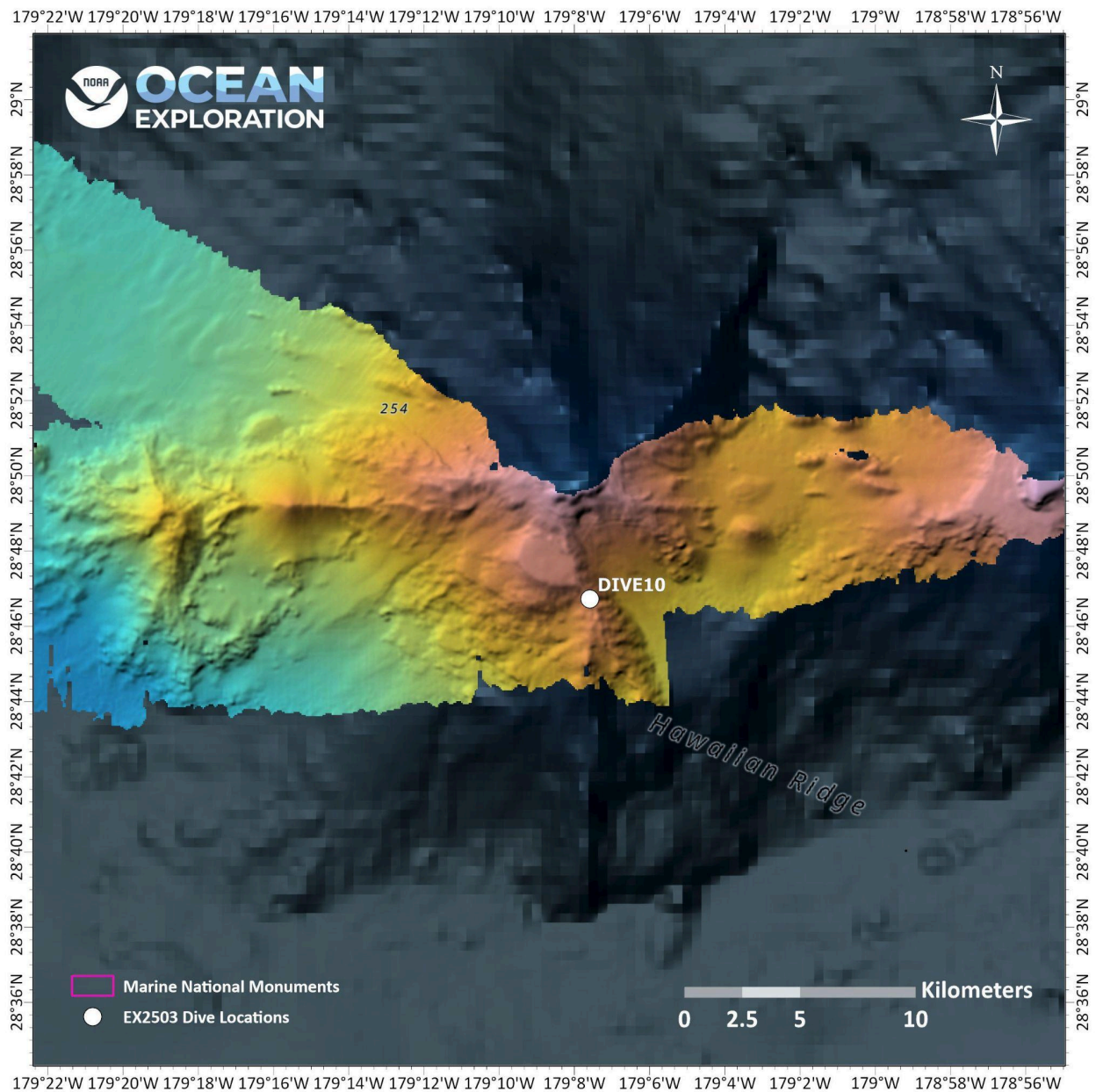


ROV Dive Summary

EX2503, Dive 10, April 23, 2025

General Location Map



Dive Information

Site Name	Unnamed Seamount 03 - Northwest of Holanikū (Kure Atoll)
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 10 was to explore the southern ridge arm of this unnamed seamount, northwest of Holanikū (Kure Atoll), and to investigate geological features that could provide clues to the age and provenance of seamounts in this region. Another key goal was to characterize the ecosystem of this seamount ridge arm, including key faunal components and organismal interactions.
Maritime Heritage Restrictions	No

