sufficient)

Dive	Site	Dates	Times	Depth m
J2-453	Fla Slope-1	8/20-8/21	2130-1600	450
J2-454	DC-583	8/22-8/23	1720-0745	2500
J2-456	MC-294	8/23-8/24	2140-0745	1360
J2-457	AT-47	8/24-8/25	1630-0730	863
J2-458	GC-235	25-Aug	1643-2230	530
J2-459	GB-299	8/26-8/27	0830-0740	410
J2-460	GB-535	8/27-8/28	1636-1216	600
J2-461	GC-852	29-Aug	0118-2020	1400
J2-462	GC-388	30-Aug	0851-2030	900
J2-464	MC-751	8/31-9/1	1324-1206	460
J2-465	VK-906	9/1-9/2	2031-2000	400
J2-466	VK-826	9/3-9/4	1119-0805	510
J2-468	VK-786	9/5-9/6	2030-0810	612
J2-469	MC-657	9/6-9/7	1714-0800	2256
J2-470	EW1008	9/7-9/8	2025-0830	610
J2-471	GC245	9/8-9/9	1644-1210	627
J2-472	MC497	9/9-9/10	2108-0815	554
J2-473	VK-906	9/10-9/11	1633-0815	490
J2-474	VK-826	11-Sep	1259-2312	510

Chief Scientist and institution:

Erik Cordes (Chief Scientist Sept 5 - 12)
Biology Department, 1900 N 12th St, Philadelphia PA 19122

Charles Fisher (Chief Scientist Aug 19 – Sept 5)
208 Mueller Laboratory, The Pennsylvania State University, University Park, PA 16802

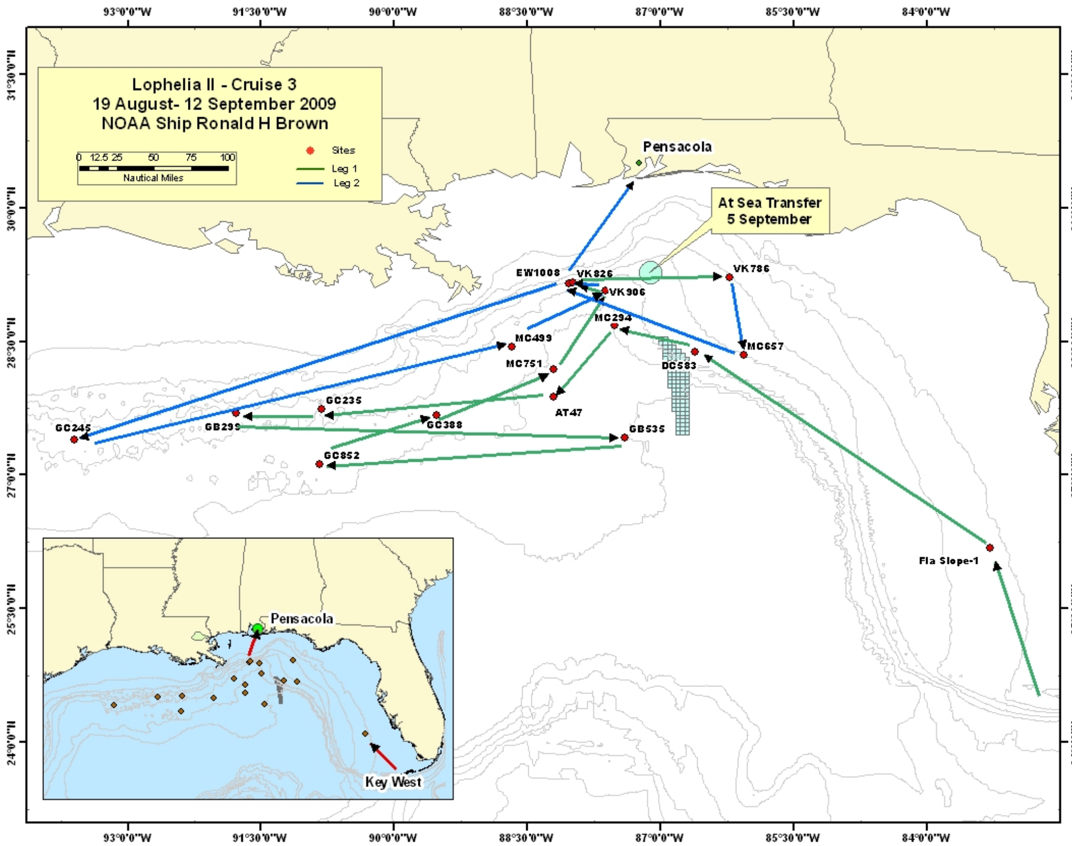
Co-sponsors / partners / participating organizations: (a table of names and affiliations)

PSU	Dept. of Biology, State College, PA 16802
LSU	Geosciences Complex, Baton Rouge, LA 70803
TAMUCC	Physical and Life Sciences Dept., Corpus Christi, TX 78412-5774
TEMPLE	Biology Department, 1900 N 12th St, Philadelphia PA 19122
WHOI	National Deep Submergence Facility, Woods Hole Oceanographic Institution, Woods Hole, MA 02543-1050
USGS	US Geological Survey, Florida Integrated Science Center, St. Petersburg, FL 33701
TDI-Brooks International	1902 Pinon Dr., College Station, TX 77845
MMS	Gulf of Mexico OCS Region and Atlantic Activities New Orleans, LA 70123-2394
NOAA OE	NOAA Office of Ocean Exploration, 1315 East-West Highway, Silver Spring, MD 20910
C & C	730 E. Kaliste Saloom Rd., Lafayette, LA 70508

Vessel Identification: (if applicable)
NOAA Ship *Ronald H. Brown*

Primary Equipment: (embarked vehicles, sensors, and tools of significance)
*JASON*II WHOI

Geographic area of operations (identify common name such as Northwestern Hawaiian Islands as well as boundary coordinates for the area, and a map if available)GOM



Summary of Expedition Objectives: (a list of the proposed objectives that were met as a result of the expedition)
This cruise employed the Remotely Operated Vehicle (ROV) *Jason II* to explore new sites, make a variety of deployments and collections, and conduct a variety of studies on natural deep water coral reefs and 4-5 deep water shipwrecks. This was a 25-day cruise with 19 ROV dives and an at-sea personnel transfer.

Milestones Achieved: (This section of the report should amplify the information provided in the official OE cover sheet summary of results. This section should elaborate on key findings)
Jason II was used to: explore 4-6 new sites for the occurrence of deep water coral reefs; make collections of *Lophelia* and other corals for genetic and physiological studies, make collections of communities associated with *Lophelia* and other corals for ecological studies; collect quantitative digital imagery for characterization of sites and coral communities; collect spatially explicit physical near bottom oceanographic data; deploy cameras and microbial arrays; reposition larval traps and current meters; collect push cores; and conduct a series of linked archeological/ biological investigations on deep water shipwrecks. In addition to launching and recovering *Jason II* , elevators were deployed and recovered approximately six times, four moorings (2 larval traps and 2 current meters) were deployed, and CTD casts were conducted.

A total of 17 dives at 13 natural sites, 8 of which had never had visual surveys before. Even with this high degree of pure exploration, corals were found at every one of the sites, and new high-density *Lophelia pertusa* communities at three of the sites. These included Garden Banks 535, the western-most *Lophelia* site in the Gulf; Viosca Knoll 906, one of the largest continuous *Lophelia* reefs known in the Gulf and named Roberts' Reef; and a new area of Viosca Knoll 826, a 200 m long ridge hosting a large *Lophelia* reef. At Mississippi Canyon 751, the most active seep known to host live *Lophelia* colonies was investigated. Some high density black coral communities were found at a number of the sites investigated, and a new site with a high abundance of bamboo corals at the northern end of the Florida Escarpment. This site in DeSoto Canyon was a new depth record for six different genera of octocorals including three different species of bamboo corals. The first alkalinity data from the deep Gulf of Mexico was collected, which will guide research into the potential impact of ocean acidification on deep-water corals throughout the rest of the project.

At total of five historic shipwreck sites were investigated, one of which had never had been surveyed by ROV before. The wrecks included 4 metal-sheathed wooden sailing vessels (VK wreck, 7,000'wreck, EW Bank wreck, GC245 wreck) and 1 World War II U-boat casualty (*Gulfpenn*). One of these wrecks, the 7,000 ft wreck, represents the deepest known shipwreck site in the Gulf of Mexico. Investigations at the wooden wrecks detailed them with video and still imagery and placed long and short-term microbiological experiments for corrosion studies. The survey of the *Gulfpenn* was carried out primarily to further document the extensive growths of *Lophelia* corals at the site. Archaeological investigations were limited since this wreck was studied extensively during the 2004 Deep Wrecks I Project. The four metal-sheathed wooden sailing vessels represent not only a cross-section of 19th and early 20th century wooden shipbuilding technology, but there locations and various depths provide a unique opportunity to examine site formation and distribution processes in the Gulf of Mexico's deepwater areas. The study of these site formation and distribution processes will help refine the shipwreck avoidance criteria model developed during the 2004 Deep Wrecks I Project.

Sample log entries: (from any daily logs of activities that were kept)

TDI-Brooks   Lophelia II Cruise 3 Ron Brown

DAILY PROGRESS REPORT
Ending 2400 Thursday 27 August 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 09** **MMS**
LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
GB-535	27 25.645230 N	93 35.139534 W

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	swell	0-2 ft	Clear	Partly Cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
GB-299	0000	0740	explore		Photo transects, coral collections, push cores
GB-299	0750	0751	Launch		Launch small boat
GB-299	0740	0810	Off bottom		Jason off bottom end J2-459
GB-299	0810	0815	Retrieve RoV		Jason on deck
GB-299	0815	0840	Retrieve		Retrieve small boat
In Transit	0840	1350	In Transit		In Transit to GB-355
In Transit	1205	1230	Meeting		Science Meeting
In Transit	1300	1320	Safety Drill		Fire Drill, Abandon Ship, Man overboard
GB-535	1350	1600	On Site		Arrive on site at GB-355
GB-535	1600	1605	Launch RoV		Start dive J2-460
GB-535	16:05	16:36	On bottom	550	Begin exploration of GB-355
GB-535	16:26	24:00	EXplore	550	Looking for coral

Activity (as of 2400 hrs this day):

"Activity 1"			
Job Plan	Today	Previous	Remaining

"Activity 2"			
Job Plan	Today	Previous	Remaining
0	0	0	0

"Activity n"			
Job Plan	Today	Previous	Remaining
0	0	0	0

Page 1 of 2

TDI-Brooks   Lophelia II Cruise 3 Ron Brown

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
GB-535	27 25.424700	93 35.640288	Quiver collection	1	537	Crab
GB-535	27 25.424676	93 35.640372	Slurp collection	1	537	Coral
GB-535	27 25.465068	93 35.630844	Quiver collection	1	538	Purple antipatharian
GB-535	27 25.465284	93 35.630832	Quiver collection	1	538	Gorgonian
GB-535	27 25.465398	93 35.630562	Quiver collection	1	538	Gorgonian
GB-535	27 25.465350	93 35.630844	Quiver collection	1	538	Gorgonian
GB-535	27 25.466160	93 35.630640	Quiver collection	1	538	Gorgonian Narella
GB-535	27 25.547940	93 35.574498	Quiver collection	1	550	Pink gorgonian
GB-535	27 25.548468	93 35.572788	Quiver collection	1	550	Lophelia and assoc.
GB-535	27 25.560762	93 35.546262	Niskin bottle	1	545	
GB-535	27 25.560774	93 35.546658	Quiver collection	1	544	Purple gorgonian

TDI-Brooks Rep (Lara Miles) Comments:

J2-459 was a productive dive with several collections of Callogorgia with associated fauna and photo mosaics. There were also several photo transects completed and several push cores taken. The area was sparsely populated with patches of coral mostly Callogorgia and no Lophelia. We arrived on site at GB-535 at a little before 1600. At this site Lophelia were identified and collected. There were also several Gorgonian species collected as well as shark egg cases that were attached to the coral.

Planned Activities next 24 hours (Lara Miles):

Tomorrow we plan to retrieve Jason at 0800 and it is a 12hour transit GC-852. Once on site Jason will be launched and the dive is expected to run 16 hours. The dive at GC-852 is expected to go in 2000 and run for approximately another 16 hours. Once again we hope to find live Lophelia at the up coming site.

Issued by:

Lara Miles
Rep
TDI-Brooks

	22:03:44		Q10	2		Callogorgia w ophuroid
	22:14:13		Q9			Callogorgia w ophuroid
	22:31:57		Port Biobox			Callogorgia w ophuroid

Page 2 of 2

Summary of Digital Data Collected: (Identify volume in MB/GB/TB etc. and type of data collected. Be as explicit as possible, e.g. identify high definition video as opposed to simply video.) Approx 3 TB of multibeam swath bathymetry, video and stills from *JASON*II

Summary of outreach and educational activities: (a summary discussion of the nature and success of the activities, i.e., number and types of displays and participants in the case of an open-house event) - NOAA Ocean Exploration & Research Signature Expedition, Near-real time web-coverage and NOAA Web Coordinator / Data Manager on board

As a NOAA Ocean Explorer "Signature Expedition," the *Lophelia II* cruise was featured on the NOAA Ocean Explorer website (http://oceanexplorer.noaa.gov/welcome.html) and promoted through NOAA OE channels (e.g., VIMS Scuttlebutt listserve). During the cruise, log entries, seafloor and shipboard imagery and seafloor video clips were posted to the NOAA OE site on almost a daily basis. Log entries were authored by various cruise participants as an opportunity to feature individual contributions to the overall research agenda. A Highlights "Best Of" Imagery and Video DVD was also created and provided to NOAA OE.

