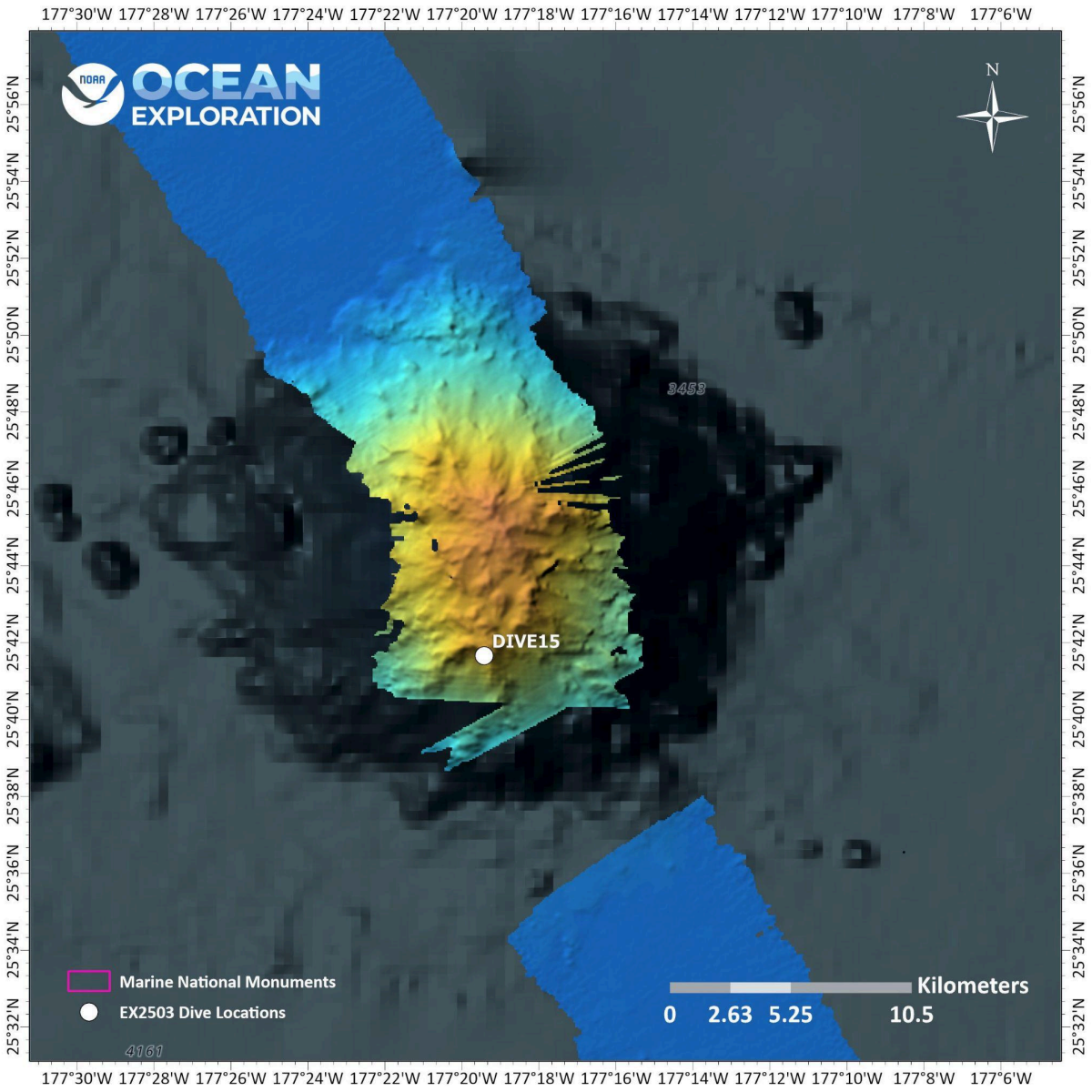
ROV Dive Summary
EX2503, Dive 15, April 29, 2025