ROV Dive Summary
Data

Dive Type: Normal

In Water: 2025-04-23T18:23:43.165456
28.778503902591265 ; -179.12676076859384

On Bottom: 2025-04-23T19:21:10.891018
28.77947041177328 ; -179.1267486651386

Off Bottom: 2025-04-24T01:40:45.905669
28.78276407710833 ; -179.1289650513111

Out Water: 2025-04-24T02:34:57.409671
28.784197380890934 ; -179.12539596010996

Dive Duration: 8:11:14

Bottom Time: 6:19:35

Max Vehicle Depth: 1462.0 m

Min Seafloor Depth: 1365.2 m

Distance Travelled: 498.3 m

Dive Description

EX2503 Dive 10 began with visualization of the seamount ridge at 0919 HST. Upon arrival at the seafloor, we noted that this area of the seamount ridge arm was relatively barren of macrofauna, but with some small *Hemicorallium* and *Paragorgia* immediately visible. Also in frame was a Pterasterid slime star, which we attempted to sample as it is likely undescribed from this region, but were unable to do so given the challenging bathymetry. This region had large pillow basalt features that created a complex topography of ridges/channels. A rock was collected from this area, interpreted to be basalt, before continuing up the ridge arm.

This presumed basalt continued until ~1430m, at which point shipboard and shoreside scientists noted karst-like features that suggested the substrate may have shifted to carbonate. Macrofauna continued to be sparse, with *Hemicorallium* clearly dominating the coral community but not providing very dense cover. We observed numerous examples of symbioses between corals and associates, including *Chrysogorgia* and a *Uroptychus* squat lobster (a classic!) and a Ferreid sponge with an *Antipathes* black coral growing on (and inside) the sponge.

A notable observation was a high abundance of predatory chitons, which we have not seen elsewhere on the expedition and were a first for many of the shipboard science team. They were observed frequently throughout the latter portion of the dive, often among the bases of corals, though a large portion also appeared to be free-living. Several individuals were observed in what appeared to be their hunting posture (see *Representative Photos of the Dive*), with their mantle lifted, awaiting prey ([see this web page](#) for an example of this behavior from a shallow-water chiton). One individual was collected for further analysis; this likely represents a new species in the genus *Placiphorella*.

	<p>Current at the initial part of the dive was light and strengthened slightly as we shallowed up to our final depth, but remained moderate overall. Towards the final portion of the dive, we came across a significant high-density, high-diversity community of corals, primarily <i>Hemicorallium</i>. These Hemicorallids were large – many more than a meter in width – suggesting that they are likely many hundreds of years old. Within this community there was also a notable lack of corallivorous sea stars and other predators. Another notable feature of this high-diversity community was the strange geology of this area, which appeared to contain laminated sedimentary rocks, pillow basalts, and columnar basalt all at the same water depth.</p> <p>While several small individuals and occasionally large <i>Poliopogon</i> were noted throughout the dive, we observed a conspicuous lack of sponges, including in the high-density and diversity coral “forest.” Fish were also notably light, with a few Halosauridae, one Chanocops, and one Ophidiid. The dive ended at 1540 HST in the <i>Hemicorallium</i> forest at ~1400m.</p>
Notable Observations	<p>A high-density and diverse coral community composed of large <i>Hemicorallium</i> colonies growing across multiple ridges and valleys made of interspersed laminated sedimentary and volcanic rocks.</p> <p>A high abundance of apparent predatory chitons (likely <i>Placiphorella</i> sp. nov.) were observed exhibiting feeding behavior.</p>
Community and Habitat Observations	<p>Corals and Sponges — Present</p> <p>Chemosynthetic Community — Absent</p> <p>High biodiversity Community — Present</p> <p>Active Seep or Vent — Absent</p> <p>Extinct Seep or Vent — Absent</p> <p>Hydrates — Absent</p>
CMECS Feature Type(s)	Seamount > Slope > Terrace > Wall
SeaTube Link (science annotations)	https://data.oceannetworks.ca/app/dive-logs/1805