A total of 25 hours of high quality underwater video footage was collected in the DVCAM format from the *JASON* ROV, and 2 hours of broadcast quality footage showing on-deck activities associated with the expedition, including *JASON* launch and retrieval, CTD operations, laboratory work, and science meetings. All footage was digitized and imported to Final Cut Pro software for editing. The "Best of Video" footage associated from *Jason* ROV was edited and exported into nearly 100 short videos 1-2 minute long in the Quicktime format at 360 x 240 resolution. Samples are provided on the OER Website. Quicktime videos are intended for use in Powerpoint presentations by project PIs and collaborators, but they will also form parts of a 20 minute broadcast quality documentary video about the project.

During the first leg of the cruise, the education team developed a draft problem-based curriculum unit targeting high school level students in biology or environmental science. The draft unit features a Student Challenge to locate potential Gulf of Mexico oil-drilling sites (using fictitious maps) that would have minimal impact on *Lophelia* communities. The Challenge provides a context for the lessons presented in the unit and also serves as a performance assessment. Lesson topics include introduction to deep sea conditions; deep water coral biology; climate change effects on coral skeletons; importance of currents in movement of food, sediment and larvae; and food webs. Currently the unit includes six lessons in addition to the Student Challenge. Where possible, lessons will be written featuring available datasets, to engage students and develop data analysis skills. Identification of potential suitable datasets was initiated during the cruise.

During the second leg of the cruise, the archaeological team worked with a cohort of seven Ohio schools to incorporate aspects of the shipwreck research into the schools' project-based learning curriculum on ROV design and development. The archaeological team provided three powerpoint presentations to the teachers along with histories of the shipwrecks that the cruise planned to visit. The powerpoints focused on 1) ROV technologies put together by C&C Technologies, 2) Archaeological Sampling put together by PAST and 3) The Nexus of Natural and Cultural Resources put together as a joint team effort with Lori Johnson of Droycon Bioconcepts, Inc. Teachers and students prepared styrofoam cups in advance and then followed both the OE website and PAST website. In addition the teachers were able to communicate among themselves through their own project on the PAST Basecamp creating a cohort that could question, encourage and reflect. Shortly after the cruise ended, they already had a research and design project springing from the need for a low cost solution to the mechanical arms used on *Jason* II.

Thoughts for the Future: (a discussion of any ideas for future exploration, research, or management activities related to the work accomplished) Cruise 4

Summary of Expedition Operations (A good summary would identify as many of the following elements as possible for each "operation." Table formats are ideal for this aspect of the report: data type collected / time / position / ID tag /operation type /dive tracklines / depth /comments)

Site	Start	End	Activity	Depth	Comments
					20 August 2009
In Transit	0000	9:00	On Station		Arrive on station at W. Florida Slope 1
FLA-Slope 1	0900	10:00	Safety Drill		Fire and Abandon ship drill
FLA-Slope 1	1420		Deployment		Elevator Deployed
FLA-Slope 1	1500		Start Calibration		USBL Calibration
FLA-Slope 1	12:00	13:00	Science Meeting		Science party meeting
FLA-Slope 1	17:30		End Calibration		
FLA-Slope 1	20:00		Launch ROV		Launch *Jason*-2
FLA-Slope 1	21:30		On Bottom	460m	*Jason*-2 on Bottom
FLA-Slope 1	21:30	24:00	Working on Bottom	460m	Surveying area, sample collection
					21 August 2009
FLA-Slope 1	0000	15:30	Working On Bottom	460m	Collecting biological and geological samples
FLA-Slope 1	15:30	16:00	Off Bottom		ROV and Elevator return to surface
FLA-Slope 1	16:00	16:30	Recover ROV		*Jason*-2 on deck
FLA-Slope 1	17:00	17:15	Recover Elevator		Elevator on Deck
In Transit	17:15	00:00	In Transit		In transit to DC-583
					22 August 2009
In Transit	0000	09:00	Arrive on Site		Arrive at DC-583
DC-583	9:00	10:	MultiBeam Scan		Conducting multibeam scan
DC-583	12:00	12:05	Launch Rov		Launch *Jason*-2
DC-583	12:05	12:30	Meeting		Science meeting
DC-583	12:05	12:10	Recover Rov		Recover *Jason*-2
DC-583	13:00	13:10	Launch Rov		Launch *Jason*-2
DC-583			On Bottom	2440m	*Jason* on bottom
DC-583	16:30	17:20	Alarm		Smoke alarm sounded, no damage/injuries
DC-583	17:20	24:00	exploration		Exploring DC-583
DC-583	0000	07:45	On Site	2440	Leave bottom
DC-583	07:45	8:10	Off Bottom		*Jason*-2 ascending
DC-583	8:10	8:15	Retrieve Rov		*Jason*-2 on deck
DC-583	8:15		CTD Cast		
DC-583			Raise the Boom		
In Transit			In Transit		In Transit to MC-294
					23 August 2009
In Transit	12:05	12:30	Meeting		Science Meeting
MC-294	12:30	16:30	On site		Arrive at MC-294
MC-294	17:30	17:35	Launch		Launch *Jason* and USBL
MC-294	17:35	18:30	Launch aborted		*Jason* returns to surface
MC-294	18:30	19:30	Retrieve ROV		*Jason* on deck
MC-294	19:30	19:50	Medical Evac		Waiting for Helicopter

Site	Start	End	Activity	Depth	Comments
MC-294	19:50	20:05	Medical Evac		Patient evacuated and Helicopter away
MC-294	20:05	20:45	Transit		Return to station
MC-294	20:45	20:50	Launch ROV		Launch *Jason*-2
MC-294	21:40	24:00	On bottom	1420m	Start dive J2-456
					24 August 2009
MC-294	0000	0745	On bottom	1350m	On bottom ending work
MC-294	0745	0810	Off Bottom		
MC-294	0810	0815	Retrieve Rov		*Jason* on deck
In Transit	0815	1600	In transit		In transit to AT-47
In Transit	1205	1230	Meeting		Science meeting
On Site	1600	1605	On site		On site at AT-47
AT-47	1605	1630	Launch Rov		Start Dive #457
AT-47	1630	1708	On Bottom	860m	Start work at AT-47
AT-47	1708	2400	Exploring	860m	Surveying the AT-47 and taking appropriate samples
					25 August 2009
AT-47	0000	0730	Explore	840	Explore AT-47 for coral
AT-47	0730	0811	Off Bottom	856	End Dive J2-457
AT-47	0811	0816	On Deck	0	*Jason* secured on deck
In Transit	0816	1500	In Transit	0	GC-235
In Transit	1205	1230	Meeting	0	Daily Science Meeting
In Transit	1500	1600	Multibeam	500m	
Arrive	1600	1605	Launch		Launch *Jason* at GC-235 start dive J2-458
GC-235	1605	1643	On bottom	510m	
GC-235	1643	2155	Exploring	510m	Some coral and tubeworm communities found
GC-235	2155	22:30	Aborted		J2-458 aborted due hydraulic failure on Rov
GC-235	22:30	22:35	Retrieve RoV		*Jason* On Deck
GC-235	23:20	24:00	CTD Cast	500m	CTD cast with 12 Niskin bottle collections
In Transit	2400		In Transit		In transit to GB-299
					26 August 2009
In Transit	0030	0745	In transit		In transit to GB-299
On Site	0745	0750	On Site		Arrive at GB-299
GB-299	0750	0800	Launch Rov		Launch *Jason* at GB-299
GB-299	0800	0830	On Bottom	356	
GB-299	0830	2400	Explore	356	Explore GB-299
GB-299	1205	1230	Meeting		Science Meeting
GB-299	0830	2400	Explore	356	Photo transects, biological collections
					27 August 2009
GB-299	0000	0740	explore		Photo transects, coral collections, push cores
GB-299	0750	0751	Launch		Launch small boat
GB-299	0740	0810	Off bottom		*Jason* off bottom end J2-459
GB-299	0810	0815	Retrieve RoV		*Jason* on deck
GB-299	0815	0840	Retrieve		Retrieve small boat
In Transit	0840	1350	In Transit		In Transit to GB-355
In Transit	1205	1230	Meeting		Science Meeting
In Transit	1300	1320	Safety Drill		Fire Drill, Abandon Ship, Man overboard
GB-535	1350	1600	On Site		Arrive on site at GB-355
GB-535	1600	1605	Launch RoV		Start dive J2-460
GB-535	16:05	16:36	On bottom	550	Begin exploration of GB-355
GB-535	16:26	24:00	EXplore	550	Looking for coral

Site	Start	End	Activity	Depth	Comments
					28 August 2009
GB-535	0000	1144	Explore	505	Found *Lophelia*!
GB-535	1144	1216	Off Bottom		
GB-535	1216	1220	Retrieve RoV		*Jason* On Deck
In Transit	1230	2400	In Transit		In Transit to GC-852
On Site	2400		On site		On Site at GC-852
					29 August 2009
GC-852	0000	0020	Launch RoV	0	Launch *Jason*
GC-852	0020	0118	On Bottom	1478	On site at GC-852
GC-852	0118		Explore	1478	Explore GC-852
GC-852	1400	1410	Retrieve Camera	1478	Retrieve MacDonald Camera
GC-852	1605	1633	Science Meeting		
GC-852	1844	2006	Off Bottom	1430	*Jason*-2 returning to service
GC-852	2006	2020	Retrieve RoV		*Jason*-2 on deck
GC-852	2020	2240	Deploy Mooring		Deploy LSU current meter
In Transit	2240	0000	In Transit		In Transit to GC-388
					30 August 2009
GC-388	0000	0300	On Site	0	Arrive at GC-388
GC-388	0300	0745	On Station	0	Holding station until *Jason*-2 Launch
GC-388	0745	0810	On Site	0	Prepare for *Jason*-2 launch
GC-388	0810	0815	Launch	0	Launch *Jason* begin Dive J2-462
GC-388	0815	0851	On bottom	846	*Jason* on bottom start working at GC-388
GC-388	01205	01230	Meeting		Science Meeting
GC-388	1943	2030	Dive Aborted	824	Dive aborted because the Octan failed
GC-388	2030	2042	Retrieve	0	*Jason*-2 On Deck
In Transit	2113		In transit		In Transit to MC-751
					31 August 2009
MC-751	0000	0300	On Site	0	Arrive at MC-751
MC-751	0300	0600	On Station	0	Holding until 0600 for sediment traps
MC-751	0600	0900	On Station	0	Prepare for WHOI Sediment Trap
MC-751	0900	0935	Launch	0	Launch WHOI Sediment Trap
MC-751	1130	1154	On Station	846	Prepare for *Jason*-2 launch
MC-751	1154	1206	Launch		Launch *Jason*-2 start J2-463 at MC-751
MC-751	1216	1220	Abort		Still camera taken out by Jellyfish
MC-751	1220	1230	Retrieve ROV		*Jason* on Deck
MC-751	1255	1305	Launch ROV		Launch *Jason*-2 start J2-464 at MC-751
MC-751	1305	1324	On Bottom	453	On bottom MC-751 collecting corals, photos
					1 September 2009
MC-751	0000	1144	On Site	0	Arrive at MC-751
MC-751	1144	1206	Off Bottom	0	End dive J2-464 at MC-751
MC-751	1206	1213	Retrieve ROV	0	
In Transit	1230	1955	In Transit		In Transit to VK-906
VK-906	2000	2010	Launch ROV		Launch *Jason* Start Dive J2-465
VK-906	2010	2031	On Bottom		On bottom begin photo transects
VK-906	2031	2400	On Site		Photo mosaics & transects, Genetic Samples
					2 September 2009
VK906	0000		On Site	370m	Continue Dive J2-465
VK906	1945	2000	Off Bottom	367m	
VK906	2000	2015	Retrieve ROV	0	*Jason* on deck end J2-465
In Transit	2025	2203	In Transit	0	In Transit to VK826

Site	Start	End	Activity	Depth	Comments
On Site	2203	2210	On site	0	
VK 826	2210	2235	Launch Elevator	400	Elevator Launched
VK 826	2235	2400	Calibration	0	Calibrate USBL
					3 September 2009
VK826	0000	0300	Calibration		USBL calibration
VK826	0530	0700	Launch		Launch WHOI sediment trap
VK826	0830	0835	Launch ROV		Launch *Jason*-2 start Dive J2-466
VK826	0835	1119	On Bottom	491	*Jason* on bottom
VK826	0925	1000	Drill		Fire, and Abandon Ship
VK826	1119	2400	Explore	460	Explore VK826
					4 September 2009
VK826	0745	0805	OFF Bottom		*Jason* off bottom end Dive J2-466
VK826	0805	0815	Recover ROV		*Jason*-2 on deck
VK826	0825	0950	Launch		Launch LSU current meter
VK826	1035	1100	Recover	491	Recover Elevator
VK826	1205	1230	Meeting		Science Meeting
VK826	1230	1240	Release		Release Extra WHOI floats
VK826	1240	1243	Launch		Launch small boat
VK826	1243	1255	Recover		Recover Extra WHOI Floats
VK826	1254	1255	Recover		Small boat
VK826	1555	1600	Launch ROV		Launch *Jason* at VK 826 Start Dive J2-467
VK826	1600	1625	On Bottom	513	*Jason* on bottom
VK826	1625	2400	On Bottom	500	Looking for callogorgia and live *Lophelia*
					5 September 2009
VK826	0745	0805	OFF Bottom		*Jason* off bottom end Dive J2-467
VK826	0845	0850	Recover ROV	0	*Jason*-2 on deck
In Transit	0855	1220	In Transit	0	Moving to meet the crew boat
Transfer	1230	1325	Crew Transfer	0	13 off, 13 on
In Transit	1325	1935	In Transit	0	In transit to first wreck site
In Transit	17:35	17:55	Meeting	0	Science Meeting with new members
On Station	1900	1930	On Station	0	On site VK 76
VK76	1955	2000	Launch	0	Launch *Jason*-2 start Dive J2-468
VK 76	2000	2030	On Bottom	632	Start to locate the wreck
VK 76	2030	2400	Surveying	632	Photo Transects of the wreck
					6 September 2009
VK 76	0000	0745	Survey	537	Photo transects and artifact collection
VK76	0745	0810	OFF Bottom	537	*Jason* off bottom end Dive J2-468
VK76	0810	0820	Recover ROV		*Jason*-2 on deck
In Transit	0820	1308	In Transit		In Transit to MC657 7,000ft Wreck
On site	1308	1555	On Site		Holding Station until launch at 1600
MC 657	1555	1605	Launch ROV		Launch *Jason*-2 Start Dive J2-469
MC 657	1600	1630	Meeting		Science Meeting
MC 657	1605	1714	On Bottom	2263	Begin survey of site
MC 657	1714	2400	Survey	2263	Survey site MC 657
					7 September 2009
MC 657	0000	0656	Survey	2267	Photo transects and artifact collection
MC 657	0656	0800	OFF Bottom	2267	*Jason* off bottom end Dive J2-469
MC 657	0800	0815	Recover ROV	0	*Jason*-2 on deck
In Transit	0820	1620	In Transit	0	In Transit to EW 1008 11hrs
In Transit	1736	1752	In Transit	0	Science Meeting
On Station	1620	1955	On Station	0	Holding Station until 2000 launch
EW 1008	1955	2000	Launch ROV	0	Launch *Jason*-2 Start Dive J2-470
EW 1008	2000	2025	On Bottom	616	Begin dive J2-470