General Location Map



Dive Information

Site Name	Unnamed Seamount 07: Southwest of Salmon Bank
General Area Descriptor	Papahānaumokuākea
Science Team Leads	Sara Kahanamoku-Meyer (UH Mānoa/HI Sea Grant) and Brian Kennedy (ODL/BU)
Expedition Coordinator	Sam Cuellar (NOAA Ocean Exploration)
ROV Dive Supervisor	Chris Ritter (GFOE)
Mapping Lead	Neah Baechler (NOAA Ocean Exploration/UCAR)
Sample Data Manager	Anna Lienesch and Jordan Schweizer (NCEI)
Dive Purpose	The goal of EX2503 Dive 15 was to explore a lumpy, isolated seamount feature (summit depth: ~2000 meters) southwest of Salmon Bank. Our goal was to examine how communities on this seamount compare with other, less isolated seamount communities across Papahānaumokuākea. We targeted a depth range between 2400 and 2200 meters in order to make comparisons against other seamount communities investigated during EX2503.
Maritime Heritage Restrictions	No

ROV Dive Summary Data	Dive Type: Normal In Water: 2025-04-28T19:11:08.467186 25.694121 ; -177.323145 On Bottom: 2025-04-28T20:39:14.907657 25.692612649547435 ; -177.32131075226283 Off Bottom: 2025-04-29T01:15:00.802984 25.695104958410216 ; -177.32178125346582 Out Water: 2025-04-29T02:34:24.829447 25.6958579784171 ; -177.3195937886231 Dive Duration: 7:23:16 Bottom Time: 4:35:45 Max Vehicle Depth: 2389.8 m Min Seafloor Depth: 2244.0 m Distance Travelled: 327.5 m

Dive Description	EX2503 Dive 15 began with visualization of the seamount ridge at 1038 HST. Upon reaching the bottom depth, the ROV pilots noted a strong downwelling at this locality. We noted large pillow basalt flows interspersed with sediment pools; a number of fan- and whip-type corals from the genera *Narella*, *Chrysogorgia*, *Calyptrophora*, and *Hemicorallium* were growing on the basalt pillows. Notably, we observed multiple individuals of an unusual Chrysogorgid coral with a mixture of *Chrysogorgia* and *Metallogorgia* morphologies, similar to the individual sampled on EX2503 Dive 14. We also observed several *Stauropathes, Bathypathes*, and *Trissopathes* black corals at these depths. As we continued to shallow up we noted several transitions between cobble fields and sloping pillow basalt pavement. While corals were occasionally present on cobble, we noted that large fields of *Calyptrophora* were only present on pillow basalt flows across this transect. Along the way to the summit we came across and collected four likely new or undescribed species: a crinoid similar in coloration to one collected on Dive 12 (which, upon inspection topside, was a different morphology than that individual); an extremely mobile brittle star in the family Ophimyxidae; a snail likely in the family Margaritidae; and a sea cucumber likely in the family Synallactidae. Thus, while the communities present on this seamount were not particularly dense, they contained a number of organisms new to western science. This seamount was also particularly well-suited for geological sampling, and two potential pillow basalt fragments were collected for radiometric dating and isotope work. We also sampled sediments at the bottom depth at the dive (but were unable to do so at the top depth given the hard ground pavement in that region), and water samples at regular intervals across the dive transect. Dive 15 ended in a local high with a view of a dense *Calyptrophora* forest on top of a hummocky pillow basalt hill.
Notable Observations	Four potential new or undescribed species of brittle star (Ophimyxidae), sea cucumber (Synallactidae), crinoid (Antedonidae), and gastropod (Margaritidae). Variations in the density of *Calyptrophora* and other coral communities across the dive provided clear visuals of the patchiness of coral and sponge seamount communities.

Community and Habitat Observations	Corals and Sponges — Present Chemosynthetic Community — Absent High biodiversity Community — Present Active Seep or Vent — Absent Extinct Seep or Vent — Absent Hydrates — Absent
CMECS Feature Type(s)	Seamount > Boulder Field > Slope > Wall
SeaTube Link (science annotations)	https://data.oceannetworks.ca/app/dive-logs/2205

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 following row notes if any of these sensors were malfunctioning or not operational.
Equipment Malfunctions	