Equipment Deployed

ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>

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

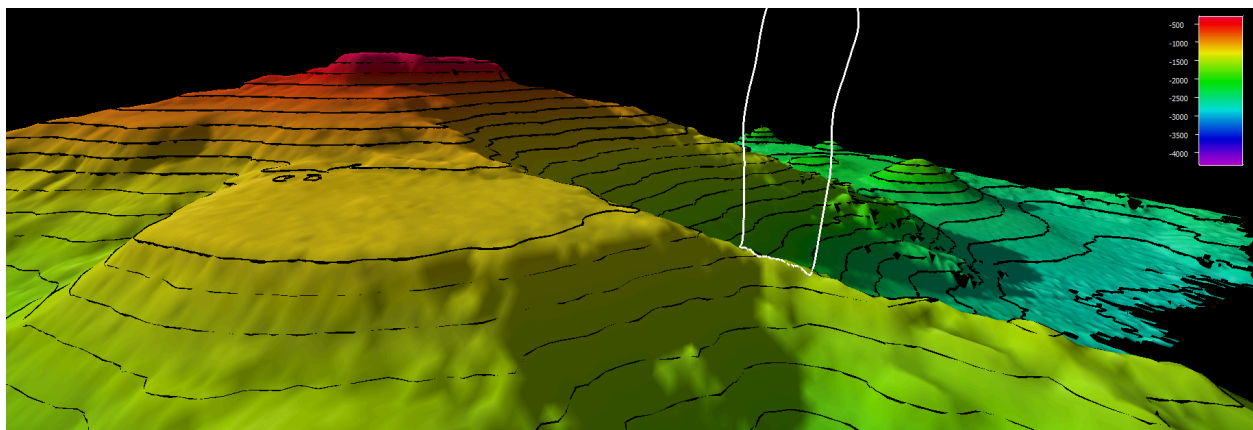


Figure 1: Dive 10 dive site. Shown in 2x vertical exaggeration; smoothed ROV dive track shown in white on 60x60 cell size bathymetry. Depth shown in meters; coloration based on depths with 100-meter contours overlain.

