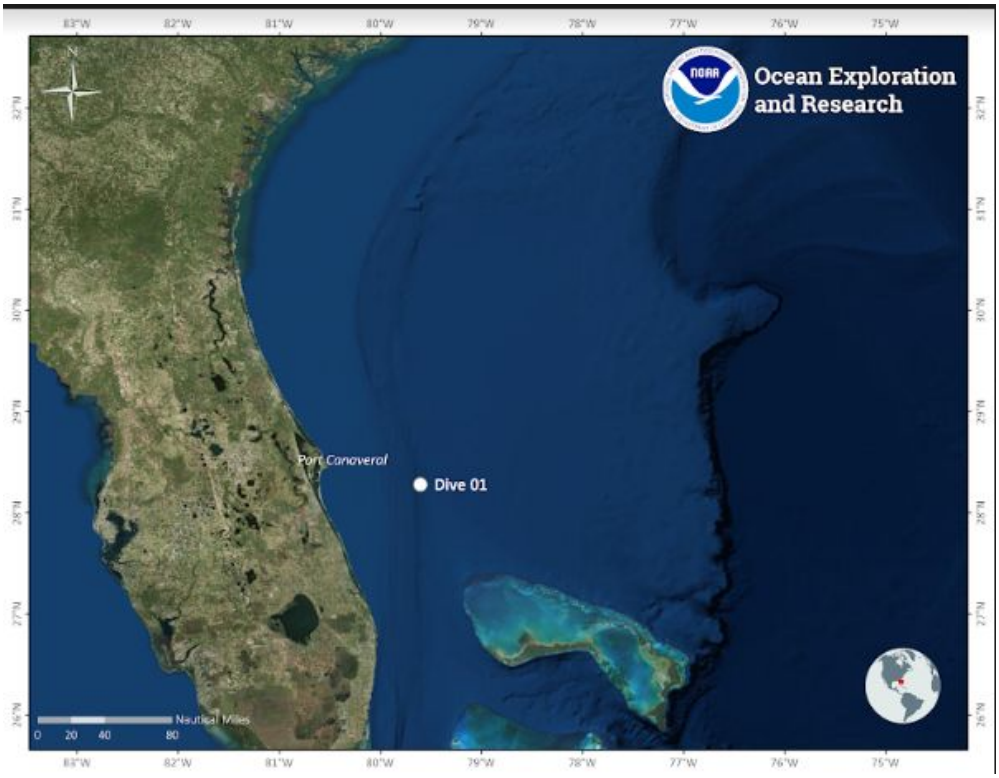
Ocean Exploration and Research

Okeanos Explorer ROV Dive Summary

Dive Information

General Location Map	
General Area Descriptor	U.S. Southeast, Blake Plateau
Site Name	Canaveral Deep
Science Team Leads	Amy Wagner (CSUS) and Alexis Weinnig (Temple)
Expedition Coordinator	Kasey Cantwell (NOAA-OER)
ROV Dive Supervisor	Chris Ritter (GFOE)
Mapping Lead	Shannon Hoy (NOAA-OER)

ROV Dive Name

Cruise	EX1903L2
Dive Number	DIVE01

Equipment Deployed

ROV	*Deep Discoverer*		
Camera Platform	*Seirios*		
ROV Measurements	✔CTD	✔Depth	✔Altitude
	✔Scanning Sonar	✔USBL Position	✔Heading
	✔Pitch	✔Roll	✔HD Camera 1
	✔HD Camera 2	✔Low Res Cam 1	✔Low Res Cam 2
	✔Low Res Cam 3	✔Low Res Cam 4	✔Low Res Cam 5
Equipment Malfunctions			
ROV Dive Summary Data (from Processed ROV)	Dive Summary: EX1903L2_DIVE01 ^^^ In Water: 2019-06-21T12:50:53.109671 28°, 15.064' N ; 79°, 36.072' W On Bottom: 2019-06-21T14:38:19.051810 28°, 15.148' N ; 79°, 35.923' W Off Bottom: 2019-06-21T20:05:00.878717 28°, 14.808' N ; 79°, 35.793' W Out Water: 2019-06-21T20:46:21.587985 28°, 14.912' N ; 79°, 35.84' W Dive duration: 7:55:28 Bottom Time: 5:26:41 Max. depth: 805.0 m		
Special Notes	ROV launch was delayed due to an increase in winds and current at launch (as compared to the drift test). Delay of launch resulted in the ship drifting north of the dive site and a long descent and tow to the first way point.		