Site	Start	End	Activity	Depth	Comments
EW 1008	2025	2400	On Bottom	616	Photo transects, archaeological, biological sampling
					8 September 2009
EW 1008	0000	0808	Survey	614	Photo transects and artifact collection
EW 1008	0808	0830	OFF Bottom	614	*Jason* off bottom end Dive J2-470
EW 1008	0830	0840	Recover ROV	0	*Jason*-2 on deck
In Transit	0850	1215	In Transit	0	In Transit to GC245 MC245
On Station	1215	1600	Holding	0	Holding Station until 1600 launch
On Station	1246	1255	Alarm	0	Fire Alarm… false alarm
GC245	1600	1605	Launch ROV	0	Launch *Jason*-2 Start Dive J2-471
GC245	1605	1644	On Bottom	910	Begin dive J2-471
GC245	1605	1630	Meeting		Science Meeting
GC245	1644	2400	On Bottom	910	Recover artifacts, biological samples
					9 September 2009
GC245	0000	1136	Survey	614	Photo transects and artifact collection
GC245	1136	1210	OFF Bottom	614	*Jason* off bottom end Dive J2-471
GC245	1210	1215	Recover ROV	0	*Jason*-2 on deck
In Transit	1300	2020	In Transit	0	In Transit to MC497 8hours (waited for a ship to pass us)
In Transit	1730	1745	Meeting	0	Science Meeting
On Station	2020	2033	Launch ROV	0	Launch *Jason*-2 Start Dive J2-472
MC497	2031	2108	On Bottom	910	Begin dive J2-472
MC497	2108	2400	On Bottom	910	biological sampling and photo transects
					10 September 2009
MC497	0000	0737	Survey	544	Photo transects and genetic collections
MC497	0737	0815	OFF Bottom	544	*Jason* off bottom end Dive J2-472
MC497	0815	0820	Recover ROV	0	*Jason*-2 on deck
In Transit	0825	1445	In Transit	0	In Transit to VK 906
In Transit	1300	1320	Drill	0	Fire Drill, Abandon Ship
On station	1445	1550	On Station	0	Holding Station until Launch
On Station	1555	1602	Launch ROV	0	Launch *Jason*-2 Start Dive J2-473
VK 906	1602	1633	On Bottom	494	Begin dive J2-473
VK 906	1633	2400	On Bottom	494	Biological samples, bathymetry survey
					11 September 2009
VK 906	0000	0737	Survey	0	Photo transects and genetic collections
VK 906	0737	0815	OFF Bottom		*Jason* off bottom end Dive J2-473
VK 906	0815	0820	Recover ROV	0	*Jason*-2 on deck
In Transit	0825	1025	In Transit	0	In Transit to VK 826
In Transit	1000	1030	Meeting	0	Artifact Presentation for Crew and Science
On station	1025	1200	On Station	0	Holding Station until Launch
On Station	1200	1230	Launch ROV	0	Launch *Jason*-2 Start Dive J2-474 Weather Delay
VK 826	1229	1259	On Bottom	546	Begin dive J2-474
VK 826	1259	2230	Collections	546	Collecting live *Lophelia* and genetic samples
VK 826	2300	2312	Off Bottom	546	
In Transit	2312	2400	In Transit	546	In Transit to Pensacola, FL

APPENDIX 3 - DAILY PROGRESS REPORTS - DPR

DAILY PROGRESS REPORT
Ending 2400 Wednesday 19 August 2009

R/V Ron H. Brown
RB-09-05

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks Job# J09768 **Report number: 1** *Lophelia* II

LOPHELIA II

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
In Transit		

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
Key West, Fl	9:00	10:00	Ship Orientation		
Key West, Fl	15:30		Disembark		In Transit to West Florida Slope 1
In Transit	18:30	19:30	Jason Safety Meeting		
In Transit	19:30	24:00	In Transit		Continue In Transit to W. Florida Slope 1

HSE Statistics (as of 2400 hrs this day):

Fatalities:	0	Total:	0
Occupational Illness:	0	Total:	0
Lost Time Injury:	0	Total:	0
First Aid Case:	0	Total:	0
Near Miss:	0	Total:	0
Environ. Incident:	0	Total:	0
Equipment Damage:	0	Total:	0
Safety Drill:	0	Total:	0
JSA review:	0	Total:	0
All-Hands Safety Meeting:	2	Total:	0
MOC Meeting:	0	Total:	0
Toolbox Meetings	0	Total:	0
Safety observation cards	0	Total:	0

TDI-Brooks Rep (Lara Miles) Comments:

Science Party arrived on board and preparations continued through out the day. NOAA Lt. Manning conducted a ship orientation and safety meeting for the Science Party. The Ron H. Brown disembarked from Key West, Florida at 15:30 and started transiting to West Florida Slope 1 (FLA-Slope 1). Once underway the Jason Crew led a safety orientation and training session for on deck operations and data logging.

Projected Schedule:

We should arrive on site in the morning of Thursday 20th August 2009. Upon arrive there will be a safety drill followed by calibration of the USBL. Once Jason is fully prepared it will be deployed in the evening.

Issued by:

Lara Miles
Field Scientist
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Thursday 20 August 2009

R/V Ron H. Brown
RB-09-05

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks Job# J09768 **Report number: 2** *Lophelia* II

LOPHELIA II

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
FLA-Slope 1	**26 11.1091N**	**84 42.3691 W**

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
In Transit	0000	9:00	On Station		Arrive on station at W. Florida Slope 1
FLA-Slope 1	0900	10:00	Safety Drill		Fire and Abandon ship drill
FLA-Slope 1	1420		Deployment		Elevator Deployed
FLA-Slope 1	1500		Start Calibration		USBL Calibration
FLA-Slope 1	12:00	13:00	Science Meeting		Science party meeting
FLA-Slope 1	17:30		End Calibration		
FLA-Slope 1	20:00		Launch ROV		Launch Jason-2
FLA-Slope 1	21:30		On Bottom	460m	Jason-2 on Bottom
FLA-Slope 1	21:30	24:00	Working on Bottom	460m	Surveying area, sample collection

HSE Statistics (as of 2400 hrs this day):

Fatalities:	0	Total:	0
Occupational Illness:	0	Total:	0
Lost Time Injury:	0	Total:	0
First Aid Case:	0	Total:	0
Near Miss:	0	Total:	0
Environ. Incident:	0	Total:	0
Equipment Damage:	0	Total:	0
Safety Drill:	1	Total:	0
JSA review:	0	Total:	0
All-Hands Safety Meeting:	0	Total:	2
MOC Meeting:	1	Total:	0
Toolbox Meetings	0	Total:	0
Safety observation cards	0	Total:	0

Production (as of 2400 hrs this day):

Sample Collection			
Biological	**3**		
Geological	**1**		
Photo Mosaic			

TDI-Brooks Rep (Lara Miles) Comments:

Had a great day at sea ending with the first Jason launch: J2-453 at FLA-Slope 1. The day started off with a fire and abandon ship drill. There was a successful elevator launch and USBL calibration. ROV Jason was launched at 20:00 local time. At launch one of the mussel pods in the ROV basket was lost over board. It was not recovered upon ROV Jason reaching the bottom. Once on bottom a survey of the site was underway to explore the possible coral communities present at the site. Some geological and biological samples were taken.

Projected Schedule:

Tomorrow the plan is to recover the elevator and the ROV at 16:00. Once all equipment is secured on deck the R/V Ron Brown will start steaming to DC-583; which is estimated to be a 12-hour steam.

Issued by:

Lara Miles
Field Scientist
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Friday 21 August 2009

R/V Ron H. Brown
RB-09-05

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks Job# J09768 **Report number: 3** *Lophelia* II

LOPHELIA II

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
In Transit		

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
FLA-Slope 1	0000	15:30	Working On Bottom	460m	Collecting biological and geological samples
FLA-Slope 1	15:30	16:00	Off Bottom		ROV and Elevator return to surface
FLA-Slope 1	16:00	16:30	Recover ROV		Jason-2 on deck
FLA-Slope 1	17:00	17:15	Recover Elevator		Elevator on Deck
In Transit	17:15	00:00	In Transit		In transit to DC-583

HSE Statistics (as of 2400 hrs this day):

Fatalities:	0	Total:	0
Occupational Illness:	0	Total:	0
Lost Time Injury:	0	Total:	0
First Aid Case:	0	Total:	0
Near Miss:	0	Total:	0
Environ. Incident:	0	Total:	0
Equipment Damage:	0	Total:	0
Safety Drill:	0	Total:	1
JSA review:	0	Total:	0
All-Hands Safety Meeting:	0	Total:	2
MOC Meeting:	0	Total:	1
Toolbox Meetings	0	Total:	0
Safety observation cards	0	Total:	0

Production (as of 2400 hrs this day):

Sample Collection			
Dive number	**J2-453**		
Biological	**12**		
Geological	**2**		
Photo Mosaic	**0**		

TDI-Brooks Rep (Lara Miles) Comments:

Today we had a very productive dive with ROV Jason-2. Work on the bottom consisted of the collection of several biological samples for genetic work, geological samples, and general exploration of the site. Both Jason-2 and the elevator were recovered successfully and with out incident.

Projected Schedule:

It should take approximately 17hrs to get on to the next site; hopefully to arrive at 12pm. Once we are on station at DC-583; Jason-2 will be prepared and launched for it's second lowering. Upon reaching the bottom; the area will be visually scanned for live Lophelia coral communities.

Issued by:

Lara Miles
Field Scientist
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Saturday 22 August 2009

R/V Ron H. Brown
RB-09-05

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks Job# J09768 **Report number: 4** *Lophelia* II

LOPHELIA II

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
DC-583	**28.23.251399 N**	**87 22.892420 W**

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
In Transit	0000	09:00	Arrive on Site		Arrive at DC-583
DC-583	9:00	10:	MultiBeam Scan		Conducting multibeam scan
DC-583	12:00	12:05	Launch Rov		Launch Jason-2
DC-583	12:05	12:30	Meeting		Science meeting
DC-583	12:05	12:10	Recover Rov		Recover Jason-2
DC-583	13:00	13:10	Launch Rov		Launch Jason-2
DC-583			On Bottom	2440m	Jason on bottom
DC-583	16:30	17:20	Alarm		Smoke alarm sounded, no damage/injuries
DC-583	17:20	24:00	exploration		Exploring DC-583

HSE Statistics (as of 2400 hrs this day):

Fatalities:	0	Total:	0
Occupational Illness:	0	Total:	0
Lost Time Injury:	0	Total:	0
First Aid Case:	0	Total:	0
Near Miss:	0	Total:	0
Environ. Incident:	0	Total:	0
Equipment Damage:	1	Total:	0
Safety Drill:	0	Total:	1
JSA review:	0	Total:	0
All-Hands Safety Meeting:	0	Total:	2
MOC Meeting:	1	Total:	1
Toolbox Meetings	0	Total:	0
Safety observation cards	0	Total:	0

Production (as of 2400 hrs this day):

Sample Collection			
Dive number	**J2-454**	**J2-453**	
Biological			
Geological			
Photo Mosaic			

TDI-Brooks Rep (Lara Miles) Comments:

We arrived on station, DeSoto Canyon, ahead of schedule and promptly started a multibeam scan. The first attempted launch of Jason-2 was aborted due the fiber cable failing on the vehicle. The second launch was a success and Jason-2 proceeded to a depth of 2440m. There was a failed fan belt that caused the smoke alarm to sound on the ship. The science party promptly reported to their muster station while, the ships crew did a suburb job of locating and containing the source of the smoke. Operations continued as normal with Jason-2 discovering a vertical tubeworm and mussel community on the side of a rock face. Coral was also observed on the top of the rock mound that was several meters high.

Projected Schedule:

Jason-2 will be retrieved at 8:00am respectively and a CTD cast using the ships equipment will follow immediately after. The next site is a 5 hr steam and is MC-294. We should arrive on station in the late afternoon and promptly launch Jason-2.

