

ROV Dive Summary, EX-21-04, Dive 10, July 13, 2021

General Location Map



Dive 10 at the same location as Dive 09 indicated in the photo above

Dive Information

Site Name	Yakutat Seamount - Deep
General Area Descriptor	Large seamount near the Eastern margin of the Corner Rise Seamount Complex
Science Team Leads	Rhian Waller, Kira Mizell
Expedition Coordinator	Kasey Cantwell, Kimberly Galvez (Expedition Coordinator in Training)
ROV Dive Supervisor	Chris Ritter
Mapping Lead	Shannon Hoy

Dive Purpose	Explore an unexplored region of a large seamount
Was the dive restricted for Underwater Cultural Heritage?	No
ROV Dive	Dive Summary: EX2104_DIVE10
Summary Data	AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
	Dive Type: Normal
	In Water: 2021-07-13T12:30:31.589213 35.262380757290536 ; -47.99946403605061
	On Bottom: 2021-07-13T13:59:38.457659 35.26536583480826 ; -48.00233603834808
	Off Bottom: 2021-07-13T19:36:01.698069 35.26232069893101; -48.001584000385336
	Out Water: 2021-07-13T20:46:26.476686 35.2637826171117 ; -48.0033960489624
	Dive Duration: 8:15:54
	Bottom Time: 5:36:23
	Max Vehicle Depth: 1982.9 m
	Min Seafloor Depth: 1696.6 m
	Distance Travelled: 492.2 m
Dive Description	The dive began on a slope feature below the ridge of a small saddle between two bathymetric highs along the large central ridge of Yakutat seamount. The terrain where the ROV landed was a smooth pavement of rock that looked to be igneous sheet flows. Thin patches of coarse biogenic sediments and ancient coral rubble were also present. As the dive progressed, large igneous outcrops were observed including large collapsed pillows of basalt providing habitat for numerous fauna. A rock sample was collected at the base of what appeared to be an outcropping ledge of igneous material but may have been carbonate. Large portions of the mid-range depths of the dive showed expanses of dead coral rubble coated in a thin layer of ferromanganese oxides. During the collection of a sea star, the ROV pilots attempted to disturb the coral rubble, which was easily moved by the ROV arm, shown to be less than 10 cm thick, and covering very coarse grained biogenic sediments. As the dive progressed upslope, many linear tracks were observed in the coral rubble fields that resembled dredge or trawl tracks, some with distinct exposed sediments. A steeper wall feature was then traversed that appeared to be a large block of carbonate rock that was weathered and eroded in places, creating a varied topography and showing abraded channels and down-slope sediment flows. In order to explore some shallower features, the ROV then left the sloped and moved through the water column to the top of the saddle ridge (~1800 m). Here, smooth pavement surfaces were observed again, likely carbonate smoothed by the strong currents here, though some outcrops may have been igneous. A carbonate conglomerate of coral rubble and a rounded dropstone were also collected near the end of the dive.
	Biology was sparse on this dive, and large megafauna were notably absent from the beginning of the dive until we reached the wall feature, likely owing to the mobile rubble not being conducive to larval settling, and the potential trawling/dredging of unknown vintage. A lone and damaged Paramuricea about midway to the cliff face was the first notable megafauna. As we approached the wall and started to observe larger boulders other coral and



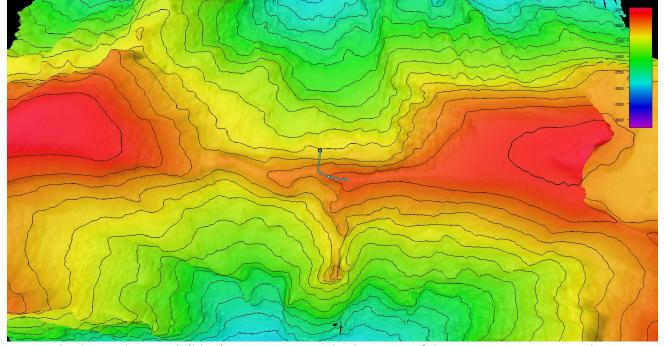
	sponge species started to appear including rosselid vase sponges, black corals (bathypathes and stauropathes), Acanella and Crysogorgia and anthomastus and the squat cup coral Vaughnella and reef builderEnallopsammia rostrata. We also collected a potentially new species of Lophaster seastar. As we climbed the wall the diversity was still low, especially compared to Dive 9, with sparse sponge colonies and almost absent of corals, though a Orniteuthis squid and some grenadiers were observed. Once we jumped onto the ridge the landscape biota changed considerably - large colonies of Hertwigia sponges, anemones and seastars became more abundant (though still well spread) and we observed very large colonies of Candidella imbricata, with numerous associated brittle stars. We also observed parantipathes, healthier Paramuricea (with associated astroschema brittle stars) and potentially Narella. Though the biological diversity overall was low, this was an interesting dive in terms of overall species (many not recorded until today) and diversity.
Notable Observations	expansive fields of ancient coral rubble, tracks that appear anthropogenic (trawl/dredge) in the coral rubble and coarse sediments along the slope that were well imaged by the BlueView Sonar.
Community and	Corals and Sponges - (Present)
habitat	Chemosynthetic Community - (Absent)
observations	High biodiversity Community - (Absent)
	Active Seep or Vent - (Absent)
	Extinct Seep or Vent - (Absent)
	Hydrates - (Absent)
CMECS Feature	Rock, Sediment (coarse unconsolidated)
Type(s)	
SeaTube Link	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2333
(science	
annotation	
system)	