Sound Speed Manager Image of ROV CTD Profile

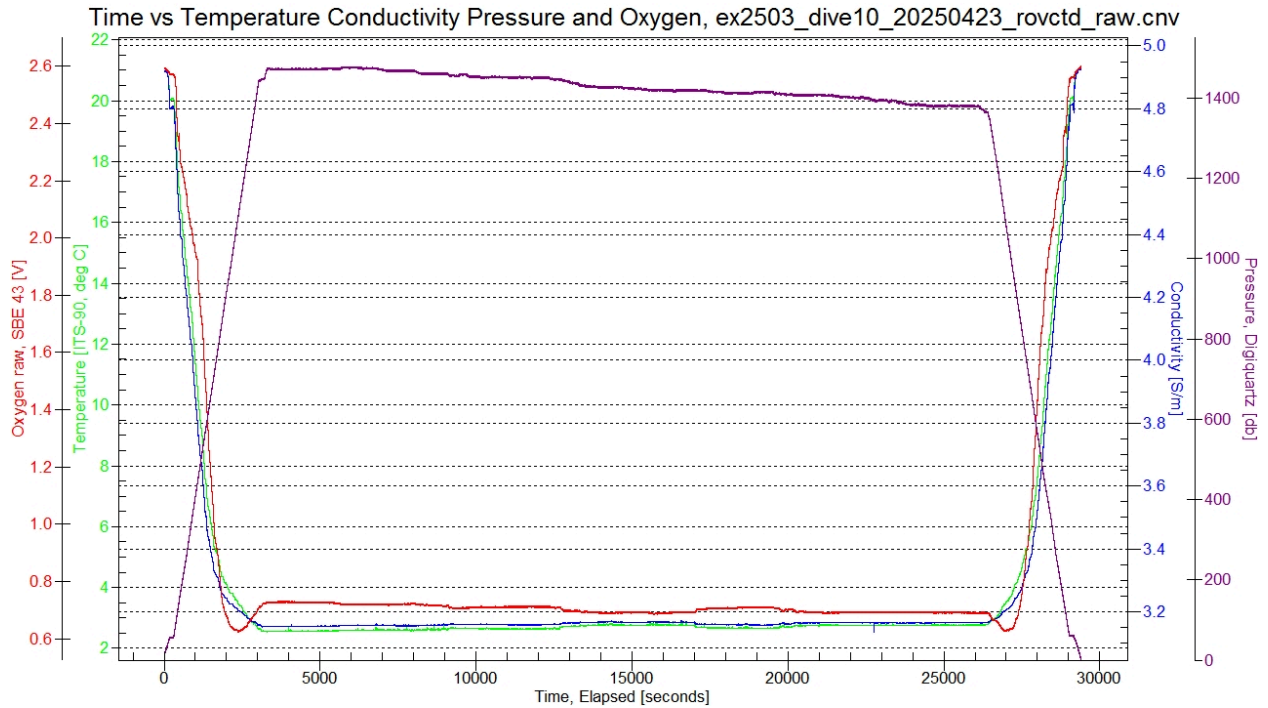
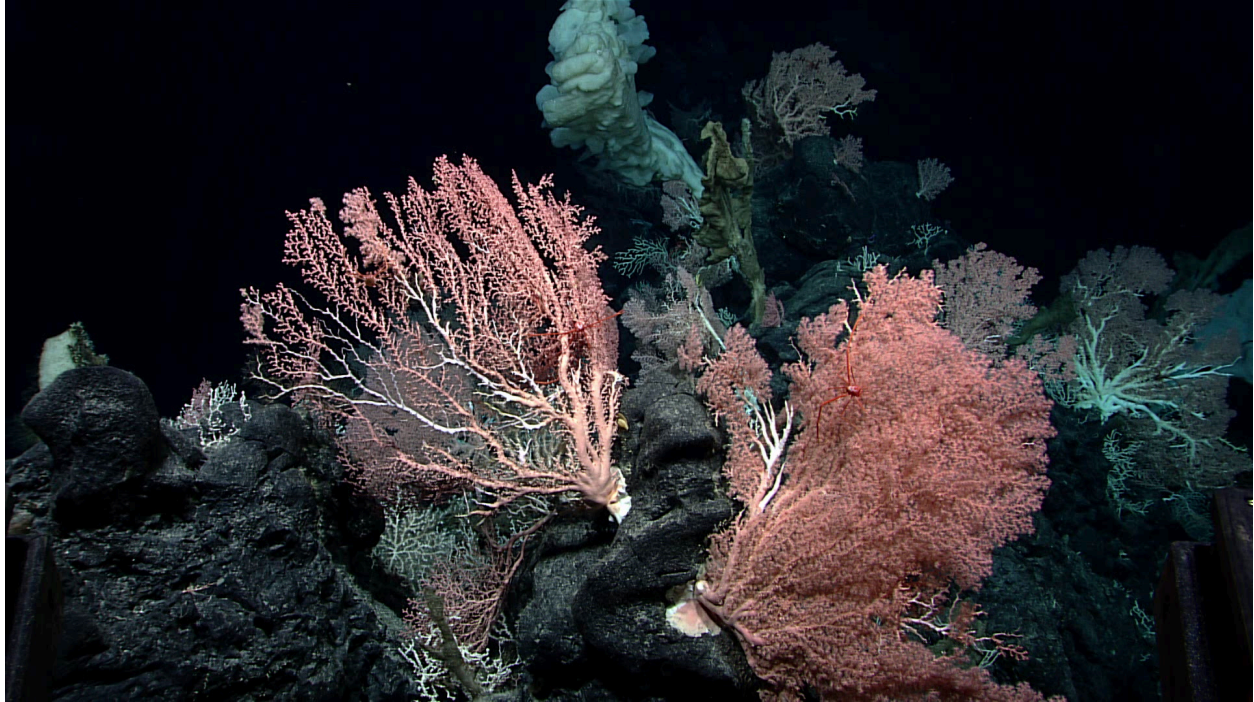


Figure 2. Ambient conditions during Dive 10. Plot shows Temperature ($^{\circ}\text{C}$), Conductivity (S/m), Pressure (db), and Oxygen (V; as measured by SBE43).