Close-Up Map of Main Dive Site

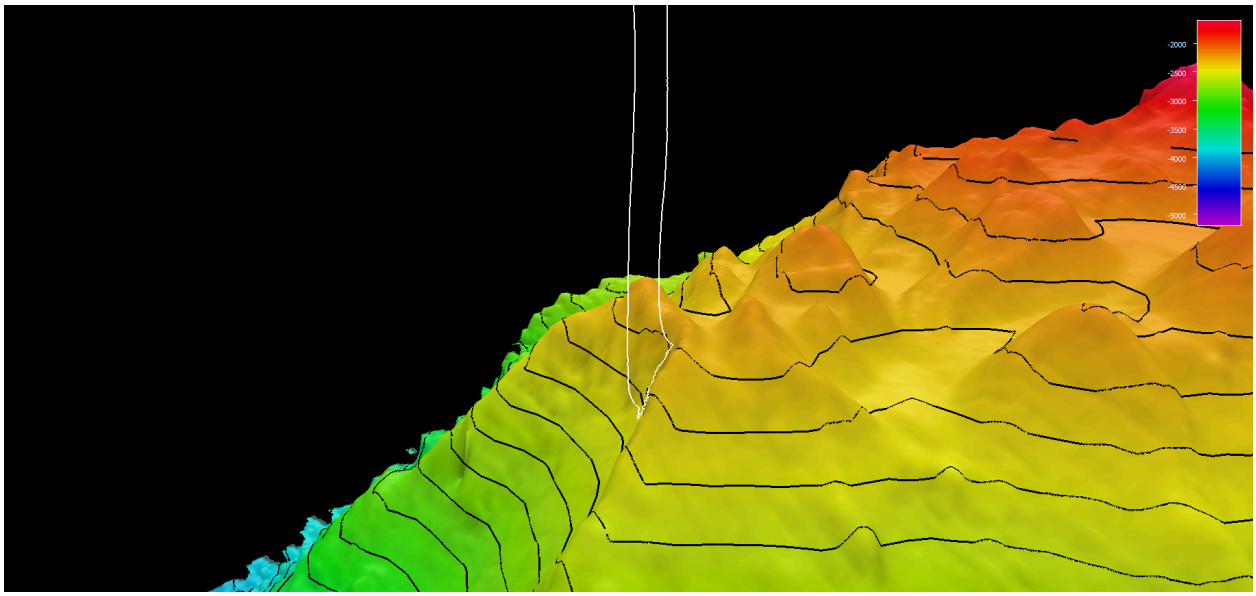


Figure 1: Dive 15 dive site. Shown in 2x vertical exaggeration; smoothed ROV dive track shown in white on 50x50 (interpolated) cell size bathymetry. Depth shown in meters; coloration based on depths with 100-meter contours overlain.