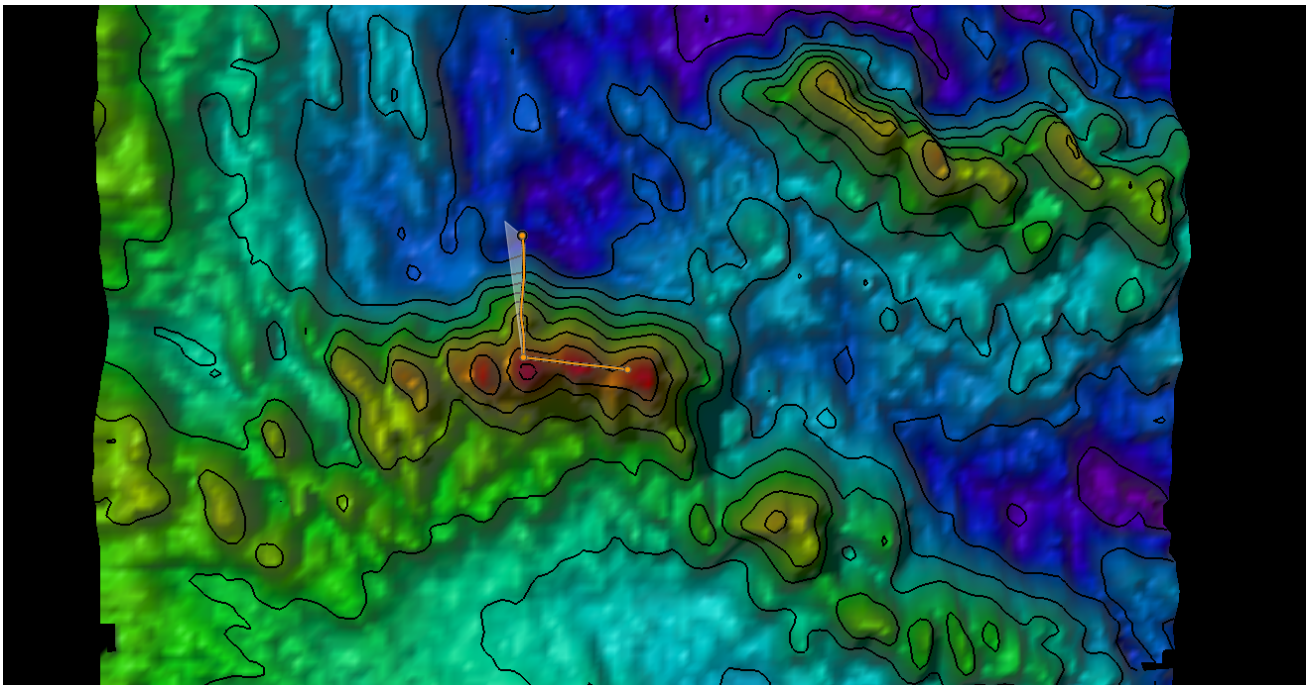
Scientists Involved (provide name, affiliation, email)

Name	Affiliation	Email
Adam Skarke	Mississippi State University	adam.skarke@msstate.edu
Alexis Weinnig	Temple University	aweinnig@temple.edu
Allen Collins	NOAA's National Systematics Lab	Collinsa@si.edu
Amy Wagner	California State University, Sacramento	amy.wagner@csus.edu
Bradley Stevens	University of Maryland Eastern Shore	bgstevens@umes.edu
Cheryl Morrison	U.S. Geological Survey	cmorrison@usgs.gov
Chip Collier	SAFMC	Chip.collier@safmc.net
Christopher Mah	Dept. of Invertebrate Zoology, NMNH Smithsonian	brisinga@gmail.com
Danielle Power	NOAA Ship Okeanos Explorer	danielle.l.power@noaa.gov
Elizabeth Fraser	NOAA NCCOS	gugliottief@gmail.com
Elizabeth Gugliotti	NOAA Deep Sea coral ecology lab	elizabeth.gugliotti@noaa.gov
Enrique (Ren) Salgado	NOAA CSS	enrique.salgado@noaa.gov
Erik Cordes	Temple University	ecordes@temple.edu
Erin Easton	University of Texas Rio Grande Valley	erin.easton@utrgv.edu
Georgios Kazanidis	University of Edinburgh	georgios.kazanidis@ed.ac.uk
Herbert Leavitt	NOAA Office of Ocean Exploration and Research (OER Hollings Scholar)	herbert.leavitt@noaa.gov
J Dunn	NOAA OER	christopher.dunn@noaa.gov
Janessy Frometa	NOAA Deep Coral Ecology Lab	janessy.frometa@noaa.gov
Jaymes Awbrey	University of Louisiana at Lafayette	jawbrey@louisiana.edu
Jeffrey Obelcz	NRC Postdoctoral Fellow, Naval Research Lab	jbobelcz@gmail.com
Jenna Hill	USGS	jhill@usgs.gov
Jill Bourque	USGS	jbourque@usgs.gov
Jim Masterson	FAU Harbor Branch Oceanographic	jmaster7@fau.edu
Joana Xavier	CIIMAR, University of Porto, Portugal	joanarxavier@gmail.com
John Reed	Harbor Branch Oceanographic Institute	jreed12@fau.edu
Kelley Brumley	Fugro	kbrumley@fugro.com