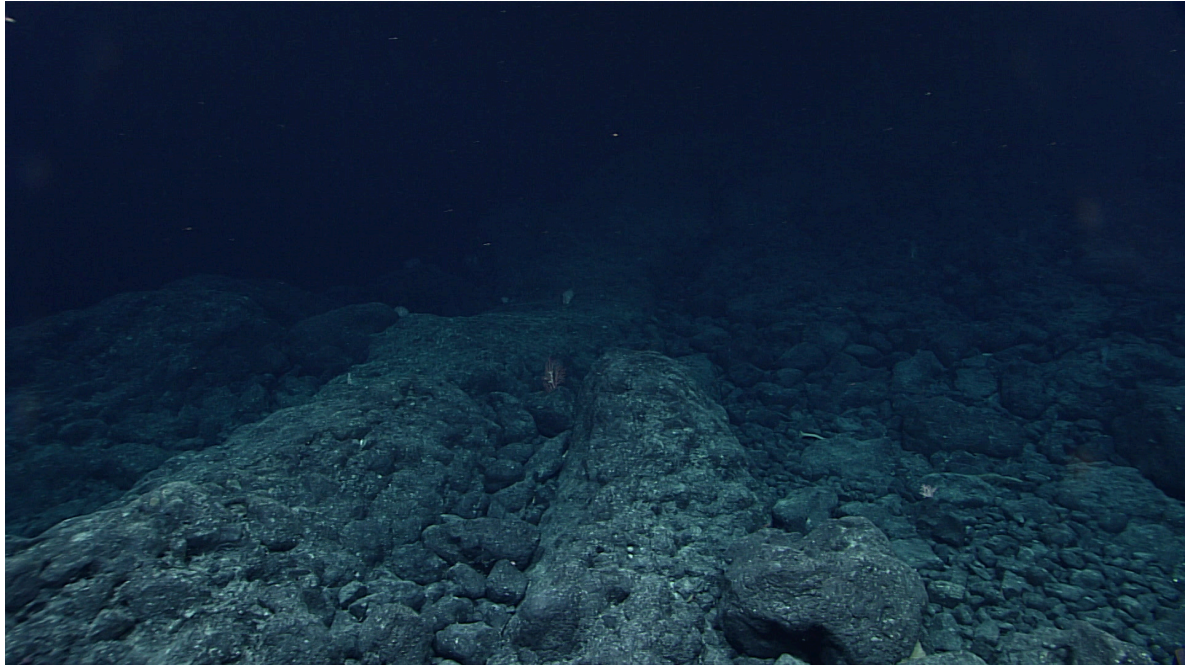
Representative Photos of the Dive



A predatory chiton in what we assume to be its ambush posture.



A hemicorallum-dominated high-density, high-diversity community found at the end of the dive.



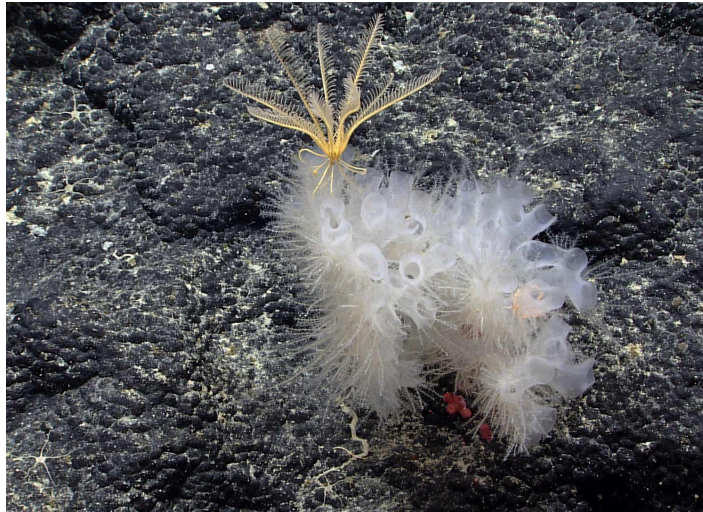
The relatively barren Fe-Mn encrusted basalt that dominated the earlier parts of the dive.

Samples Collected



Sample ID	EX2503_D10_02G
Date (UTC)	20250423
Time (UTC)	201816
Depth (m)	1459.40698242188
Latitude (decimal degrees)	28.7797222137451
Longitude (decimal degrees)	-179.126800537109
Temp. (°C)	2.60400009155273
Field ID(s)	Heavily encrusted basalt
Comments	With associated crinoids, which did not come up. One surface appears much less encrusted, suggesting a potential cleave site. The opposite side has thick encrustation with polished areas.

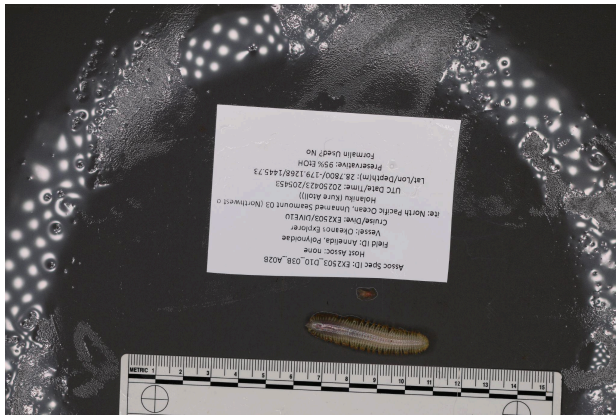
Associates Sample ID:	N/A
Field Identification:	N/A
Count:	N/A