Sound Speed Manager Image of ROV CTD Profile

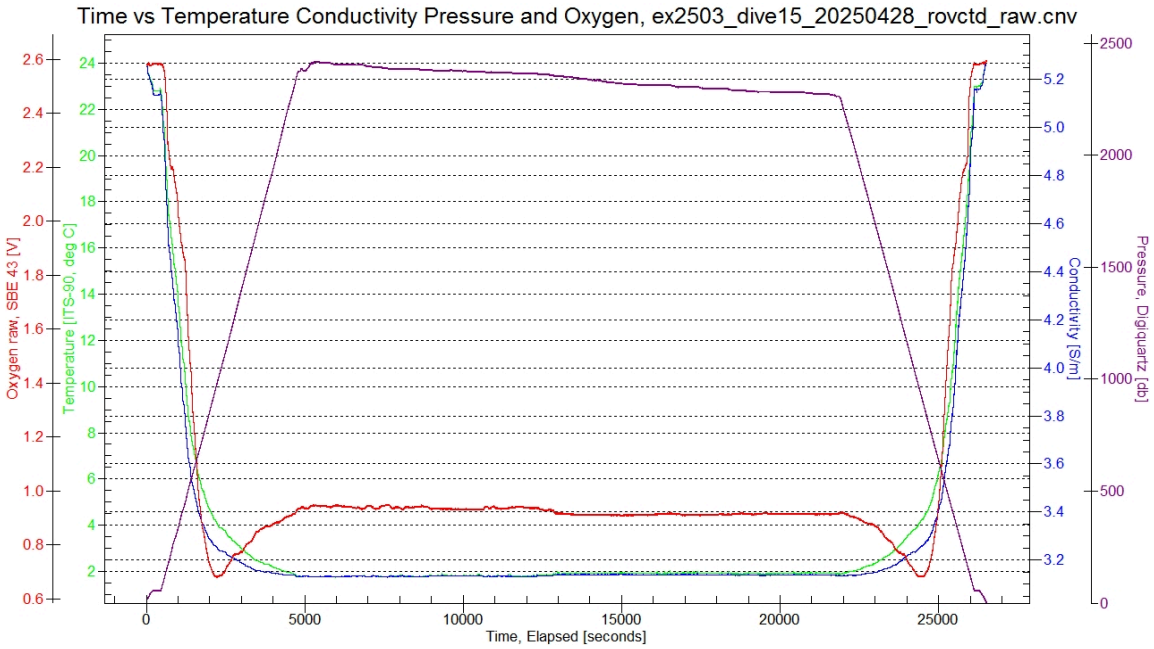
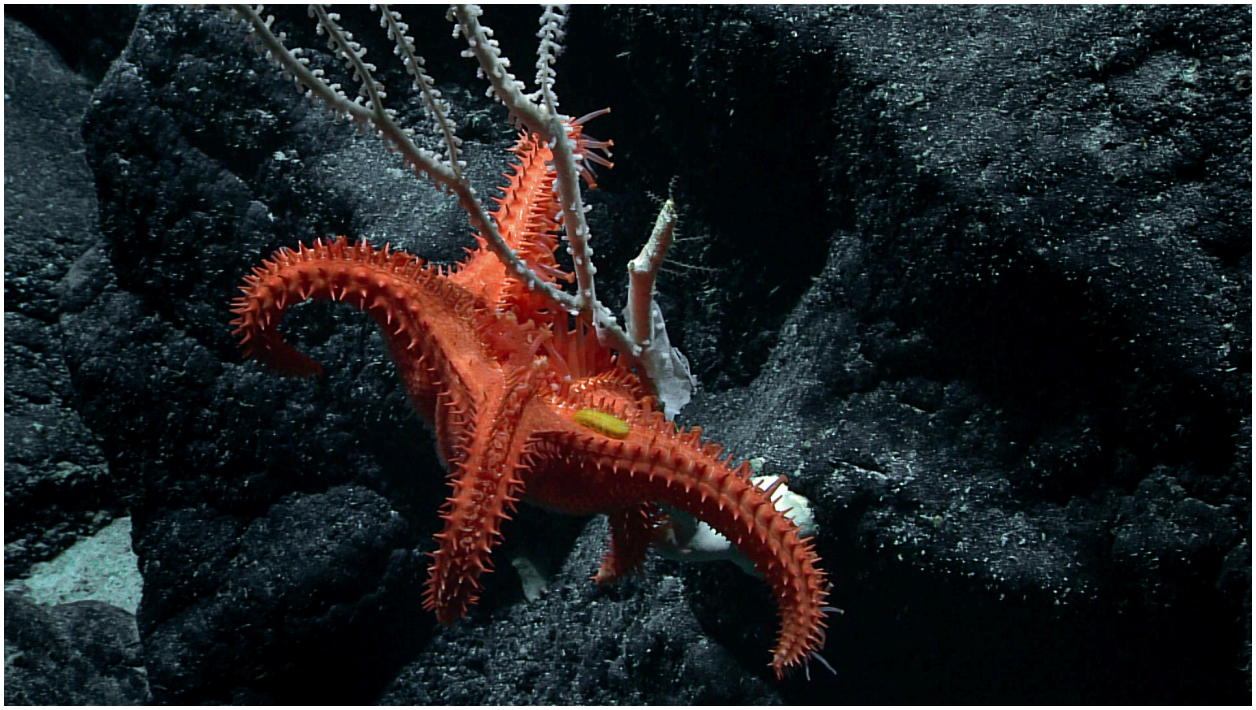


Figure 2. Ambient conditions during Dive 15. Plot shows Temperature (˚C), Conductivity (S/m), Pressure (db), and Oxygen (V; as measured by SBE43).