Issued by:

Lara Miles
Field Scientist
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Sunday 23 August 2009

R/V Ron H. Brown
RB-09-05

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks Job# J09768 **Report number: 5** *Lophelia* II

LOPHELIA II

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
MC-294	28 23.2488	87 22.8891

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
DC-583	0000	07:45	On Site	2440	Leave bottom
DC-583	07:45	8:10	Off Bottom		Jason-2 ascending
DC-583	8:10	8:15	Retrieve Rov		Jason-2 on deck
DC-583	8:15		CTD Cast		
DC-583			Raise the Boom		
In Transit			In Transit		In Transit to MC-294
In Transit	12:05	12:30	Meeting		Science Meeting
MC-294	12:30	16:30	On site		Arrive at MC-294
MC-294	17:30	17:35	Launch		Launch Jason and USBL
MC-294	17:35	18:30	Launch aborted		Jason returns to surface
MC-294	18:30	19:30	Retrieve ROV		Jason on deck
MC-294	19:30	19:50	Medical Evac		Waiting for Helicopter
MC-294	19:50	20:05	Medical Evac		Patient evacuated and Helicopter away
MC-294	20:05	20:45	Transit		Return to station
MC-294	20:45	20:50	Launch ROV		Launch Jason-2
MC-294	21:40	24:00	On bottom	1420m	Start dive J2-456

HSE Statistics (as of 2400 hrs this day):

Fatalities:	0	Total:	0
Occupational Illness:	0	Total:	0
Lost Time Injury:	0	Total:	0
First Aid Case:	1	Total:	0
Near Miss:	0	Total:	0
Environ. Incident:	0	Total:	0
Equipment Damage:	0	Total:	1
Safety Drill:	0	Total:	1
JSA review:	0	Total:	0
All-Hands Safety Meeting:	0	Total:	2
MOC Meeting:	1	Total:	2
Toolbox Meetings	0	Total:	0
Safety observation cards	0	Total:	0

Production (as of 2400 hrs this day):

Sample Collection			
Dive number	**J2-456**	**J2-454**	**J2-453**
Biological			
Geological			
Photo Mosaic			

TDI-Brooks Rep (Lara Miles) Comments:

It was an eventful day on the Ron Brown. The Jason was secured on deck early in the morning and samples were transferred to the lab. It was a successful sample collection at DC-583 with at least 5 push cores, 7 different species of coral, one species of tubeworm, and two species of mussels. The corals were located at the top of a flat rock out crop with the tubeworms and mussels located in cracks along the vertical rock face.

In the early evening Science Party member Gaelin Rosenwates began feeling severe abdomen pains while on watch in the Jason van at site MC-294. After consultation with the Medical Officer on board the dive was aborted and we held station to wait for a Coast Guard helicopter. She was Medi-vacted to the closest hospital in New Orleans, La. She smiled a bit while being hoisted up to the helicopter in the rescue basket so we hope to hear promising news in the morning. After a successful transfer, where both crews of the ship and chopper preformed exemplarily, we got back into position for lowering J2-456 at MC-294. We were back in the water by 20:45 and on bottom by 21:40. The first three hours of exploration produced no communities of any kind.

Projected Schedule:

For tomorrow we hope to get a good update on the condition of our evacuated scientist and will continue with dive J2-456 in the morning. In the late afternoon J2-456 should end and we will proceed to AT-47.

Issued by:

Lara Miles
Field Scientist
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Monday 24 August 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 06** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
AT-47	27.8801646	89.7886253

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	swell	0-2 ft	Clear	Partly Cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
MC-294	0000	0745	On bottom	1350m	On bottom ending work
MC-294	0745	0810	Off Bottom		
MC-294	0810	0815	Retrieve Rov		Jason on deck
In Transit	0815	1600	In transit		In transit to AT-47
In Transit	1205	1230	Meeting		Science meeting
On Site	1600	1605	On site		On site at AT-47
AT-47	1605	1630	Launch Rov		Start Dive #457
AT-47	1630	1708	On Bottom	860m	Start work at AT-47
AT-47	1708	2400	Exploring	860m	Surveying the AT-47 and taking appropriate samples

Activity (as of 2400 hrs this day):

"Activity 1"			
Job Plan	**Today**	**Previous**	**Remaining**

"Activity 2"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

"Activity n"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
MC-294			Transect lines	1	1350m	
AT-47	27.8769	-89.7995	Quiver 4	2	859	Coral Genetics
AT-47	27.8799	-89.7883	Mussel Pod D		854	coral
AT-47	27.8799	-89.7883	Push Core 8		853	Black Mud
AT-47	27.8801	-89.7887	Q1A	1	839	Coral Genetics
AT-47	27.8801	-89.7886	5m photo mosaic		834	
AT-47	27.8800	-89.7886	Niskin bottle	1	835	
AT-47	27.8801	-89.7886	MPB		840	coral
AT-47	27.8801	-89.7885	PC5	1	839	Near coral
AT-47	27.8801	-89.7886	PC4	1	839	Near coral
AT-47	27.8802	-89.7887	PC3	1	839	Near coral
AT-47	27.8808	-89.7904	Q1B	1		Coral Genetics
AT-47	27.8887	-89.7944	Q2A	3	846	Brachiopod
AT-47	27.8799	-89.7882	BioBox Port Aft	2	853	Gorgornian

TDI-Brooks Party Chief/ Rep (Lara Miles) Comments:

Early morning reports that Gaelin was doing well at the Tulane hospital and was waiting for the results of the tests taken. The rest of the dive at MC-294 was uneventful. There were hard surfaces suited for coral colonization however they were covered with a layer of mud thus preventing attachment by polyps. There were however several observations of fish, shrimp, and crab in and around the rock outcrops. As a result of the lack of coral no biological samples were taken. There was one Niskin bottle water sample and CTD data collected at the site. However, AT-47 has proven so far to be a much different site. There is abundance evidence of marine life including; live corals, clams, crab, fish and shrimp. There are extensive clamshell beds but there appeared to be no living individuals. Several push cores were taken early in the dive near a group of hard corals.

Planned Activities next 24 hours (Lara Miles):

Tomorrow we plan to retrieve Jason-2 at 08:00 and proceed to GC-299 getting there at about 15:00. GC-299 is close to a previously visited site of tubeworms so there are high hopes that the exposed rocks previously observed extend into GC-299 and will have ample amounts of Lophelia on them.

Issued by:

Lara Miles
Party Chief/ Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Tuesday 25 August 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 07** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
GC-235	**27 44.352006 N**	**91 11.680596 W**

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	swell	0-2 ft	Clear	Partly Cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
AT-47	0000	0730	Explore	840	Explore AT-47 for coral
AT-47	0730	0811	Off Bottom	856	End Dive J2-457
AT-47	0811	0816	On Deck	0	Jason secured on deck
In Transit	0816	1500	In Transit	0	GC-235
In Transit	1205	1230	Meeting	0	Daily Science Meeting
In Transit	1500	1600	Multibeam	500m	
Arrive	1600	1605	Launch		Launch Jason at GC-235 start dive J2-458
GC-235	1605	1643	On bottom	510m	
GC-235	1643	2155	Exploring	510m	Some coral and tubeworm communities found
GC-235	2155	22:30	Aborted		J2-458 aborted due hydraulic failure on Rov
GC-235	22:30	22:35	Retrieve RoV		Jason On Deck
GC-235	23:20	24:00	CTD Cast	500m	CTD cast with 12 Niskin bottle collections
In Transit	2400		In Transit		In transit to GB-299

Activity (as of 2400 hrs this day):

"Activity 1"			
Job Plan	**Today**	**Previous**	**Remaining**

"Activity 2"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

"Activity n"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
AT-47	27.8898	-89.7944	PC6	1	837	
AT-47	27.8898	-89.7944	PC9	1	837	
AT-47	27.8898	-89.7944	PC10	1	837	
GC-235	27.73914	-91.1941636	BB Stbd	2	531	gorgonian w ophiuriod
GC-235	27.73914	-91.1941642	2A	2	531	gorgonian w ophiuriod
GC-235	27.73914	-91.1941726	Slurp Black	2	531	cup coral Javania
GC-235	27.73917	-91.1941463	3A	2	531	callogorgia w/ophiuriod
GC-235	27.73938	-91.1940745	2B	2	531	callogorgia w/ophiuriod
GC-235	27.73939	-91.1940762	3B	1	531	callogorgia
GC-235	27.73929	-91.1944269	1A	2	532	callogorgia w/ophiuriod
GC-235	27.73929	-91.1944295	1B	2	532	callogorgia w/ophiuriod

TDI-Brooks Rep (Lara Miles) Comments:

It was another productive day at sea with its usual combination of hiccups. We finished dive J2-457 on AT-47 at 08:00 and started steaming to GC-235. The collections from AT-47 consisted of a few coral collections (gorgonians), a live clam, and push cores. We arrived at GC-235 at 1500 and did a predive multibeam run until 1600. The initial waypoint at GC-235 was promising with some cup corals, Callogorgia and Ophiuriods. However, 5 hours into the dive the hydraulics for the Jason failed and the dive was aborted. Luckily all waypoints for the site had been explored and there were already some collections on board. After retrieval there was a CTD and Rosette cast. We then started steaming towards GB-299 to arrive onsite for a 0800 launch.

Planned Activities next 24 hours (Lara Miles):

Tomorrow we should arrive on site at 08:00 and if all systems check out on Jason-2 we will start dive J2-459 at site GB-299.

Issued by:

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Wednesday 26 August 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 08** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
GB-299	**27 41.225586**	**92 13.764618**

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	swell	0-1 ft	Clear	Partly Cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
In Transit	0030	0745	In transit		In transit to GB-299
On Site	0745	0750	On Site		Arrive at GB-299
GB-299	0750	0800	Launch Rov		Launch Jason at GB-299
GB-299	0800	0830	On Bottom	356	
GB-299	0830	2400	Explore	356	Explore GB-299
GB-299	1205	1230	Meeting		Science Meeting
GB-299	0830	2400	Explore	356	Photo transects, biological collections

Activity (as of 2400 hrs this day):

"Activity 1"			
Job Plan	**Today**	**Previous**	**Remaining**

"Activity 2"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

"Activity n"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
GB-299	27 41.339724 N	92 13.056630 W	Q3A	1		Callogorgia Gorgonian
GB-299	27 41.350368 N	92 13.048482 W	Q2A	2		Callogorgia Gorgonian Ophiocrius
GB-299	27 41.350122 N	92 13.047156 W	Q2B	1		Callogorgia
GB-299	27 41.350242 N	92 13.047264 W	Q5A	1		Antipatharian
GB-299	27 41.351622 N	92 13.047258 W	Q4A	2	365	gorgonian bamboo, astrogomphus
GB-299	27 41.351742 N	92 13.047420 W	Q5B	1	365	Antipatharian
GB2-99	27 41.351940 N	92 13.047120 W	Q4B	1	365	gorgonian unbranched white
GB-299	27 41.341944 N	92 13.067106 W	Q8A	1	364	Callogorgia
GB-299	27 41.339298 N	92 13.064664 W	Q8B	1	364	Callogorgia
GB-299	27 41.337372 N	92 13.057218 W	Q7A	2	364	Callogorgia with brittle stars
GB-299	27 41.336544 N	92 13.057314 W	Q7B	2	364	callogorgia with ophiuroid
GB-299	27 41.387244 N	92 13.170780 W	Q6A	1		priminoid
GB-299	27 41.156982 N	92 13.337238 W	Q6B	1	357	madrepora
GB-299	27 41.337384 N	92 13.057194 W	Stbd	1	364	

TDI-Brooks Rep (Lara Miles) Comments:

It was another productive day at sea. We arrived on site at a little before 0800 and were on the bottom by 0830. At GB-299 there have been numerous species of coral collected and in healthy communities. There are several species of Gorgonian, along with several associate fauna such as sea stars and anemones. Photo mosaics and photo transects were taken of the site along with several push cores.

Planned Activities next 24 hours (Lara Miles):

Tomorrow we should have Jason on deck by 0800 and arrive at GB-355 in time for a 1600 launch. At this site hopefully there will be multiple biological collections, push cores and photo mosaics. However this is all dependent on if there is any coral at the site to collect.

Issued by:

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Thursday 27 August 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 09** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
GB-535	**27 25.645230 N**	**93 35.139534 W**

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	swell	0-2 ft	Clear	Partly Cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
GB-299	0000	0740	explore		Photo transects, coral collections, push cores
GB-299	0750	0751	Launch		Launch small boat
GB-299	0740	0810	Off bottom		Jason off bottom end J2-459
GB-299	0810	0815	Retrieve RoV		Jason on deck
GB-299	0815	0840	Retrieve		Retrieve small boat
In Transit	0840	1350	In Transit		In Transit to GB-355
In Transit	1205	1230	Meeting		Science Meeting
In Transit	1300	1320	Safety Drill		Fire Drill, Abandon Ship, Man overboard
GB-535	1350	1600	On Site		Arrive on site at GB-355
GB-535	1600	1605	Launch RoV		Start dive J2-460
GB-535	16:05	16:36	On bottom	550	Begin exploration of GB-355
GB-535	16:26	24:00	EXplore	550	Looking for coral

Activity (as of 2400 hrs this day):

"Activity 1"			
Job Plan	**Today**	**Previous**	**Remaining**

"Activity 2"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

"Activity n"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
GB-535	27 25.424700	93 35.640288	Quiver collection	1	537	Crab
GB-535	27 25.424676	93 35.640372	Slurp collection	1	537	Coral
GB-535	27 25.465068	93 35.630844	Quiver collection	1	538	Purple antipatharian
GB-535	27 25.465284	93 35.630832	Quiver collection	1	538	Gorgonian
GB-535	27 25.465398	93 35.630562	Quiver collection	1	538	Gorgonian
GB-535	27 25.465350	93 35.630844	Quiver collection	1	538	Gorgonian
GB-535	27 25.466160	93 35.630640	Quiver collection	1	538	Gorgonian Narella
GB-535	27 25.547940	93 35.574498	Quiver collection	1	550	Pink gorgonian
GB-535	27 25.548468	93 35.572788	Quiver collection	1	550	Lophelia and assoc.
GB-535	27 25.560762	93 35.546262	Niskin bottle	1	545	
GB-535	27 25.560774	93 35.546658	Quiver collection	1	544	Purple gorgonian

TDI-Brooks Rep (Lara Miles) Comments:

J2-459 was a productive dive with several collections of Callogorgia with associated fauna and photo mosaics. There were also several photo transects completed and several push cores taken. The area was sparsely populated with patches of coral mostly Callogorgia and no Lophelia. We arrived on site at GB-535 at a little before 1600. At this site Lophelia were identified and collected. There were also several Gorgonian species collected as well as shark egg cases that were attached to the coral.