Equipment Deployed

ROV	Deep Discoverer
Camera Platform	Seirios
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The section below notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	none

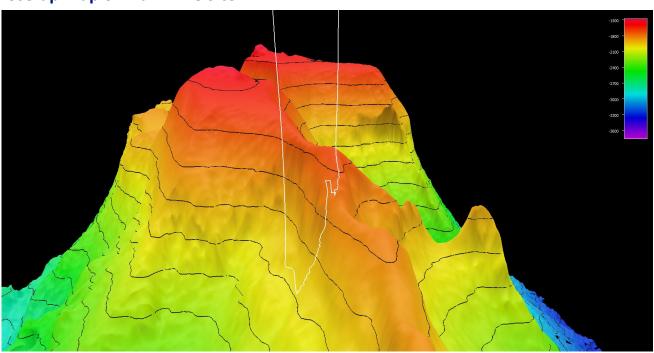
Overview of Dive Site





Smoothed ROV dive track (blue) on an overview bathymetry of the seamount, 3x vertical exaggeration.

Close-up Map of Main Dive Site



Smoothed ROV dive track in white on 25x25 cell size bathymetry, 3x vertical exaggeration, depth in meters, 100 meter contours



Representative Photos of the Dive



[A large rock outcrop amongst the fields of fossil coral rubble, encrusted with sponges, a black coral (*Stauropathes* sp.) and crinoids]

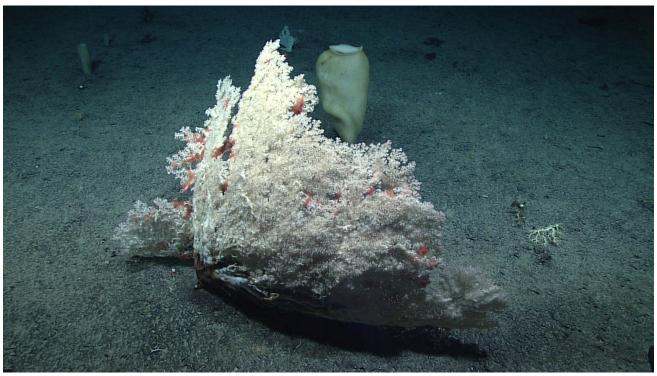


[The large anthropogenic marks in the fossil coral rubble with D2 for scale. These marks were also observed in the sonar scans from the BlueView]





[Scar marks in the wall thought to be due to a mix of water and sediment cascading downslope, creating abraded channels]



[A large Candidella imbrucata colony on the ridge at the top of the dive]



Samples Collected -



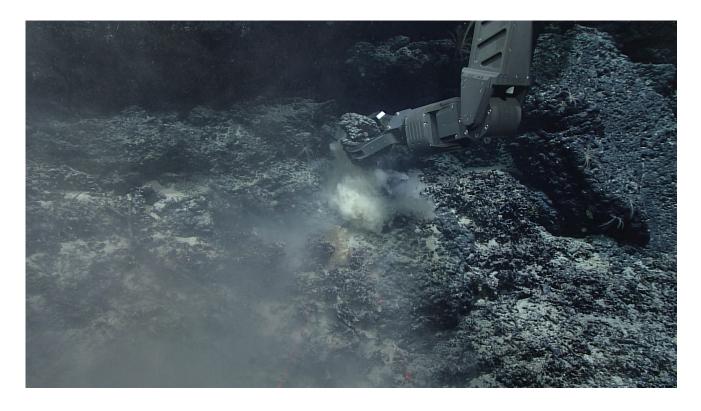


Sample ID	EX2104_D10_01B
Date (UTC)	20210713
Time (UTC)	162611
Depth (m)	1893.041016
Latitude (decimal degrees)	35.2638588
Longitude (decimal degrees)	-48.00228119