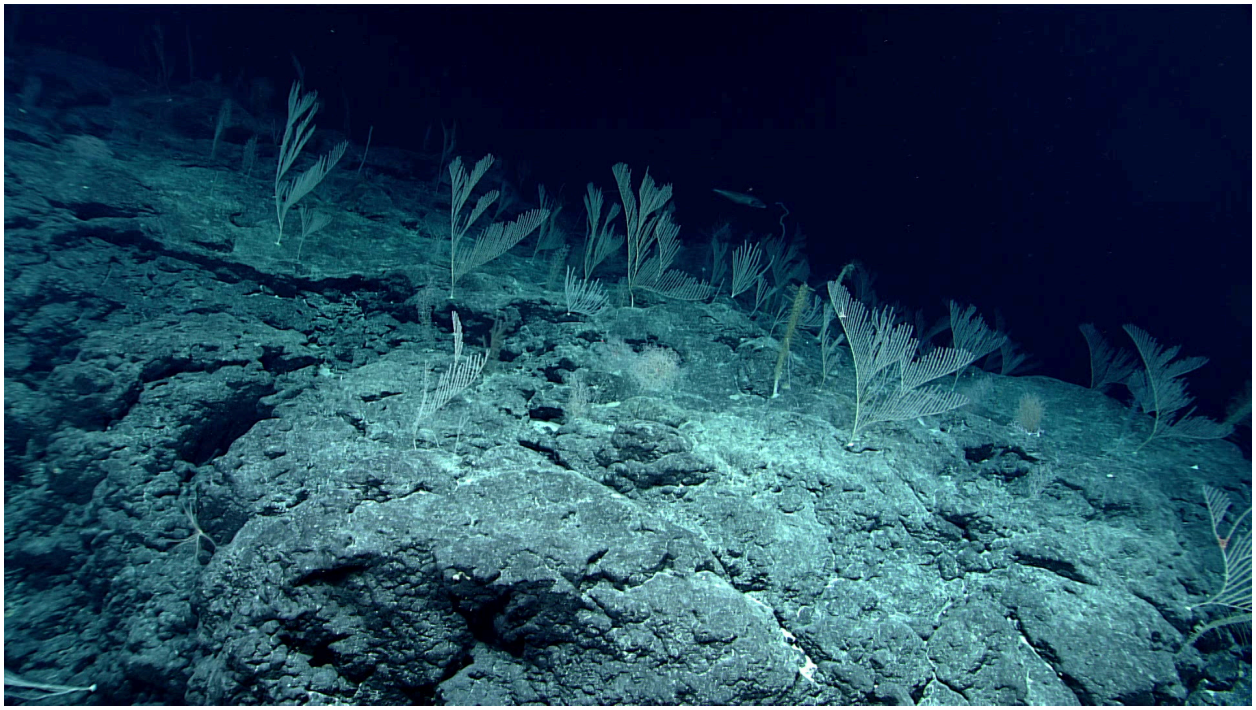
Representative Photos of the Dive

EX2503 Dive 15 explored a hummocky ridge of an isolated seamount. Higher-resolution mapping data collected by mappers on *Okeanos Explorer* just prior to the dive revealed these hummocks and drove a last-minute course change to explore the edge of one particularly steep hummocked ridge.



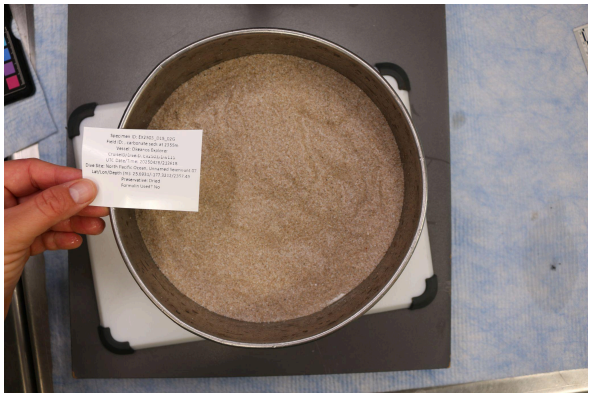
A number of predatory sea stars (family Goniasteridae) were observed feeding on corals during EX2503 Dive 15. This star was taking a break from feeding on a Primnoid coral. On the star is a small polychete scale worm.