Planned Activities next 24 hours (Lara Miles):

Tomorrow we plan to retrieve Jason at 0800 and it is a 12hour transit GC-852. Once on site Jason will be launched and the dive is expected to run 16 hours. The dive at GC-852 is expected to go in 2000 and run for approximately another 16 hours. Once again we hope to find live Lophelia at the up coming site.

Issued by:

____

Lara Miles
Rep
TDI-Brooks

	22:03:44		Q10	2		Callogorgia w ophuroid
	22:14:13		Q9			Callogorgia w ophuroid

	22:31:57		Port Biobox			Callogorgia w ophuroid

DAILY PROGRESS REPORT
Ending 2400 Friday 28 August 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 10** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
GC-852	**27.1001**	**-91.1800**

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	swell	0-1 ft	Clear	Partly Cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
GB-535	0000	1144	Explore	505	Found Lophelia!
GB-535	1144	1216	Off Bottom		
GB-535	1216	1220	Retrieve RoV		Jason On Deck
In Transit	1230	2400	In Transit		In Transit to GC-852
On Site	2400		On site		On Site at GC-852

Activity (as of 2400 hrs this day):

"Activity 1"			
Job Plan	**Today**	**Previous**	**Remaining**

"Activity 2"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

"Activity n"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
GB-535	28 25.638840	94 35.124192	Q4B	1	518	Lophelia
GB-535	27 25.637532	93 35.131806	MPB	1	515	dead lophelia mound
GB-535	27 25636680	93 35.133330	Q9A	1	518	Lophelia
GB-535	27 25.636752	93 35.132856	PC3	1	519	lophelia community
GB-535	27 25.636752	93 35.132856	PC4	1	519	
GB-535	27 25.638882	93 35.134230	PC5	1	517	
GB-535	27 25.638810	93 35.134302	PC 7	1	517	
GB-535	27 25.638396	93 35.134950	PC8	1	517	
GB-535	27 25.637412	93 35.133702	Slurp Green	1	519	
GB-535	27 25.642314	93 35.116668	PC 6	1	520	

GB-535	27 25.644492	93 35.114232	PC9		520	
GB-535	27 25.644570	93 35.114196	PC 10		520	
GB-535	27 25.644678	93 35.114070	PC 1		520	
GB-535	27 25.644540	93 35.113914	PC 2		520	
GB-535	27 25.676604	93 35.009688	Q10A	1	515	antipatharian
GB-535	27 25.680888	93 35.010504	Stbd	1	516	Lophelia
GB-535	27 25.680792	93 35.010348	Stbd	1	516	lophelia Stbd from the same Colony
GB-535	27 25.681686	93 35.01088	Q9B	1	515	Lophelia
GB-535	27 25.682706	93 35.011428	Q6A	1	514	Lophelia
GB-535	27 25.679166	93 35.025096	MPD	1	515	lophelia dead/alive
GB-535	27 25.678062	93 35.024370	Q6B	1	514	Lophelia
GB-535	27 25.678830	93 35.021742	Q8A	1	514	Lophelia
GB-535	27 25.732212	93 34.906542	Q8B	1	507	Lophelia
GB-535	27 25.810986	93 34.654230	MPF		511	
GB-535	27 25.810860	93 34.654164	Slurp Black	1	511	Galatheids
GB-535	27 25.812774	93 34.654440	Slurp Orange	1	510	crab
GB-535	27 25.811988	93 34.652736	Slurp Red	1	509	Crabs from Lophelia

TDI-Brooks Rep (Lara Miles) Comments:

Dive J2-460 has been a very successful one. Lophelia was identified and collected early in the dive along with several coral patches. The dive was extend from coming up to 0800 to 1200 when more Lophelia was found. The RoV was on deck by 1220 and we were under way by 1230 for a 12hour steam to GC-852. The 12hour transit was much needed as every Quiver, Biobox, Slurp and Push Core were full of collections.

Planned Activities next 24 hours (Lara Miles):

Due to the presence of Lophelia at GB-535 the timeline has been pushed back. As of 2400 the plan is to have dive J2-461 last for 20hours and deploy moorings at 2000 tomorrow evening. Moorings are expected to take a few hours and then there is a few hour transit to GC-338.

Issued by:

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Saturday 29 August 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 11** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
In Transit		

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	calm	0-1 ft	Clear	Partly Cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
GC-852	0000	0020	Launch RoV	0	Launch Jason
GC-852	0020	0118	On Bottom	1478	On site at GC-852
GC-852	0118		Explore	1478	Explore GC-852
GC-852	1400	1410	Retrieve Camera	1478	Retrieve MacDonald Camera
GC-852	1605	1633	Science Meeting		
GC-852	1844	2006	Off Bottom	1430	Jason-2 returning to service
GC-852	2006	2020	Retrieve RoV		Jason-2 on deck
GC-852	2020	2240	Deploy Mooring		Deploy LSU current meter
In Transit	2240	0000	In Transit		In Transit to GC-388

Activity (as of 2400 hrs this day):

"Activity 1"			
Job Plan	**Today**	**Previous**	**Remaining**

"Activity 2"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

"Activity n"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
GB-852	27 7.185792	91 9.881196	Q 1A	coral		Gorgonian
GB-852	27 7.196292	91 9.873684	Q1B	coral		Bamboo
GB-852	27 7.196304	91 9.873762	Q 5A?	coral		Gorgonian
GB-852	27 7.193136	91 9.867480	Q 6A	coral		Gorgonian
GB-852	27 7.206690	91 9.877074	Q 8A	coral		Iridiogorgia
GB-852	27 7.196310	91 9.873684	Slurp Red	coral		Shrimp
GB-852	27 6.612600	91 9.960834	Q 3A	coral		Gorgonian
GB-852	27 6.603630	91 9.962418	Q 5B	coral		Hard coral
GB-852	27 6.588516	91 9.69990	Q 7A	coral		Enallopsammia
GB-852	27 6.588498	91 9.970176	Q 10A	coral		Madrepora
GB-852	27 6.611880	91 9.823326	PC 1	sediment		Background
GB-852	27 6.611874	91 9.823326	PC 2	sediment		Background
GB-852	27 6.611874	91 9.823326	PC 3	sediment		Background
GB-852	27 6.613224	91 9.912582	PC 4	sediment		Microbial
GB-852	27 6.613398	91 9.913236	PC 5	sediment		Microbial
GB-852	27 6.611154	91 9.916146	PC 8	sediment		Microbial
GB-852	27 6.611028	91 9.916194	PC 7	sediment		Microbial
GB-852	27 6.611052	91 9.916308	PC 6	sediment		Microbial
GB-852	27 6.611202	91 9.916386	PC 9	sediment		Microbial
GB-852	27 6.611184	91 9.916464	PC 10	sediment		Microbial

TDI-Brooks Rep (Lara Miles) Comments:

We had a very productive dive today at GB-852. Several new coral species were collected and microbial sediment cores were also taken. Ian MacDonald's camera that was unrecoverable two years ago was found in tact and with a little help from Jason was recovered. The camera was undamaged after spending 2 years at GB-852. Several photo transects were conducted of the ridge, while visual scans were more successful in finding coral communities. No Lophelia were found during Dive J2-461. Jason-2 was on deck by 2020 and the LSU team promptly started working on deploying the current meter. The deployment went very well and took only two hours. Once the mooring was set we began steaming towards GC-338 for dive J2-462.

Planned Activities next 24 hours (Lara Miles):

For tomorrow we should arrive on site at GC-338 at 0340 but will not deploy Jason-2 until 0800. The search for Lophelia continues.

Issued by:

____

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Sunday 30 August 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 12** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
In Transit MC-751		

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	calm	0-1 ft	Clear	Partly Cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
GC-388	0000	0300	On Site	0	Arrive at GC-388
GC-388	0300	0745	On Station	0	Holding station until Jason-2 Launch
GC-388	0745	0810	On Site	0	Prepare for Jason-2 launch
GC-388	0810	0815	Launch	0	Launch Jason begin Dive J2-462
GC-388	0815	0851	On bottom	846	Jason on bottom start working at GC-388
GC-388	01205	01230	Meeting		Science Meeting
GC-388	1943	2030	Dive Aborted	824	Dive aborted because the Octan failed
GC-388	2030	2042	Retrieve	0	Jason-2 On Deck
In Transit	2113		In transit		In Transit to MC-751

Activity (as of 2400 hrs this day):

"Activity 1"			
Job Plan	**Today**	**Previous**	**Remaining**

"Activity 2"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

"Activity n"			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**0**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
GC-388	27 40.346832	90 28.572936	Q 14A	Coral, seastar	836	Gorgonian Paramurcea with ophiuroid
GC-388	27 40.345560	90 28.574190	PA 1	coral	836	callagorgia
GC-388	27 40.366500	90 28.576506	Q 15A	Coral	829	callagorgia
GC-388	27 40.370142	90 28.573320	Q 3A	Coral, seastar	829	callaogorgia with ophiuroid
GC-388	27 40.370262	90 28.570320	Q 2A	Coral	829	callagorgia
GC-388	27 40.529652	90 28.732572	Q 1A	Coral	820	purple gorgonian
GC-388	27 40.567380	90 28.58194	Q 16A	Coral	842	antipatharian
GC-388	27 40.569570	90 28.539930	Collection	rock	843	carbonate

TDI-Brooks Rep (Lara Miles) Comments:

Dive J2-462 was cut short because of a failed OcTan on Jason-2. This means that instruments in the van said the ROV was spinning when it clearly was not. While at GC-388 we were able to use Ian MacDonald's mobile camera to get some macro shots of the coral and associate fauna. Before the dive was aborted several coral genetic samples were collected as well as one carbonate rock sample for Bill Shed.

Planned Activities next 24 hours (Lara Miles):

Tomorrow we should get on site around 0100 and at 0600 the WHOI sediment trap will be launched. Jason-2 will start dive J2-463 at MC-751 around 0800 after the traps have been successfully deployed. This should be a 16 hour dive but depending on the schedule could be extended.

Issued by:

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Monday 31 August 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 13** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
MC-751	28 11.639046 N	89 47.903106

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	calm	0-1 ft	Clear	overcast

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
MC-751	0000	0300	On Site	0	Arrive at MC-751
MC-751	0300	0600	On Station	0	Holding until 0600 for sediment traps
MC-751	0600	0900	On Station	0	Prepare for WHOI Sediment Trap
MC-751	0900	0935	Launch	0	Launch WHOI Sediment Trap
MC-751	1130	1154	On Station	846	Prepare for Jason-2 launch
MC-751	1154	1206	Launch		Launch Jason-2 start J2-463 at MC-751
MC-751	1216	1220	Abort		Still camera taken out by Jellyfish
MC-751	1220	1230	Retrieve ROV		Jason on Deck
MC-751	1255	1305	Launch ROV		Launch Jason-2 start J2-464 at MC-751
MC-751	1305	1324	On Bottom	453	On bottom MC-751 collecting corals, photos

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**11**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**1**	**1**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**1**	**1**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
MC-751	28 11.639046	89 47.903106	Port Niskin	Coral, seastar	434	
MC-751	28 11.633088	89 47.899704	MP D	coral	439	dead and live lophelia
MC-751	28 11.634282	89 47.899392	PC 6	Coral	439	near lophelia
MC-751	28 11.634282	89 47.899392	PC 7	Coral, seastar	439	near lophelia
MC-751	28 11.628090	89 47.907000	PC 4	Coral	439	near lophelia
MC-751	28 11.631564	89 47.928806	MP B	Coral	440	dead and live lophelia
MC-751	28 11.630808	89 47.939526	Top Niskin	Coral	432	over coral mound

TDI-Brooks Rep (Lara Miles) Comments:

Today we started with launching a sediment trap in a minor squall bright and early at 0600. Jason-2 was launched at 1200 only to have to abort a few minutes into dive J2-463. Right after the launch of Jason-2, a jellyfish became stuck on the down looking camera used for mosaics and photo transects. The only way to get it off was to recover Jason-2 and clean the lens. Jason-2 was successfully launched again at 1255 and started dive J2-464. This is a known site where Lophelia have been found before so, photo mosaics were completed over two mounds of coral. Several push cores and community collections of the live and dead coral were taken as well.

Planned Activities next 24 hours (Lara Miles):

Tomorrow the plan is to continue with dive J2-464 until 12pm on September 1, 2009. There were extra floats on the sediment trap, which will be released and recovered by the small boat. It is estimated that this will take a few hours to complete. It is approximately a 7hour transit to VK906 and there is a tentative launch time of 00:00 on the 2nd for dive J2-465.