Sample ID	EX2503_D10_03B
Date (UTC)	20250423
Time (UTC)	205453
Depth (m)	1445.72497558594
Latitude (decimal degrees)	28.78000831604
Longitude (decimal degrees)	-179.126800537109
Temp. (°C)	2.64199995994568
Field ID(s)	Antipatharia
Comments	One scale worm bottle with 2 scale worms. One cronachulid crinoid, one sponge



Associates Sample ID:	EX2503_D10_03B_A01B
Field Identification:	Farrea
Count:	1



Associates Sample ID:	EX2503_D10_03B_A02B
Field Identification:	Polynoidae
Count:	2



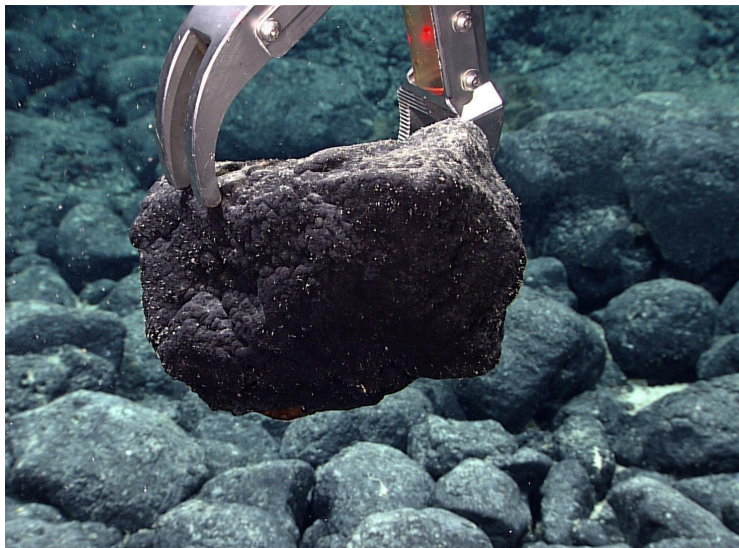
Associates Sample ID:	EX2503_D10_03B_A03B
Field Identification:	Comatulida
Count:	1



Associates Sample ID:	EX2503_D10_03B_A04B
Field Identification:	Ophiocantha
Count:	2



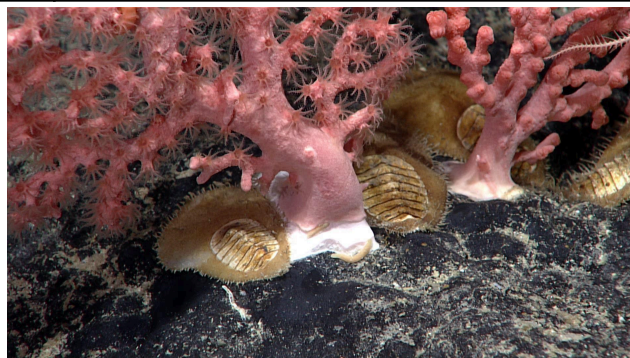
Associates Sample ID:	EX2503_D10_03B_A05B
Field Identification:	Decapoda
Count:	1



Sample ID	EX2503_D10_04G
Date (UTC)	20250423
Time (UTC)	213935
Depth (m)	1436.23803710938
Latitude (decimal degrees)	28.7804698944092

Longitude (decimal degrees)	-179.126907348633
Temp. (°C)	2.6340000629425
Field ID(s)	1435m near large pillow basalt
Comments	Within carbonate cap? Looks like a pillow. One surface has thicker Mn crust. The other side has thinner Mn crust which is much more crumbly. Apparent iron oxidation.

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



Sample ID	EX2503_D10_05B
Date (UTC)	20250423
Time (UTC)	214939
Depth (m)	1435.97802734375
Latitude (decimal degrees)	28.7803363800049
Longitude (decimal degrees)	-179.12712097168
Temp. (°C)	2.65300011634827
Field ID(s)	chiton