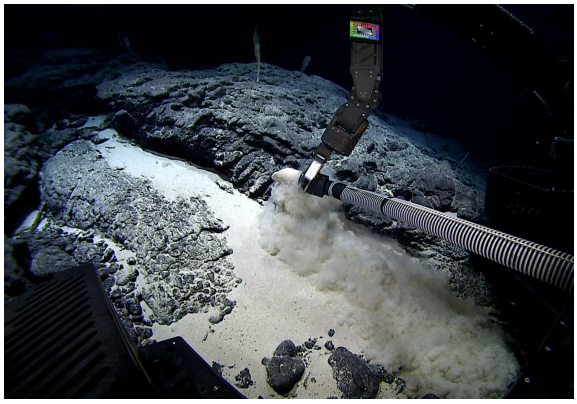
Hummocky volcanic terrain created a highly patchy community, where more barren areas of cobbled rocks would give way to large boulders home to dense and diverse communities of corals. Pictured here is one such community, where *Hemicorallium, Chrysogorgia, Narella,* and *Calyptrophora* corals were tightly grouped on the sheer upcurrent side of a large pillow basalt boulder.



Fields of lyrate *Calyptrophora* corals were commonly observed on smooth basalt flows during EX2503 Dive 15.

Samples Collected





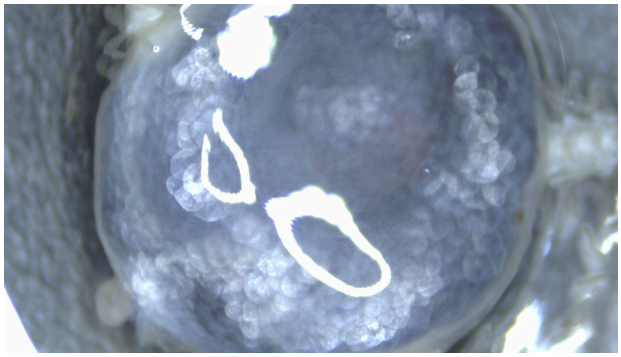
Sample ID	EX2503_D15_02G
Date (UTC)	20250428
Time (UTC)	212618
Depth (m)	2357.45092773438
Latitude (decimal degrees)	25.6930599212646
Longitude (decimal degrees)	-177.321197509766
Temp. (°C)	1.81500005722046
Field ID(s)	carbonate seds at 2355m
Comments	Sediments. Carbonate ooze sampled from sediment pool with clear burrowing traces potentially due to tube worm.

Associates Sample ID:	EX2503_D15_02G_A01B
Field Identification:	Annelida
Count:	1

Sample ID	EX2503_D15_03G
Date (UTC)	20250428
Time (UTC)	214926
Depth (m)	2350.36206054688
Latitude (decimal degrees)	25.6931629180908
Longitude (decimal degrees)	-177.321334838867
Temp. (°C)	1.81599998474121
Field ID(s)	Basalt

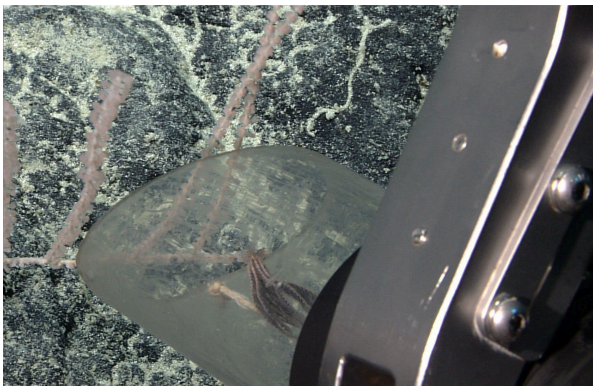
Comments	Two faces of rock are heavily encrusted, one face is lightly encrusted. Some shiny spots potentially from currents.

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

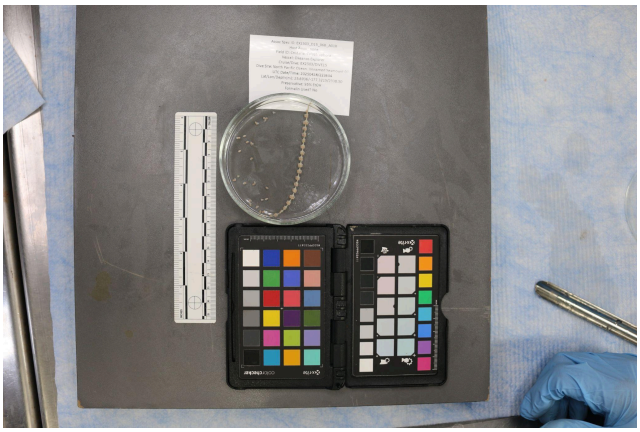


Sample ID	EX2503_D15_04B
Date (UTC)	20250428
Time (UTC)	222232
Depth (m)	2342.19189453125
Latitude (decimal degrees)	25.6934719085693
Longitude (decimal degrees)	-177.32145690918
Temp. (°C)	1.79900002479553
Field ID(s)	Ophiomyxidae
Comments	Blue/purple bulbous thing on the dorsal surface. Blue, bulbous part looks like partially iridescent scales. Scale pieces appear transparent on arms.