Issued by:

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Tuesday 1 September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 14** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
VK-906	**29 4.188024 N**	**88 22.644744 W**

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	calm	0-3 ft	Clear	Drizzle

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
MC-751	0000	1144	On Site	0	Arrive at MC-751
MC-751	1144	1206	Off Bottom	0	End dive J2-464 at MC-751
MC-751	1206	1213	Retrieve ROV	0	
In Transit	1230	1955	In Transit		In Transit to VK-906
VK-906	2000	2010	Launch ROV		Launch Jason Start Dive J2-465
VK-906	2010	2031	On Bottom		On bottom begin photo transects
VK-906	2031	2400	On Site		Photo mosaics & transects, Genetic Samples

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**12**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**1**	**1**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**1**	**1**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
MC-751	28 11.665140	89 47.90 2452	PC 3	sediment	440	near coral
MC-751	28 11.664690	89 47.902542	PC 5	sediment	440	near coral
MC-751	28 11.667648	89 47.906184	PC 2	sediment	438	
MC-751	28 11.666298	89 47.907426	PC 1	Sediment	439	
MC-751	28 11.623482	89 47.885004	Slurp Blue	Coral	440	Lophelia w/galatheid
MC-751	28 11.621292	89 47.908776	Q 10A	Coral	440	Callogorgia w/ophiuroid/Lophelia
MC-751	28 11.619432	89 47.912310	Q 9A	Coral	440	Callogorgia w/ophiuroid
MC-751	28 11.619888	89 47.916798	Q 7A	Coral	439	callogorgia/ callogorgia w/ ophiuroid
MC-751	28 11.619348	89 47.916846	Q 2A	Coral	437	Callogorgia w/ophiuroid
MC-751	28 11.638938	89 47.917272	Q	Coral	440	lophelia
MC-751	28 11.638080	89 47.917344	Q 2A_2	Coral	439	Lophelia
MC-751	28 11.638158	89 47.917410	Q 3A	Coral	439	callogorgia
MC-751	28 11.638464	89 47.917008	Q 5A	Coral	439	callogorgia/callogorg ia
MC-751	28 11.636838	89 47.886558	Q 6A	Coral	439	Callogorgia w/ophiuroid
MC-751	28 11.632506	89 47.914548	Q 3A_2	Coral	440	lophelia
MC-751	28 11.633184	89 47.914146	Q 9A_2	Coral	440	lophelia
MC-751	28 11.634126	89 47.919102	Q 8A	Coral	440	callogorgia
MC-751	28 11.633400	89 47.919990	Q 4A	Coral	440	Callogorgia w/ophiuroid
MC-751	28 11.644500	89 47.897538	Slurp Red	Coral	439	Lophelia
MC-751	28 11.612388	89 47.894250	Q 4B	Coral	440	callogorgia/lophelia w/ophiuroid
MC-751	28 11.617422	89 47.889798	Q 10B	Coral	441	Callogorgia w/ophiuroid
MC-751			Q 7B	Coral	441	ophiuroid arm
MC-751	28 11.673498	89 47.873154	Q 3B	Coral	441	Callogorgia w/ophiuroid
MC-751	28 11.649282	89 47.947968	Q 10B_2	Coral	438	lophelia w/ophiuroid
MC-751	28 11.647902	89 47.949768	Q 9B	Coral	432	gorgonian white
MC-751	28 11.645760	89 47.940696	Q 5A_2	Coral	438	gorgonian paramuricea
MC-751	28 11.645754	89 47.940936	Q 6B	Coral	438	gorgonian paramuricea
MC-751	28 11.645562	89 47.940474	Q 2B	Coral	438	callogorgia/paragorg iid
MC-751	28 11.651262	89 47.953278	Q 8A_2	Coral	437	lophelia
MC-751	28 11.664738	89 47.955492	Port Biobox	Coral	437	Lophelia
MC-751	28 11.678082	89 47.940162	Q 1A	Coral	437	callogorgia
MC-751	28 11.706732	89 48.008736	Q 5B	Coral	437	Lophelia/ callogorgia w/ophiuroid
MC-751	28 11.706822	89 48.009570	Q8	Coral	437	crinoid
MC-751	28 11.923476	89 48.060990	PC 9	Sediment	432	background
MC-751	28 11.923476	89 48.061026	PC 8	sediment	432	background

TDI-Brooks Rep (Lara Miles) Comments:

We had a very productive day on the Ron H. Brown. Dive J2-464 consisted of several coral genetic collections including; *Lophelia, Callogorgia* and Gorgonian sp with associate fauna. We were also able to capture pictures of two coral communities on carbonate mounds for photo mosaic. Live Lophelia were also collected to maintain in the cold rooms and attempts will be made to keep them to be added to the live collections that will be leaving on the crew change in a few days. The extra floats on the sediment trap were not released and therefore not recovered. Too few floats were sent down for Jason-2 to more the sediment trap into a better location so, it was decided to leave the trap down with all floats attached for recover on a later cruise. At 1230 we began a 7hour steam to VK-906 for Dive J2-465. We arrived on station at 1955 and launched Jason-2 at 2000. The launch site had impressive communities of coral especially large portions of live Lophelia.

Planned Activities next 24 hours (Lara Miles):

For Wednesday 2nd we plan to launch Jason-2 at 2000 and have dive J2-465 last for 24hours. We hope to have several genetic collections and bring back live Lophelia.

Issued by:

____

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Wednesday 2nd September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 15** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
VK 826	**29 09.56N**	**088 01.07W**

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
NE 11kts	swell	1-3 ft	8-10 NM	cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
VK906	0000		On Site	370m	Continue Dive J2-465
VK906	1945	2000	Off Bottom	367m	
VK906	2000	2015	Retrieve ROV	0	Jason on deck end J2-465
In Transit	2025	2203	In Transit	0	In Transit to VK826
On Site	2203	2210	On site	0	
VK 826	2210	2235	Launch Elevator	400	Elevator Launched
VK 826	2235	2400	Calibration	0	Calibrate USBL

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**11**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**1**	**1**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**1**	**1**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
VK 906	29 4.161738	88 22.644276	Q 1A	Coral	392	Antipatharian
VK 906	29 4.161756	88 22.644372	Q 1A	Coral	392	Lophelia
VK 906	29 4.161432	88 22.643670	Q 1B	Coral	391	Lophelia
VK 906	29 4.161432	88 22.643700	Q 1B	Coral	391	Antipatharian + d lophelia
VK 906	29 4.176990	88 22.630560	Q 2A	Coral	388	Lophelia
VK 906	29 4.177122	88 22.630698	Q 2A	Coral	388	Antipatharian
VK 906	29 4.181712	88 22.631184	Q 3A	Coral	389	Lophelia
VK 906	29 4.181580	88 22.631082	Q 3A	Coral	389	Antipatharian
VK 906	29 4.182726	88 22.631526	Q 3B	Coral	389	Lophelia
VK 906	29 4.165764	88 22.634334	Q 4A	Coral	389	Lophelia
VK 906	29 4.165536	88 22.634004	Q 4A	Coral	389	Antipatharian
VK 906	29 4.166370	88 22.633818	Q 4B	Coral	389	Antipatharian + d lophelia
VK 906	29 4.166508	88 22.632756	Q 4B	Coral	389	Lophelia
VK 906	29 4.142496	88 22.637154	Q 5A	Coral	390	antipatharian
VK 906	29 4.130400	88 22.641582	Q 5B	Coral	390	Lophelia
VK 906	29 4.115136	88 22.632918	Q	Coral	389	Lophelia
VK 906	29 4.115664	88 22.633584	Q 6A	Coral	390	Antipatharian
VK 906	29 4.114020	88 22.635378	Q 6A	Coral	390	Lophelia
VK 906	29 4.146048	88 22.619214	Q 6B	Coral	392	Lophelia
VK 906	29 4.146960	88 22.619976	Q 7A	Coral	392	Antipatharian
VK 906	29 4.136340	88 22.614300	Q 7B	Coral	393	Lophelia
VK 906	29 4.136598	88 22.610730	Q 6B	Coral	393	Antipahtarian w/ some in Q 10A
VK 906	29 4.132896	88 22.649238	Q 10A	Coral	398	Antipatharian
VK 906	29 4.132944	88 22.649226	Q 10A	Coral	398	Lophelia
VK 906	29 4.133364	88 22.649208	Q 10B	Coral	397	Antipatharian
VK 906	29 4.134066	88 22.649268	Q 10B	Coral	397	Lophelia
VK 906	29 4.043472	88 22.788726	Q 9A	Coral	427	Lophelia
VK 906	29 4.046292	88 22.784766	Q 8A	Coral	427	Lophelia
VK 906	29 4.120818	88 22.693278	Q 9A	Coral	420	Antipatharian
VK 906	29 4.121280	88 22.692378	Q 8A	Coral	419	antipatharian
VK 906	29 4.139934	88 22.656990	Q 15A	Coral	394	Lophelia
VK 906	29 4.141518	88 22.653918	Q 9A	Coral	393	Leiopathes
VK 906	29 4.148226	88 22.659426	Q 8B	Coral	393	Lophelia Antipatharian
VK 906	29 4.423842	88 22.783452	Q 16A	Coral	399	Lophelia
VK 906	29 4.424130	88 22.783398	Q 16A	Coral	399	Leiopahtes orange
VK 906	29 4.432764	88 22.807188	Q 15B	Coral	391	lophelia
VK 906	29 4.143714	88 22.615506	Slurp Black	Coral	392	Galatheid-Munidopsis
VK 906	29 4.143150	88 22.615260	Slurp Black	Coral	392	Galatheid
VK 906	29 4.141530	88 22.615374	Slurp Black	Coral	392	Galatheid-Eumunida
VK 906	29 4.140348	88 22.614306	Slurp Red	Coral	392	
VK 906	29 4.140462	88 22.656432	Biobox	Coral	394	Lophelia
VK 906	29 4.176324	88 22.630404	Port box	Coral	387	Urchin
VK 906	29 4.182180	88 22.621218	PC 1	Sediment	388	Lophelia and Antipatharian
VK 906	29 4.182474	88 22.619628	PC 2	Sediment	388	Antipatharian
VK 906	29 4.182258	88 22.619118	PC 3	Sediment	388	Lophelia

VK 906	29 4.125168	88 22.621554	PC 5	Sediment	393	
VK 906	29 4.121334	88 22.625622	PC 4	Sediment	393	
VK 906	29 4.121610	88 22.635168	PC 10	Sediment	393	
VK 906	29 4.035444	88 22.811310	PC 6	Sediment	432	background
VK 906	29 4.035354	88 22.811340	PC 7	Sediment	432	background
VK 906	29 4.035588	88 22.811286	PC 8	Sediment	432	background

TDI-Brooks Rep (Lara Miles) Comments:

Viscol Knoll 906 was a very good Lophelia site. Several large coral communities atop sea mounds were photographed both for mosaics and transects. This site was so abundant in coral that live Lophelia were collected to keep in the lab as well as genetic samples. Dive J2-465 ended at 2000 and after a short 2hour steam were at VK862 by 2203. Once on site the elevator was launch with only Ian MacDonald's rotary camera on board.

Planned Activities next 24 hours (Lara Miles):

Tomorrow we plan to launch the sediment trap at 0500 at VK826 and then launch Jason at 0800. This dive (J2-466) should last for approximately 24hours.

Issued by:

____

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Thursday 3rd September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 16** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
VK 826	29 9.865830 N	88 0.693858 W

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	swell	1-3 ft	clear	cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
VK826	0000	0300	Calibration		USBL calibration
VK826	0530	0700	Launch		Launch WHOI sediment trap
VK826	0830	0835	Launch ROV		Launch Jason-2 start Dive J2-466
VK826	0835	1119	On Bottom	491	Jason on bottom
VK826	0925	1000	Drill		Fire, and Abandon Ship
VK826	1119	2400	Explore	460	Explore VK826

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**12**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**1**	**1**	**0**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**1**	**1**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
VK 826	29 9.362514	88 0.969456	Q 10A	coral	500	Antipatharian/lohelia
VK 826	29 9.362520	88 0.969468	Q 10B	coral	500	Antipatharian/lohelia
VK 826	29 9.367680	88 0.985824	Q 7A	coral	498	Antipatharian
VK 826	29 9.371292	88 0.983790	Q 7A_2	coral	495	Lophelia
VK 826	29 9.381684	88 0.979872	Q 7B	coral	492	Antipatharian/lohelia
VK 826	29 9.389064	88 0.985218	Q 3A	coral	489	Antipatharian/lohelia
VK 826	29 9.395910	88 0.983280	Q 3B	coral	486	Antipatharian/lohelia
VK 826	29 9.393024	88 0.982308	Q 2A	coral	486	Lophelia
VK 826	29 9.402660	88 0.979260	Q 6A	coral	484	Antipatharian/lohelia
VK 826	29 9.405126	88 0.979284	Q 6B	coral	484	Antipatharian/lohelia
VK 826	29 9.412908	88 0.978852	Q 5A	coral	482	Antipatharian/lohelia
VK 826	29 9.424656	88 0.978738	Q 5B	coral	479	Antipatharian/lohelia
VK 826	29 9.4402	88 0.978252	Q 9A	coral	476	Paragorgia/Antipatharian
VK 826	29 9.447096	88 0.970770	Q 9B	coral	476	Antipahtarian/lophelia

TDI-Brooks Rep (Lara Miles) Comments:

Today was a very productive day on the Ron H. Brown. Dive J2-466 started off very well with several observations of large Lophelia colonies and one really big school of fish. Early in the day the WHOI sediment trap was launched into a barren site and was successfully moved by Jason-2 into an area with tubeworms and Lophelia. We were only one mile away from an oilrig, which limited exploration of the eastern side of the ridge. Several genetic samples were taken as well as at least one photo mosaic.

Planned Activities next 24 hours (Lara Miles):

Tomorrow we plan to recover at 0800 then deploy the LSU mooring. After the last current meter is deployed the extra floats on the sediment trap will be released and recovered. The plan is to go back in at VK 826 for Dive J2-467 at 1600.