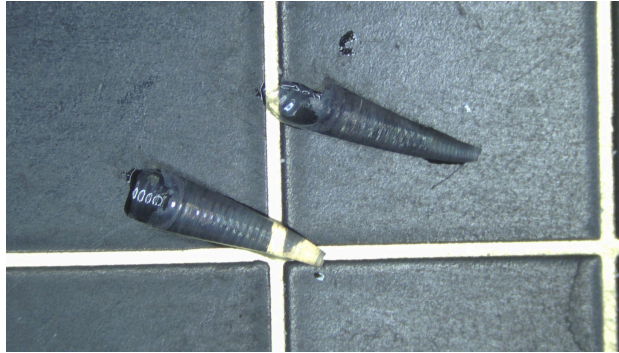
Comments	Popilliae on fringe of mantle with "cillia". Upon recovery, was holding its mantle up in potential ambush in slurp container. Potential predatory chiton. Urchin spine in canister. Forams benthic and pelagic attached to mantle. Mantle has large white patch of potentially dead
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Associates Sample ID:	N/A
Field Identification:	N/A
Count:	N/A

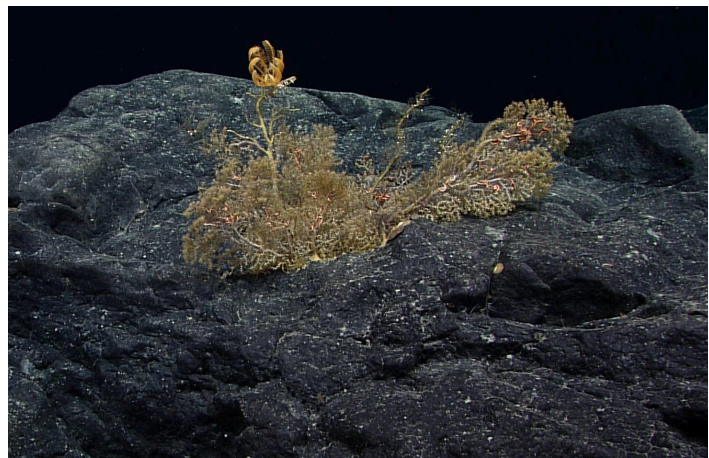


Sample ID	EX2503_D10_06B
Date (UTC)	20250423
Time (UTC)	222243
Depth (m)	1411.86596679688
Latitude (decimal degrees)	28.7809715270996
Longitude (decimal degrees)	-179.127410888672

Temp. (°C)	2.78299999237061
Field ID(s)	Benthopectinidae
Comments	Small fine arms, tube feet darker orange, arms are spikey, will make Chris Mah happy :)

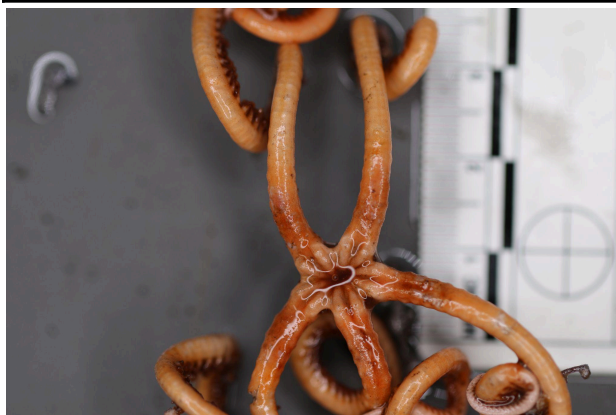


Associates Sample ID:	EX2503_D10_06B_A01B
Field Identification:	Pteropoda
Count:	1

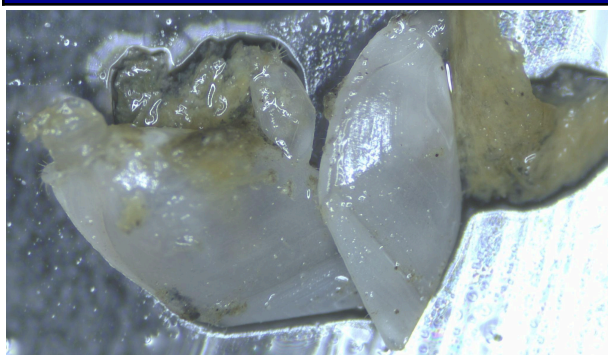


Sample ID	EX2503_D10_07B
Date (UTC)	20250423
Time (UTC)	225057
Depth (m)	1404.71203613281
Latitude (decimal degrees)	28.7810802459717