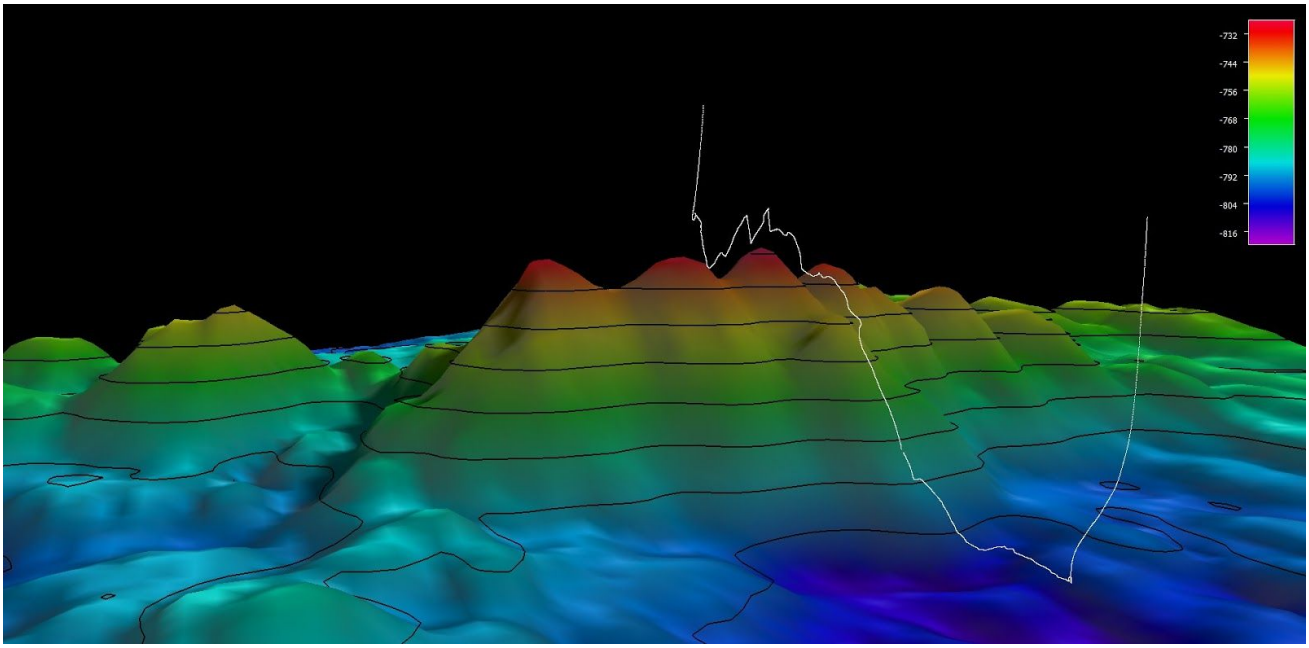
Kenneth Sulak	U.S. Geological Survey (Emeritus)	jumpingsturgeon@yahoo.com
Kevin Jerram	UNH	kjerram@ccom.unh.edu
Kevin Kocot	University of Alabama	kmkocot@ua.edu
Laura Anthony	NOAA	laura.anthony@noaa.gov
Lauren Walling	University of Louisiana at Lafayette	lauren.walling1@louisiana.edu
Luke McCartin	WHOI	
Mary Wicksten	Texas A&M University	m-wicksten@tamu.edu
Megan McCuller	North Carolina Museum of Natural Sciences	megan.mcculler@naturalsciences.org
Michael Vecchione	NOAA National Systematics Lab	vecchiom@si.edu
Mike Ford	NOAA	michael.ford@noaa.gov
Morgan Will	DCEL	morgan.will@noaa.gov
Nolan Barrett	Georgia Institute of Technology	barrettnh@g.cofc.edu
Paola Santiago	NOAA Ocean Exploration Research	paola.santiago@noaa.gov
Robert Carney	LSU, Oceanography, emeritus	rcarne1@lsu.edu
Roger Pugliese	SAFMC	Roger.Pugliese@safmc.net
Santiago Herrera	Lehigh University	sherrera@alum.mit.edu, sah516@lehigh.edu
Shannon Hoy	NOAA OER	shannon.hoy@noaa.gov
Steven Auscavitch	Temple University	steven.auscavitch@temple.edu
Tara Harmer Luke	Stockton University	luket@stockton.edu, tara.luke@stockton.edu
Timothy Shank	Woods Hole Oceanographic Institution	tshank@whoi.edu
Tina Molodtsova	P.P.Shirshov Institute of Oceanology RAS	tina@ocean.ru
Upasana Ganguly	University of Louisiana at Lafayette	upasana.ganguly1@louisiana.edu
Wilford Gardner	Texas A&M University	wgardner@ocean.tamu.edu
William Clancey	FL Institute of Human & Machine Cognition	wclancey@ihmc.us