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



Sample ID	EX2503_D15_06B
Date (UTC)	20250428
Time (UTC)	223634
Depth (m)	2338.498046875
Latitude (decimal degrees)	25.6935501098633
Longitude (decimal degrees)	-177.321548461914
Temp. (°C)	1.7940000295639
Field ID(s)	Antedon
Comments	Largely intact. Elongated tentacles(?) around the central disk covering the oral surface. Purple and white striped tentacles (?).

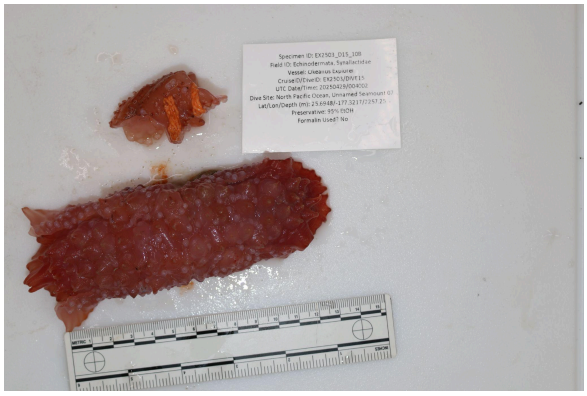


Associates Sample ID:	EX2503_D15_06B_A01B
Field Identification:	Calyptrophora
Count:	1

Sample ID	EX2503_D15_09B
Date (UTC)	20250429
Time (UTC)	001445
Depth (m)	2270.19604492188
Latitude (decimal degrees)	25.6945743560791
Longitude (decimal degrees)	-177.321762084961
Temp. (°C)	1.91299998760223

Field ID(s)	Phymorhynchus
Comments	White snail. Slight tan coloration at tip of shell. Off white foot.

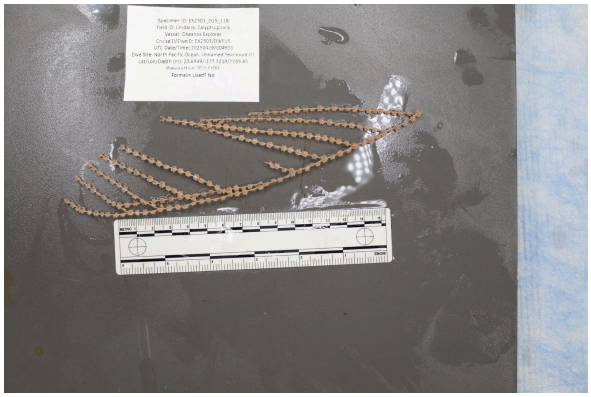
Associates Sample ID:	N/A
Field Identification:	N/A
Count:	N/A

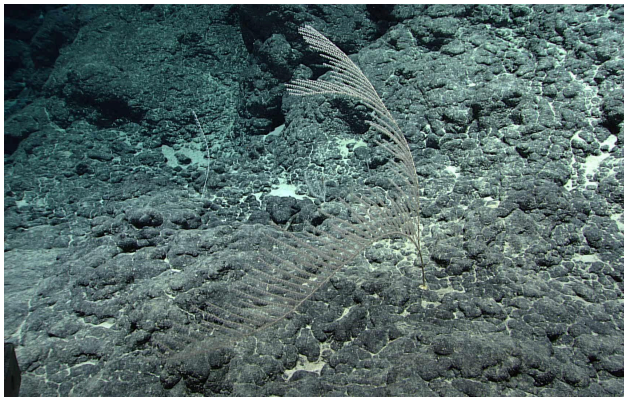


Sample ID	EX2503_D15_10B
Date (UTC)	20250429
Time (UTC)	004002
Depth (m)	2257.251953125
Latitude (decimal degrees)	25.6947860717773
Longitude (decimal degrees)	-177.321716308594
Temp. (°C)	1.89600002765656
Field ID(s)	Synallactidae
Comments	Dorsal portion of body separated from ventral portion of body bilaterally symmetric. Predatory avoidance? Planar separation.