Temp. (°C)	3.903000116
Field ID(s)	Lophaster
Comments	Potential Undescribed Species, yellow seastar

Associates Sample ID	Field Identification	Count
EX2104_D10_01B_A01	fossilized coral	5
EX2104_D10_01B_A02	shell pieces	many







Sample ID	EX2104_D10_02G
Date (UTC)	20210713
Time (UTC)	170618
Depth (m)	1867.23999
Latitude (decimal degrees)	35.26377106
Longitude (decimal degrees)	-48.00227356
Temp. (°C)	3.924999952
Field ID(s)	FeMn Covered Rock
	from base of cliff. Feels crumbly. FeMn coat. Rugged texture. Piece broke off, looks orange inside and has a lot of grains. Main sample is 24cmx17cmx12cm. Fresh worm grooves and some grooves in the FeMn crust.

Associates Sample ID	Field Identification	Count
N/A	N/A	N/A







Sample ID	EX2104_D10_03G
Date (UTC)	20210713
Time (UTC)	190648
Depth (m)	1723.520874
Latitude (decimal degrees)	35.26225281
Longitude (decimal degrees)	-48.00170898
Temp. (°C)	3.933079958



Field ID(s)	Coral rubble
Comments	and many attached biota

Associates Sample ID	Field Identification	Count
EX2104_D10_03G_A01	Ophiuroidea	3







Sample ID	EX2104_D10_04G	
Date (UTC)	20210713	
Time (UTC)	192958	
Depth (m)	1699.118042	
Latitude (decimal degrees)	35.26202774	
Longitude (decimal degrees)	-48.00107956	
Temp. (°C)	3.98803997	
Field ID(s)	rounded dropstone	
	totally hard, rounded basalt cobble with one cleaved edge. 23cm long x 12cm wide x 15cm high.	

Associates Sample ID	Field Identification	Count
N/A	N/A	N/A

Scientists Involved (provide name, email, affiliation)

First Name	Last Name	Email	Affiliation
Christopher	Kelley	ckelley@hawaii.edu	University of Hawaii
Christopher	Mah	brisinga@gmail.com	Dept. Invertebrate Zoology, National Museum of Natural History
Cindy	Van Dover	clv3@duke.edu	Duke University
David	Vousden	davidvousden@oceangov.org	United Nations and Global



			Environment Facility
Dhugal	Lindsay	dhugal@jamstec.go.jp	JAMSTEC
Emily	Crum	emily.crum@noaa.gov	NOAA Ocean Exploration
George	Matsumoto	mage@mbari.org	MBARI
Harold	Carlson	harold.carlson@noaa.gov	NOAA, USC
Jason	Chaytor	jchaytor@usgs.gov	USGS
Jaymes	Awbrey	C00227433@louisiana.edu	University of Louisiana at Lafayette
Jocelyn	Cooper	jocelyn.cooper@maine.edu	University of Maine
John	Deitz	johncdeitz@comcast.net	Long Island University
Julia	Johnstone	julia.johnstone@maine.edu	University of Maine
Kasey	Cantwell	kasey.cantwell@noaa.gov	NOAA Ocean Exploration
Kelsey	Viator	ksviator2000@gmail.com	University of Louisiana at Lafayette
Kenneth	Sulak	jumpingsturgeon@yahoo.com	USGS
Kevin	Konrad	Kevin.Konrad@unlv.edu	University of Nevada, Las Vegas
Kimberly	Galvez	kimberly.galvez@noaa.gov	NOAA Ocean Exploration
Kira	Mizell	kmizell@usgs.gov	USGS
Les	Watling	watling@hawaii.edu	University of Hawaii at Manoa
Michael	Vecchione	vecchiom@si.edu	NOAA & NMNH
Noelle	Helder	noelle.helder@noaa.gov	NOAA NOAA Ocean Exploration
Rhian	Waller	rhian.waller@maine.edu	University of Maine
Steve	Auscavitch	steven.auscavitch@temple.edu	Boston University
Tina	Molodtsova	tina@ocean.ru	P.P.Shirshov Institute of Oceanology RAS
		upasana.ganguly1@louisiana.ed	
Upasana	Ganguly	u	University of Louisiana at lafayette
Pierre	Josso	piesso@bgs.ac.uk	British Geological Survey
Vonda	Wareham-Hayes	vonda.wareham-hayes@dfo- mpo.gc.ca	DFO Newfoundland and Labrador Region

Please direct inquiries to:

NOAA Office of Ocean Exploration & Research 1315 East-West Highway, SSMC3 RM 10210 Silver Spring, MD 20910 oceanexplorer@noaa.gov