Issued by:

____

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Friday 4th September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 17** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
VK 826	29 9.329448 N	88 0.888594 W

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	choppy	1-3 ft	clear	cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
VK826	0745	0805	OFF Bottom		Jason off bottom end Dive J2-466
VK826	0805	0815	Recover ROV		Jason-2 on deck
VK826	0825	0950	Launch		Launch LSU current meter
VK826	1035	1100	Recover	491	Recover Elevator
VK826	1205	1230	Meeting		Science Meeting
VK826	1230	1240	Release		Release Extra WHOI floats
VK826	1240	1243	Launch		Launch small boat
VK826	1243	1255	Recover		Recover Extra WHOI Floats
VK826	1254	1255	Recover		Small boat
VK826	1555	1600	Launch ROV		Launch Jason at VK 826 Start Dive J2-467
VK826	1600	1625	On Bottom	513	Jason on bottom
VK826	1625	2400	On Bottom	500	Looking for callogorgia and live lophelia

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**12**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**1**	**1**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
VK 826	29 9.436422	88 0.644280	Q 8A	Coral	504	Lophelia/gorgonian orange/ophuroid
VK 826	29 9.462096	88 0.646476	Q 8B	Coral	497	Lophelia/gorgonian
VK 826	29 9.521292	88 0.626232	MP F	Community	478	L&D lophelia
VK 826	29 9.522504	88 0.622674	PC 1	Sediment	475	near coral
VK 826	29 9.529668	88 0.618762	PC 2	Sediment	479	
VK 826	29 9.529068	88 0.620136	PC 3	Sediment	479	
VK 826	29 9.529434	88 0.620568	PC 5	Sediment	479	near lophelia
VK 826	29 9.519918	88 0.629826	Slurp Green	Associate fauna	478	Beggiatoa
VK 826	29 9.519432	88 0.634722	Slurp Blue	Assoc. Fauna	478	galatheids (chuck)
VK 826	29 9.269022	88 0.872286	Slurp Red	Assoc. Fauna	538	seastar
VK 826	29 9.269028	88 0.872232	Slurp Black	Assoc. Fauna	538	galatheids (chuck)
VK 826	29 9.268950	88 0.872238	Q 9A	Coral	537	White octocoral w/ophiuroid and antipatharian
VK 826	29 9.285066	88 0.866586	Q 9B	Coral	526	yellow gorgonian
VK 826	29 9.317934	88 0.866604	Q 10A	Coral	505	red/purple gorgonian and lophelia

TDI-Brooks Rep (Lara Miles) Comments:

Today was a busy day on the Ron H. Brown with three recoveries and two launches. The Jason-2 was recovered at 0815 and started preparing for an 8hour turn around to go in at 1600. Once Jason-2 was on board the LSU group started rigging their current meter and was able to launch it in less than 2hours. Promptly after the current meter was deployed the acoustic release on the elevator was triggered and once it broke the surface the ship masterfully moved into position for a quick recovery. After a quick break for lunch; the acoustic release for the extra floats on the sediment trap was triggered and the small boat was launched to tow it back to the ship. There was a brief Science Meeting to discuss crew transfers and all lose ends before the crew change on Saturday. Jason-2 was promptly launched at 1600 for a 16hour dive.

Planned Activities next 24 hours (Lara Miles):

Tomorrow, we plan to recover Jason-2 at 0800 and start transiting towards the crew transfer boat. Depending on the weather and any other complications the transfer ship should meet up with the Ron H. Brown at in the late morning. Crew will be transferred over and some time has been allotted for new scientists to be debriefed by leaving scientists. Then scientist and samples disembarking will transfer to the crew boat and start steaming back to Louisiana.

Issued by:

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Saturday 5th September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 18** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
VK 76	29 13N	87 46

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	choppy	1-3 ft	clear	cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
VK826	0745	0805	OFF Bottom		Jason off bottom end Dive J2-467
VK826	0845	0850	Recover ROV	0	Jason-2 on deck
In Transit	0855	1220	In Transit	0	Moving to meet the crew boat
Transfer	1230	1325	Crew Transfer	0	13 off, 13 on
In Transit	1325	1935	In Transit	0	In transit to first wreck site
In Transit	17:35	17:55	Meeting	0	Science Meeting with new members
On Station	1900	1930	On Station	0	On site VK 76
VK76	1955	2000	Launch	0	Launch Jason-2 start Dive J2-468
VK 76	2000	2030	On Bottom	632	Start to locate the wreck
VK 76	2030	2400	Surveying	632	Photo Transects of the wreck

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**13**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
VK 826	29 9.432450	88 0.876960	Q 1A	Coral	481	Orange Leiopathes
VK 826	29 9.432444	88 0.876972	Q 1B	Coral	481	Red Leio/ White Leio
VK 826	29 9.771222	88 0.890298	Q 2A	Coral	456	Callogorgia
VK 826	29 9.769098	88 0.891024	Q 2B	Coral	457	Callogorgia
VK 826	29 9.431154	88 0.883152	Q 3A	Coral	482	Orange Leiopathes
VK 826	29 9.773232	88 0.892356	Q 3A 2	Coral	455	Callogorgia
VK 826	29 9.773190	88 0.892038	Q 3B	Coral	455	Callogorgia
VK 826	29 9.434016	88 0.879696	Q 4A	Coral	481	Orange Leiopathes
VK 826	29 9.431136	88 0.883170	Q 4B	Coral	482	Salmon leiopathes
VK 826	29 9.432222	88 0.878082	Q 5A	Coral	481	Salmon leiopathes
VK 826	29 9.434046	88 0.879720	Q 5B	Coral	481	Red leiopathes
VK 826	29 9.430296	88 0.874944	Q 6A	Coral	482	Red leiopathes
VK 826	29 9.431670	88 0.874530	Q 6B	Coral	482	white antipatharian
VK 826	29 9.772944	88 0.891234	Q 7A	Coral	456	Callogorgia
VK 826	29 9.772956	88 0.891270	Q 7B	Coral	456	Callogorgia

TDI-Brooks Rep (Lara Miles) Comments:

We had a very busy but productive day on the Ron H. Brown. On the second dive of VK 826, in the last hour we found Callogorgia on the site. Site VK 826 turned out to be a very species rich with several species of coral (including Lophelia), crustaceans, and fish. Once Jason-2 was back on deck we promptly started steaming to rondevu with the R/V Arcadiana. The crew transfer was a success! It was a ship-to-ship transfer with the Arcadiana tying up to the Ron Brown on the port aft portion of the ship. A total of 13 people got on with 13 people getting off (one scientist had already been airlifted off of the ship). The transfer was complete at 1325 and we started steaming to our first wreck site VK 76. It was an early 19th century tall ship with copper clad siding. Jason-2 was launched at 2000 to begin archaeological and biological surveys.

Planned Activities next 24 hours (Lara Miles):

Tomorrow the plan is to come up at 1200 and then transit to the 7,000ft wreck site in Mississippi Canyon 657.

Issued by:

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Sunday 6th September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 19** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
MC 657	28 20N	87 55W

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	choppy	1-3 ft	clear	cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
VK 76	0000	0745	Survey	537	Photo transects and artifact collection
VK76	0745	0810	OFF Bottom	537	Jason off bottom end Dive J2-468
VK76	0810	0820	Recover ROV		Jason-2 on deck
In Transit	0820	1308	In Transit		In Transit to MC657 7,000ft Wreck
On site	1308	1555	On Site		Holding Station until launch at 1600
MC 657	1555	1605	Launch ROV		Launch Jason-2 Start Dive J2-469
MC 657	1600	1630	Meeting		Science Meeting
MC 657	1605	1714	On Bottom	2263	Begin survey of site
MC 657	1714	2400	Survey	2263	Survey site MC 657

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**16**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**1**	**1**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
VK 76	29 13	87 46	PC 1	Sediment	619	Background
VK 76	29 13	87 46	PC 2	Sediment	619	Background
VK 76	29 13	87 46	PC 3	Sediment	619	Background
VK 76	29 13	87 46	PC 4	Sediment	618	Background
VK 76	29 13	87 46	PC 5	Sediment	613	Wreck
VK 76	29 13	87 46	PC 6	Sediment	613	Wreck
VK 76	29 13	87 46	PC 7	Sediment	613	Wreck
VK 76	29 13	87 46	PC 8	Sediment	613	Wreck
VK 76	29 13	87 46	PC 9	Sediment	613	Wreck
VK 76	29 13	87 46	Microbial	Experiment	607	Experiment Deploy
MC 657	28 20	87 55	PC 1	Sediment	2267	
MC 657	28 20	87 55	PC 2	Sediment	2269	
MC 657	28 20	87 55	PC 5	Sediment	2268	
MC 657	28 20	87 55	PC 6	Sediment	2268	
MC 657	28 20	87 55	PC 7	Sediment	2269	
MC 657	28 20	87 55	PC 8	Sediment	2267	
MC 657	28 20	87 55	PC 9	Sediment	2267	
MC 657	28 20	87 55	Q 15	Sediment	2266	
MC 657	28 20	87 55	Q 14	Sediment	2266	
MC 657	28 20	87 55	PC 10	Sediment	2267	

TDI-Brooks Rep (Lara Miles) Comments:

It was a shaky start on the Ron Brown this morning. Due to a miscommunication the sub was recovered at 0800 instead of 1200. These minor issues have been fixed. This dive consisted of: 6 photo transects with three on the wreck and three off the wreck, photo mosaics, push cores and artifact recovery. There were also two artifacts brought on board from the wreck. One piece was stoneware and the other piece was a charcoal water filter unit.

We started transit to MC 657, which is the 7,000ft wreck site, at 0820 and arrived at 1308. We held station for the rest of the 8hour Jason-2. Dive J2-469 started at 1600 after a successful ROV launch in the rain. Once on site there was a Science meeting to discuss how the dive last night went and plans for tomorrow. The ROV reached the bottom at 1714 and a survey was done of the area to decide where to start working. Several photo transects were taken as well as push cores and rusticle samples.

Planned Activities next 24 hours (Lara Miles):

For tomorrow we plan to come up at 0800 then start an 11hr steam to EW 1008. Jason-2 will be launched at 2000 to start dive J2-470.

Issued by:

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Monday 7th September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 20** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
EW 1008	27 57 N	90 5 W

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	swells	1-3 ft	clear	cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
MC 657	0000	0656	Survey	2267	Photo transects and artifact collection
MC 657	0656	0800	OFF Bottom	2267	Jason off bottom end Dive J2-469
MC 657	0800	0815	Recover ROV	0	Jason-2 on deck
In Transit	0820	1620	In Transit	0	In Transit to EW 1008 11hrs
In Transit	1736	1752	In Transit	0	Science Meeting
On Station	1620	1955	On Station	0	Holding Station until 2000 launch
EW 1008	1955	2000	Launch ROV	0	Launch Jason-2 Start Dive J2-470
EW 1008	2000	2025	On Bottom	616	Begin dive J2-470
EW 1008	2025	2400	On Bottom	616	Photo transects, archaeological, biological sampling

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**16**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**1**	**1**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
MC 657	28 20	87 55	BioChamber	Artifact	2267	wood
MC 657	28 20	87 55	BioBox	Artifact	2265	Hull Sheathing
MC 657	28 20	87 55	Bucket	Artifact	2267	compass
EW 1008	27 58	90 4	PC 1	Sediment	620	background

TDI-Brooks Rep (Lara Miles) Comments:

There were more interesting artifacts brought up with Jason-2 after this dive. For artifacts an early 19th century compass was recovered. The numbers and faceplate are clearly visible and in relatively good shape. Also collected were rusticles, push cores (near and away from the wreck) and photo transects. There were only two biological collections brought up in the slurp; a shrimp and a few worm tubes. There were very few corals on this wreck site. However, on EW1008 the bow section had a large colony of live Lophelia growing on it. Some video was taken of the coral community before photo transects of the wreck were started.

Planned Activities next 24 hours (Lara Miles):

For tomorrow, Jason-2 is planned to be on deck by 0800 and then we will steam 3hours to the Green Lantern wreck at GC 245. We will hold station for a few hours and launch at 1600. This dive should last approximately 20hours.

Issued by:

____

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 /Tuesday 8th September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 21** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
Green Lantern	27 43 N	90 42 W

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	swells	1-2 ft	clear	cloudy

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
EW 1008	0000	0808	Survey	614	Photo transects and artifact collection
EW 1008	0808	0830	OFF Bottom	614	Jason off bottom end Dive J2-470
EW 1008	0830	0840	Recover ROV	0	Jason-2 on deck
In Transit	0850	1215	In Transit	0	In Transit to Green Lantern MC245
On Station	1215	1600	Holding	0	Holding Station until 1600 launch
On Station	1246	1255	Alarm	0	Fire Alarm… false alarm
Green Lantern	1600	1605	Launch ROV	0	Launch Jason-2 Start Dive J2-471
Green Lantern	1605	1644	On Bottom	910	Begin dive J2-471
Green Lantern	1605	1630	Meeting		Science Meeting
Green Lantern	1644	2400	On Bottom	910	Recover artifacts, biological samples

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**17**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**1**	**1**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
EW 1008	27 58	90 4	PC 2	Sediment	619	Background
EW 1008	27 58	90 4	PC 3	Sediment	619	background
EW 1008	27 58	90 4	PC 4	Sediment	619	background
EW 1008	27 58	90 4	PC 7	Sediment	621	Near wreck
EW 1008	27 58	90 4	PC 8	Sediment	621	Near wreck
EW 1008	27 58	90 4	PC 9	Sediment	620	Near wreck
EW 1008	27 58	90 4	PC 10	Sediment	620	Near wreck
EW 1008	27 58	90 4	Q 14A	Rust	620	rusticle
EW 1008	27 58	90 4	Biochamber 1	Coral	619	Lophelia
EW 1008	27 58	90 4	Biochamber 2	Coral	621	Lophelia
EW 1008	27 58	90 4	Stbd	Artifact	621	ceramic
EW 1008	27 58	90 4	Slurp Blue		620	rubble
EW 1008	27 58	90 4	Slurp Black	Biological	620	crab
EW 1008	27 58	90 4	Slurp Red	Artifact	621	Net/fish
EW 1008	27 58	90 4	Microbe	Deployment	620	experiment
EW 1008	27 58	90 4	Short term microbe	Deployment /Recovery	620	short term experiment
EW 1008	27 58	90 4	MP bucket	Artifact	620	Ballast
EW 1008	27 58	90 4	Copper Sheathing	Artifact	620	Hull
MC 245	27 43	90 42	PC 1	Sediment	912	
MC 245	27 43	90 42	PC 4	Sediment	912	
MC 245	27 43	90 42	PC 5	Sediment	912	
MC 245	27 43	90 42	PC 9	Sediment	912	Near Wreck
MC 245	27 43	90 42	PC 10	Sediment	912	Near Wreck

TDI-Brooks Rep (Lara Miles) Comments:

It was another productive day on the Ron H. Brown with the end of one dive and the start of another. Dive J2-470 ended at 0830 after having completed 6 photo transects, collected 8 push cores and several artifacts. A large piece of the copper sheathing from the hull was successfully recovered utilizing the push-core basket. A ballast stone, ceramic cup and a piece of synthetic fishing net were also brought on board. The late recovery was due to difficult collections of a piece of netting and a delicate rusticle. Lophelia was observed growing on the ship and a few pieces were collected for genetic analysis. After Jason-2 was on deck at 0830 and we had a 3hour steam to the Green Lantern site. After holding station for a few hours to allow for the Jason-2 8hour turn around; we had a successful launch at 1600. Once on site we discovered that a mobile drilling rig was stationed about 1000m from the wreck. The anchors were split to avoid the wreck and it would not be a problem for this dive. The first thing we did when on bottom we began assessing if the bell could be collected and possibly the green starboard lantern as well. In the late hours of the evening photo transects and push core samples were taken.