	Body damaged by manipulator arm.

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

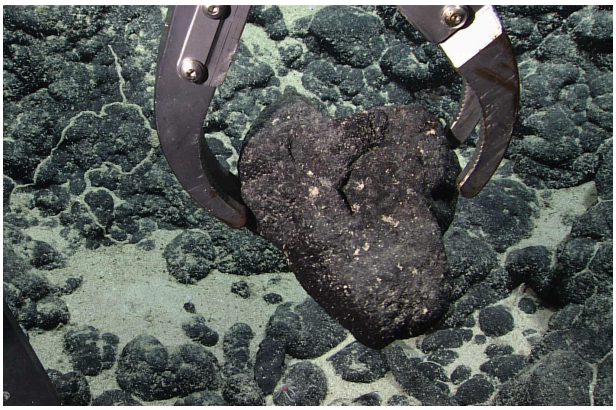




Sample ID	EX2503_D15_11B
Date (UTC)	20250429
Time (UTC)	004933
Depth (m)	2255.44995117188
Latitude (decimal degrees)	25.6948509216309
Longitude (decimal degrees)	-177.321792602539
Temp. (°C)	1.90600001811981
Field ID(s)	Calyptrophora
Comments	Pink. 3 polyps per group. Visible sclerites. Lyrate branching pattern.

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

Count:	N/A



Sample ID	EX2503_D15_12G
Date (UTC)	20250429
Time (UTC)	005517
Depth (m)	2256.294921875
Latitude (decimal degrees)	25.6948623657227
Longitude (decimal degrees)	-177.321670532227
Temp. (°C)	1.90499997138977
Field ID(s)	Encrusted basalt from 2254m
Comments	Encrusted basalt. Likely pillow.

Niskin Sampling Summary

Sample ID	EX2503_D15_01W
Date (UTC)	20250428
Time (UTC)	204507
Depth (m)	2383.51098632813

Latitude (decimal degrees)	25.6926307678223
Longitude (decimal degrees)	-177.321166992188
Bottle Number	Niskin Bottle 1
Temperature	1.76400005817413
Dissolved Oxygen (mg/L)	3.44799995422363
Treatment	DNA/RNA Shield

Sample ID	EX2503_D15_05W
Date (UTC)	20250428
Time (UTC)	223119
Depth (m)	2337.86596679688
Latitude (decimal degrees)	25.6934852600098
Longitude (decimal degrees)	-177.321624755859
Bottle Number	Niskin Bottle 2
Temperature	1.78600001335144
Dissolved Oxygen (mg/L)	3.37599992752075
Treatment	DNA/RNA Shield

Sample ID	EX2503_D15_07W
Date (UTC)	20250428
Time (UTC)	231635
Depth (m)	2298.66088867188
Latitude (decimal degrees)	25.6939601898193

Longitude (decimal degrees)	-177.32177734375
Bottle Number	Niskin Bottle 3
Temperature	1.92200005054474
Dissolved Oxygen (mg/L)	3.14299988746643
Treatment	DNA/RNA Shield

Sample ID	EX2503_D15_08W
Date (UTC)	20250429
Time (UTC)	000149
Depth (m)	2277.6708984375
Latitude (decimal degrees)	25.6945934295654
Longitude (decimal degrees)	-177.32177734375
Bottle Number	Niskin Bottle 4
Temperature	1.91799998283386
Dissolved Oxygen (mg/L)	3.11999988555908
Treatment	DNA/RNA Shield

Sample ID	EX2503_D15_13W
Date (UTC)	20250429
Time (UTC)	010738
Depth (m)	2246.11694335938
Latitude (decimal degrees)	25.6949768066406
Longitude (decimal degrees)	-177.321716308594

Bottle Number	Niskin Bottle 5
Temperature	1.90600001811981
Dissolved Oxygen (mg/L)	3.13499999046326
Treatment	DNA/RNA Shield

Scientists Involved

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