Dive Purpose	A primary purpose of this dive is to explore the southern extent of the "Million Mounds" region of the Stetson Miami Terrace Deepwater Coral HAPC and investigate the possible influence of the Gulf Stream on deepwater habitats. The dive will target one of the east-west lateral trending mounds that are common throughout the area and could potentially be biogenic habitat for corals and associated fauna.
Dive Description	Due to increased current and winds, the ROV was north of the dive site target after launch and we proceeded to descend at a slow pace that was optimal for towing the ROV to the planned dive target. Once on the bottom at the Canaveral Deep dive target, which was around 805 meters, we first observed soft sediment that quickly transitioned into coral rubble as we approached the base of the first mound. Around the base of the mound there was more scleractinian coral rubble than live coral coverage. The live scleractinian corals around the depths of 805 - 750 meters appeared to be mostly *Enallopsammia rostrata*. The dead coral rubble also fostered a high diversity of associated species including sponges (Hexactinellids, Demospongidea), fishes (Synaphobranchid eels, *Nezumia macrourid*, and *Merluccius hake,* Congridae eel, cusk eels, Lophiodies anglerfish), octocorals (*Pseudoanthomastus/Anthomastus*, Primnoids (possibly *Plumarella*), Plexauridae, Isididae, Stoloniferous octocorals, Nephtheidae), small Stylastrids, brittle stars, crinoids, and urchins. As we traversed up the mound we observed a shift in the dominant scleractinian coral type from *Enallopsammia rostrata* to *Lophelia pertusa*. Live *Lophelia* coverage increased as we continued up the mound and there was the most live coral coverage at the top of the mound at a depth of around 725 meters. The diversity of associated organisms persisted throughout the dive and a few other scleractinians (*Enallopsommia rostrata, Madrepora oculata*) were observed in small patches. Between the mounds there was very current swept sediment, indicative of the strong currents that might be in reaching these depths from surface driven currents such as the Gulf Stream. As we started up the second mound of the dive we saw a similar, characteristic transition from mostly coral rubble at the base of the mound into more live coral coverage as we approached the top of the mound. We ended the dive at a local high at the top of the second coral mound, in between WPT1 and WPT2. Throughout the dive we had relatively consistent temperature (~7 C), oxygen (~4 mg/l), and salinity (~35 PSU) measurements. We completed four biological samples including live *Lophelia pertusa*, a soft coral (*Nephtheidae*), a bamboo coral (*Isididae*), and a *Gastroptychus* squat lobster.
Notable Observations	Three chimaeras - most of the dive consisted of either dead or live scleractinian cold-water coral coverage - many anthomastus octocorals amongst dead coral framework
Community Presence/ Absence (community is defined as more than two species)	✔ Corals and Sponges ✔ Chemosynthetic Community ✔ High biodiversity Community ✔ Active Seep or Vent ✔ Extinct Seep or Vent ✔ Hydrates
Feature Type	Deep-water/Cold-water stony coral reef (cold-water coral mound)
SeaTube Link (Annotation Program)	https://data.oceannetworks.ca/SeaTubeV2?resourceTypeId=1000&resourceId=23621&diveId=2400