Planned Activities next 24 hours (Lara Miles):

Tomorrow the plan is to recover the ship bell and possibly the green lantern among other artifacts. Jason-2 will be recovered at 1200 and we will start an 8hour steam to the GulfPenn wreck.

Issued by:

____

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Wednesday 9th September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 22** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
Gulf Penn	**28 26 N**	**89 19 W**

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	flat	0ft	clear	overcast

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
Green Lantern	0000	1136	Survey	614	Photo transects and artifact collection
Green Lantern	1136	1210	OFF Bottom	614	Jason off bottom end Dive J2-471
Green Lantern	1210	1215	Recover ROV	0	Jason-2 on deck
In Transit	1300	2020	In Transit	0	In Transit to Gulf Penn 8hours (waited for a ship to pass us)
In Transit	1730	1745	Meeting	0	Science Meeting
On Station	2020	2033	Launch ROV	0	Launch Jason-2 Start Dive J2-472
Gulf Penn	2031	2108	On Bottom	910	Begin dive J2-472
Gulf Penn	2108	2400	On Bottom	910	biological sampling and photo transects

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**19**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
MC 245	27 43	90 42	PC 7	Sediment	912	
MC 245	27 43	90 42	PC 8	Sediment	912	
MC 245	27 43	90 42	Q 14A	Coral	911	Gorgonian/crab/
MC 245	27 43	90 42	Port Biobox	Artifact	911	Sheave
MC 245	27 43	90 42	Port Biobox 2	Artifact	911	Plate
MC 245	27 43	90 42	Stbd	Artifact	912	Bell
MC 245	27 43	90 42	Bucket	Artifact	912	Lantern
MC 245	27 43	90 42	biochamber 1	Artifact	911	Rusticle
MC 245	27 43	90 42	biochamber 2	Artifact	911	Fork
MC 245	27 43	90 42	biochamber 2_A	Artifact	911	Lantern cap?
MC 245	27 43	90 42	Slurp Green	Biological	911	Tubeworm shell?

TDI-Brooks Rep (Lara Miles) Comments:

Very successful dive. Green Lantern 1910-1920 probably sank. Dated by a manufacturer stamp on the back of a plate “Wood & Sons” from England. The ships bell was recovered but no writing is seen on it. The lantern had starboard in Spanish written on the side of it. A sealed box was brought up with possible contents inside. We started steaming to the Gulf Penn at 1300 and arrived at 2020. The Gulf Penn was a WW-2 tanker that was sunk by U boats in 1942. It is 400ft long with 60ft of relief off of the bottom. The large community of live Lophelia was still present and healthy. This will be a 12hour dive. We will have to be cautious working around this wreck as there are several safety hazards.

Planned Activities next 24 hours (Lara Miles):

The plan is to come up at 0800 and then dive at 1600 on VK906 in an area called Robert’s Reef. There will be a fine scale bathymetry survey completed at the site using Jason-2.
Issued by:

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Thursday 10th September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 23** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
VK 906	**29 4.142442 N**	**88 22.627272 W**

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
	choppy	1-3ft	clear	overcast

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
Gulf Penn	0000	0737	Survey	544	Photo transects and genetic collections
Gulf Penn	0737	0815	OFF Bottom	544	Jason off bottom end Dive J2-472
Gulf Penn	0815	0820	Recover ROV	0	Jason-2 on deck
In Transit	0825	1445	In Transit	0	In Transit to VK 906
In Transit	1300	1320	Drill	0	Fire Drill, Abandon Ship
On station	1445	1550	On Station	0	Holding Station until Launch
On Station	1555	1602	Launch ROV	0	Launch Jason-2 Start Dive J2-473
VK 906	1602	1633	On Bottom	494	Begin dive J2-473
VK 906	1633	2400	On Bottom	494	Biological samples, bathymetry survey

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**20**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
Gulf Penn	28 26	89 19	PC 1	Sediment	561	background
Gulf Penn	28 26	89 19	PC 2	Sediment	561	background
Gulf Penn	28 26	89 19	PC 3	Sediment	561	background
Gulf Penn	28 26	89 19	PC 4	Sediment	561	background
Gulf Penn	28 26	89 19	PC 5	Sediment	561	background
Gulf Penn	28 26	89 19	PC 6	Sediment	557	near coral
Gulf Penn	28 26	89 19	PC 8	Sediment	557	near coral
Gulf Penn	28 26	89 19	PC 9	Sediment	557	near coral
Gulf Penn	28 26	89 19	probe recovery	Recovery	542	
Gulf Penn	28 26	89 19	MP D	Community	557	lophelia
Gulf Penn	28 26	89 19	Q 10A	Coral	557	lophelia
Gulf Penn	28 26	89 19	Q 9A	Coral	545	lophelia
Gulf Penn	28 26	89 19	Q 10B	Coral	540	lophelia
Gulf Penn	28 26	89 19	Q 8A	Coral	541	octocoral
Gulf Penn	28 26	89 19	Q 6A	Coral	541	octocoral
Gulf Penn	28 26	89 19	Q 8B	Coral	542	lophelia
Gulf Penn	28 26	89 19	Q 9B	Coral	542	lophelia
Gulf Penn	28 26	89 19	Q 4A	Coral	548	lophelia
Gulf Penn	28 26	89 19	Q 1A	Coral	551	lophelia
Gulf Penn	28 26	89 19	Q 6A 2	Coral	553	lophelia
Gulf Penn	28 26	89 19	Biochamber 2	Coral	547	lophelia
VK 906	29 4.142736	88 22.627302	PC 1	Sediment	393	near coral
VK 906	29 4.142670	88 22.627464	PC 2	Sediment	393	near coral
VK 906	29 4.142664	88 22.627068	MP D	Coral	393	lophelia
VK 906	29 4.115262	88 22.653768	Q 10A	Coral	402	Leiopathes white/salmon
VK 906	29 4.115472	88 22.653768	Q 10A_2	Coral	402	Lophelia/Leiopathes orange
VK 906	29 4.086510	88 22.652568	Q 4B	Coral	423	Lophelia/Antipatharian
VK 906	29 3.878328	88 22.853346	Q6	Rock	483	carbonate
VK 906	29 3.878520	88 22.853316	Q2	Rock	483	carbonate
VK 906	29 3.878520	88 22.853316	Q5	Rock	484	carbonate
VK 906	29 3.878538	88 22.853868	Q 4A	Coral	483	lophelia
VK 906	29 3.894948	88 22.889928	Niskin	Water	483	water
VK 906	29 3.894534	88 22.889244	Q 4A	Rock	485	carbonate
VK 906	29 3.894624	88 22.889310	Q 8A	Coral	485	lophelia

TDI-Brooks Rep (Lara Miles) Comments:

The last wreck dive was on the WW2 tanker the Gulf Penn. We visited several large Lopehlia communities that were previously discovered on earlier dives. Several push cores were taken near and away from the wreck as well as Lophelia and octocoral collections. We recovered Jason at 0820 and began steaming back to VK 906. On the way we had a fire and abandon ship safety drill. Everyone preformed professionally and the scientists were very prompt in getting to their correct muster stations. We launched Jason at 1600 and began a survey of Robert's Reef with biological and carbonate collections.

Planned Activities next 24 hours (Lara Miles):

Tomorrow we will come up at 0800 there will be a 4hour turn around and dive at 1200 at VK 826. Then we will come up at 0000 and start heading towards shore. We should be in port by 11:00 EST.

Issued by:

____

Lara Miles
Rep
TDI-Brooks

DAILY PROGRESS REPORT
Ending 2400 Friday 11th September 2009

NOAA Ron Brown
e-mail:

TDI-Brooks International, Inc
e-mail: **drjmbrooks@aol.com**
Phone: 979-696-3634 (Jim Brooks mobile)
Phone: 979-693-3446 (Main office in Texas)

TDI-Brooks **Report number: 24** **MMS**

LOPHELIA II CRUISE 3

Ship Location (as of 2400 hrs this day):

Site Name	Latitude	Longitude
In Transit	N	W

Weather summary at 0700 hrs this day:

Wind	Sea	Sea	Air Visibility	Sky
30kts	choppy	4-6ft	hazy	raining

Event Log for today (UTC = Local)

Site	Start	End	Activity	Depth	Comments
VK 906	0000	0737	Survey	0	Photo transects and genetic collections
VK 906	0737	0815	OFF Bottom		Jason off bottom end Dive J2-473
VK 906	0815	0820	Recover ROV	0	Jason-2 on deck
In Transit	0825	1025	In Transit	0	In Transit to VK 826
In Transit	1000	1030	Meeting	0	Artifact Presentation for Crew and Science
On station	1025	1200	On Station	0	Holding Station until Launch
On Station	1200	1230	Launch ROV	0	Launch Jason-2 Start Dive J2-474 Weather Delay
VK 826	1229	1259	On Bottom	546	Begin dive J2-474
VK 826	1259	2230	Collections	546	Collecting live Lophelia and genetic samples
VK 826	2300	2312	Off Bottom	546	
In Transit	2312	2400	In Transit	546	In Transit to Pensacola, FL

Activity (as of 2400 hrs this day):

Dives			
Job Plan	**Today**	**Previous**	**Remaining**
	1	**21**	

Sediment Traps			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Current Meters			
Job Plan	**Today**	**Previous**	**Remaining**
0	**0**	**2**	**0**

Site/Sample Log:

Site	Lat	Lon	Activity	Samples	Depth m	Comment
VK 906	29 4.158684	88 22.606290	Q 8B	coral	394	antipatharian/ white
VK 906	29 4.158846	88 22.620522	Q 7A	coral	392	antipatharian/ orange, lophelia
VK 906	29 4.158834	88 22.620528	Q 7A_2	coral	392	antipatharian/ white
VK 906	29 4.168494	88 22.628904	Q 7B	coral	390	antipatharian/ orange
VK 906	29 4.168482	88 22.628832	Q 6A	coral	390	antipatharian/ white
VK 906	29 4.156266	88 22.620504	Q 9B	coral	392	antipatharian/ white
VK 906	29 4.157232	88 22.619688	Q 9A	coral	392	antipatharian orange, lopehlia
VK 906	29 4.158576	88 22.614420	BioChamber fore	coral	392	antipatharian
VK 906	29 4.302204	88 22.495890	Port Biobox	coral	400	live lophelia
VK 906	29 4.142220	88 22.626906	Slurp Green	coral	393	
VK 826	29 9.271260	88 1.389732	Q 10A	coral	543	callogorgia
VK 826	29 9.271476	88 1.389330	Q 10B	coral	543	callogorgia/ophuroid arm
VK 826	29 9.271458	88 1.389330	Q 7A	coral	543	callogorgia
VK 826	29 9.281286	88 1.366164	Q 10B_2	coral	540	callogorgia
VK 826	29 9.281274	88 1.366152	Q 9A	coral	540	callogorgia
VK 826	29 9.281226	88 1.366230	Q 7B	coral	540	callogorgia
VK 826	29 9.281322	88 1.366872	Q 6A	Rock	539	carbonate
VK 826	29 9.641436	88 1.129710	Q 4A	coral	454	callogorgia
VK 826	29 9.460758	88 1.176810	Q 6A_2	coral	511	callogorgia
VK 826	29 9.460638	88 1.175790	Q 6B	coral	511	callogorgia
VK 826	29 9.493584	88 1.150512	Q 10B_3	coral	490	Lophelia
VK 826	29 9.588096	88 1.129440	Q 8A	coral	454	leiopathes
VK 826	29 9.591666	88 1.128054	Q 9B	coral	453	antipatharian
VK 826	29 9.692178	88 0.952380	Q 4B	coral	451	antipatharian
VK 826	29 9.710778	88 0.941496	Q 1A	coral	452	antipatharian salmon
VK 826	29 9.718416	88 0.938238	Q 5A	coral	451	antipatharian red/lophelia
VK 826	29 9.718890	88 0.937866	Q 5B	coral	451	antipatharian salmon
VK 826	29 9.718878	88 0.937878	Q 3A	coral	451	antipatharian red
VK 826	29 9.790026	88 0.704550	Q 2B	coral	461	antipatharian orange/ leiopathes
VK 826	29 9.465294	88 1.181466	Rock	coral	513	carbonate
VK 826	29 9.545916	88 1.103538	biobox	coral	465	Lophelia
VK 826	29 9.560472	88 1.124322	biochamber 1	coral	460	Lophelia
VK 826	29 9.568284	88 1.129962	bio chamber 2	coral	458	Lophelia
VK 826	29 9.465582	88 1.181904	PC 1	Sediment	513	tubeworms
VK 826	29 9.465576	88 1.181880	PC 2	Sediment	513	bubbles
VK 826	29 9.465582	88 1.181886	PC 3	Sediment	513	
VK 826	29 9.465588	88 1.181892	PC 4	Sediment	513	

TDI-Brooks Rep (Lara Miles) Comments:

In the early hours of the morning we completed and SM2000 scan of Robert's Reef and finished collecting sediment and live Lophelia. We were on deck by 0820 and started a short steam to VK 826. There was a short Jason-2 turn around and we were back in the water by 1230. After almost four weeks of launching Jason-2 in calm seas the last launch was successfully conducted in 4-6ft seas with gust of over 10kts and torrential downpours. Once on site, genetic, sediment and carbonate collections were conducted. Once Jason-2 was completely full with deep-sea treasures we surfaced early at 2312 and began steaming towards the Port of Pensacola. This ended Jason-2 ops for Lophelia 2009.

Planned Activities next 24 hours (Lara Miles):

Tomorrow morning we will wait for the pilot boat to escort us into port then the rest of the day will consist of de-mobing and disembarking of the scientists.

Issued by:

____

Lara Miles
Rep
TDI-Brooks