Overall Map of the ROV Dive Area

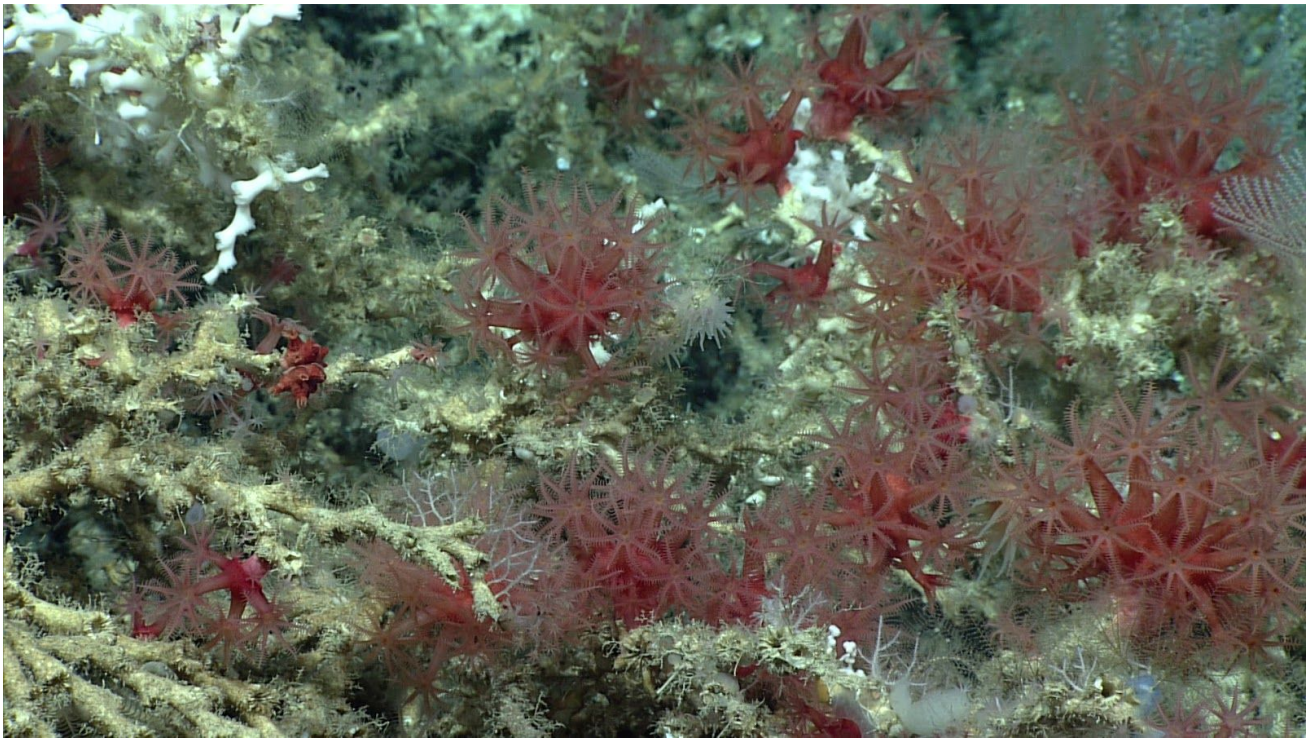


Close-up Map of Main Dive Site and Track



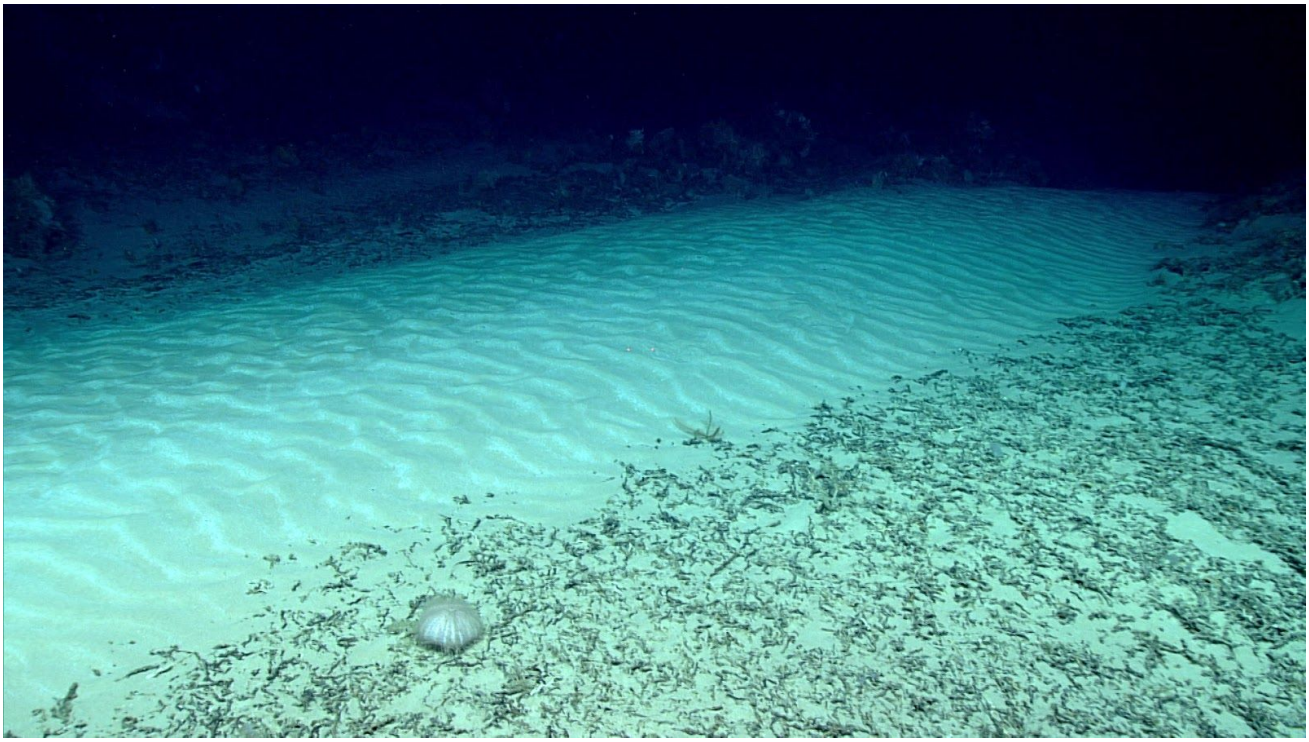
Representative Photos of the Dive

Dense live *Lophelia pertusa* thickets with associated fauna.



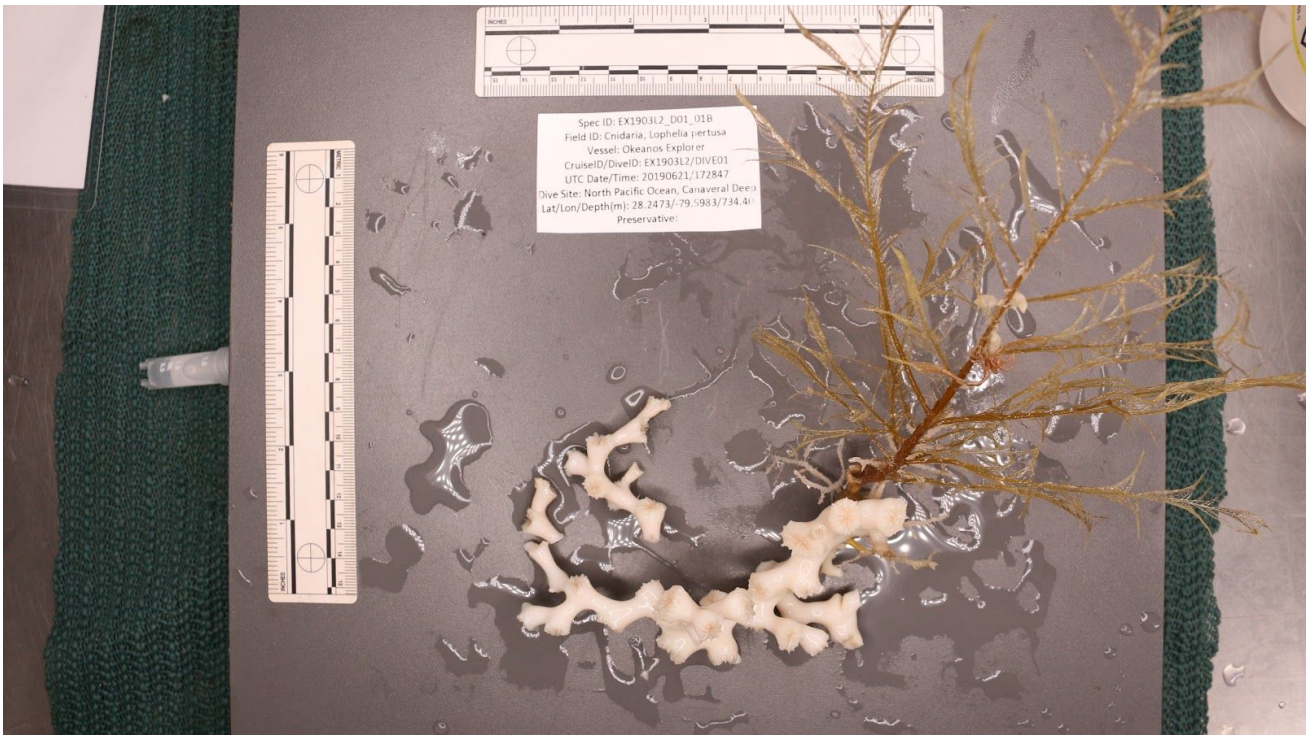
Aggregation of pink *Anthomastus sp.* soft corals growing on dead *Lophelia pertusa* framework.

Angler fish (*Sladenia*) perched on coral rubble



Sand ripples in the soft sediment surrounded by coral rubble in between two cold-water coral mounds

Samples Collected



Sample ID	EX1903L2_D01_01B
Date (UTC)	20190621
Time (UTC)	172847
Depth (m)	734.4
Temp. (˚C)	7.108
Field ID(s)	*Lophelia pertusa*
Associates	

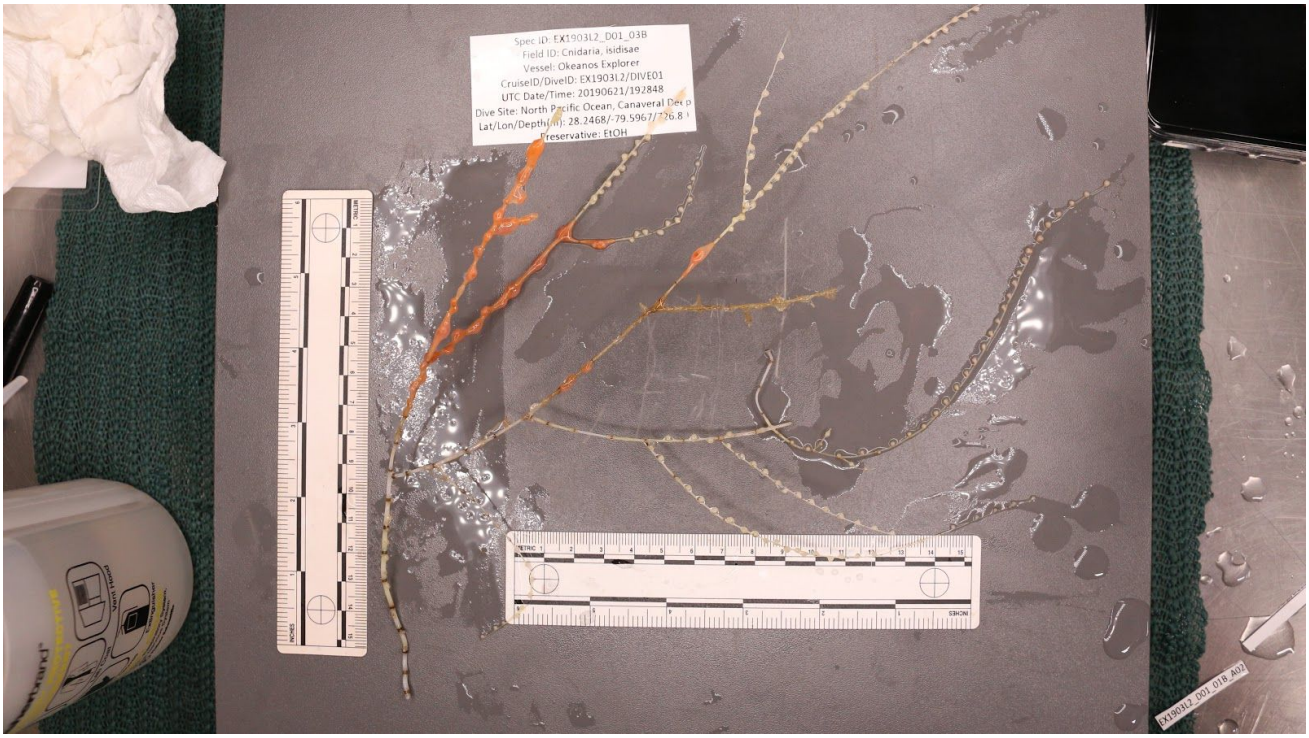
Associates Sample ID	Field Identification
EX1903L2_D01_01B_A01	Porifera
EX1903L2_D01_01B_A02	Hydrozoa
EX1903L2_D01_01B_A03	Crinoidea
EX1903L2_D01_01B_A04	Ophiuroidea
EX1903L2_D01_01B_A05	Polychaeta
EX1903L2_D01_01B_A06	Cirripedia (Barnacles)
EX1903L2_D01_01B_A07	Anemone
EX1903L2_D01_01B_A08	Primnoidae
EX1903L2_D01_01B_A09	Nephtheidae
EX1903L2_D01_01B_A10	Porifera
EX1903L2_D01_01B_A11	Anthomastus ps.
EX1903L2_D01_01B_A12	*Clavularia grandiflora*

Comments	Labels stored with samples are correct. Labels in pics for Dive 1 erroneously state Pacific Ocean

Sample ID	EX1903L2_D01_02B
Date (UTC)	20190621
Time (UTC)	183226
Depth (m)	726.7
Temp. (°C)	7.119
Field ID(s)	Nephtheidae
Associates	

Associates Sample ID	Field Identification
EX1903L2_D01_02B_A01	Hexactinellida
EX1903L2_D01_02B_A02	Amphipoda
EX1903L2_D01_02B_A03	*Lophelia pertusa* skeleton
EX1903L2_D01_02B_A04	Hydroidolina
EX1903L2_D01_02B_A05	Actiniaria
EX1903L2_D01_02B_A06	Porifera (blue encrusting sponge)

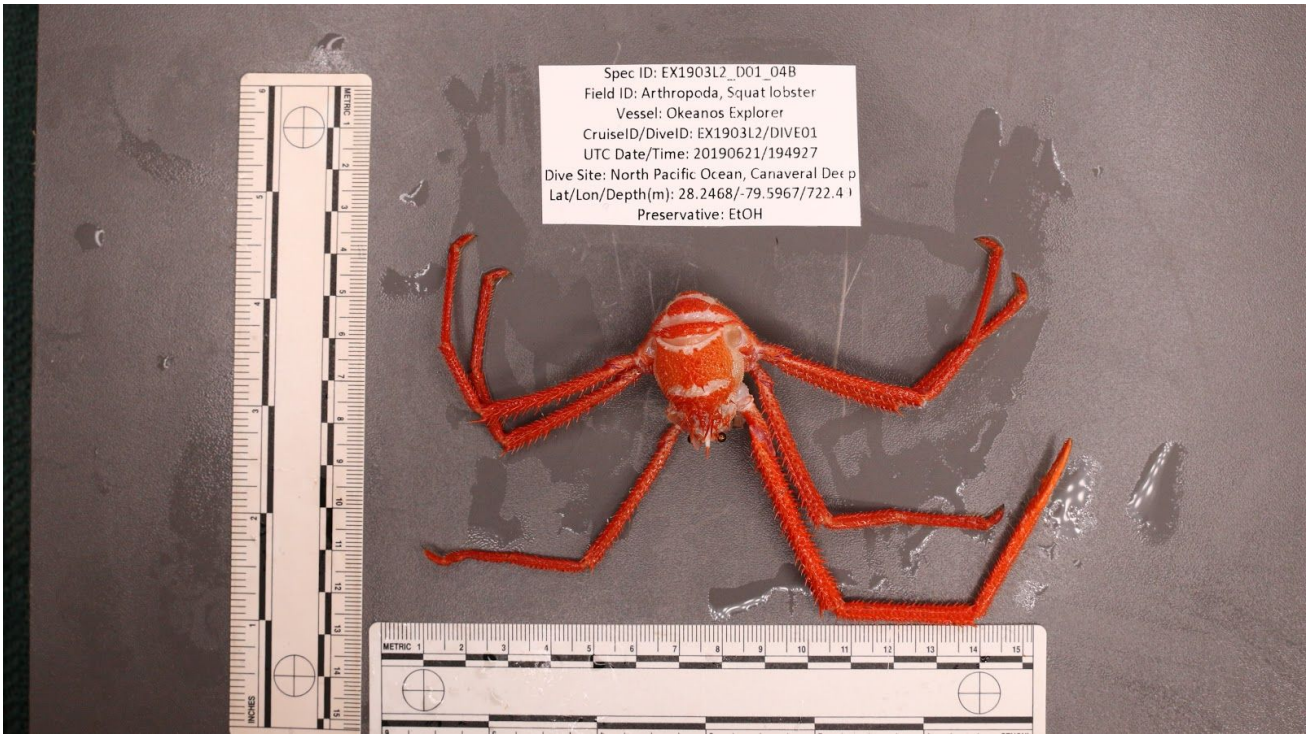
Comments	Labels stored with samples are correct. Labels in pics for Dive 1 erroneously state Pacific Ocean



Sample ID	EX1903L2_D01_03B
Date (UTC)	20190621
Time (UTC)	192848
Depth (m)	726.9
Temp. (°C)	7.131
Field ID(s)	Isididae
Associates	

Associates Sample ID	Field Identification
EX1903L2_D01_03B_A01	Actiniaria
EX1903L2_D01_03B_A02	Hydroidolina

Comments	Labels stored with samples are correct. Labels in pics for Dive 1 erroneously state Pacific Ocean



Sample ID	EX1903L2_D01_04B
Date (UTC)	20190621
Time (UTC)	194927
Depth (m)	722.5
Temp. (°C)	7.139
Field ID(s)	Chirostyloidea
Associates	Associates Sample ID: EX1903L2_D01_04B_A01 — Field Identification: Isididae
Comments	Labels stored with samples are correct. Labels in pics for Dive 1 erroneously state Pacific Ocean

Please direct inquiries to:

NOAA Office of Ocean Exploration & Research
1315 East-West Highway (SSMC3 10th Floor)
Silver Spring, MD 20910
(301) 734-1014