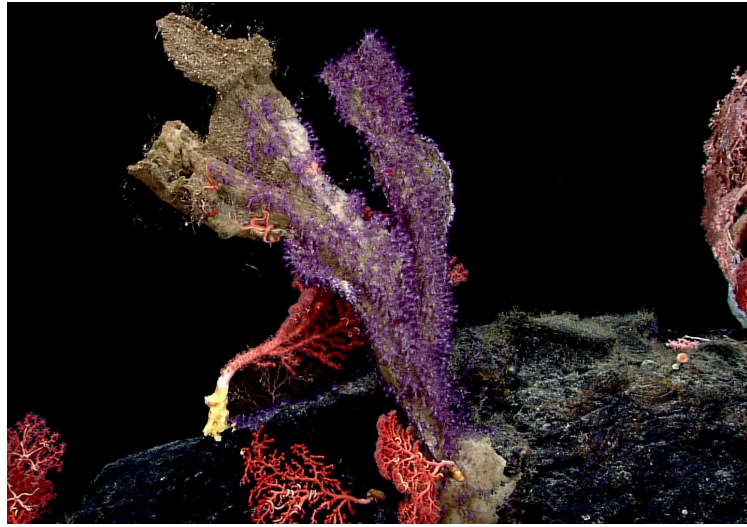
Longitude (decimal degrees)	-179.127731323242
Temp. (°C)	2.76200008392334
Field ID(s)	Paramuricea
Comments	Single associate asteroschema, 12 associate barnacles on coral stalk. Two half centimeter main branches appear to have fused together.



Associates Sample ID:	EX2503_D10_07B_A01B
Field Identification:	Asteroschema
Count:	1



Associates Sample ID:	EX2503_D10_07B_A02B
Field Identification:	Cirripedia
Count:	12



Sample ID	EX2503_D10_09B
Date (UTC)	20250423
Time (UTC)	230713
Depth (m)	1404.98400878906
Latitude (decimal degrees)	28.7811183929443
Longitude (decimal degrees)	-179.127792358398
Temp. (°C)	2.74300003051758
Field ID(s)	Clavularia
Comments	Purple in color, growing on dead tretopleura. Large sclerites.

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

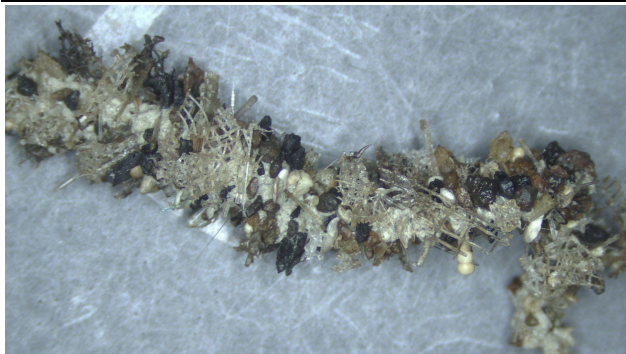


Sample ID	EX2503_D10_11B
Date (UTC)	20250423
Time (UTC)	233354
Depth (m)	1397.08605957031
Latitude (decimal degrees)	28.7812595367432
Longitude (decimal degrees)	-179.128021240234
Temp. (°C)	2.65899991989136
Field ID(s)	Coralliidae
Comments	Some stalks appear to have tissue removed. All polyps retracted.

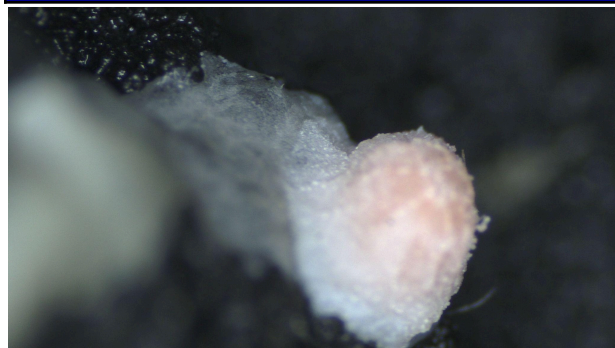
Associates Sample ID:	N/A
Field Identification:	N/A
Count:	N/A



Sample ID	EX2503_D10_12G
Date (UTC)	20250423
Time (UTC)	234917
Depth (m)	1400.84802246094
Latitude (decimal degrees)	28.7812843322754
Longitude (decimal degrees)	-179.128051757813
Temp. (°C)	2.65599989891052
Field ID(s)	Encrusted laminated sediment
Comments	From region with seds and pillows. Sedimentary rock. One surface is less encrusted, may suggest cleavage surface. Unclear if carbonate or volcanic sediment. Multiple bio associates.



Associates Sample ID:	EX2503_D10_12G_A01B
Field Identification:	Polychaeta
Count:	1



Associates Sample ID:	EX2503_D10_12G_A02B
Field Identification:	Octocorallia
Count:	1

Niskin Sampling Summary

Sample ID	EX2503_D10_01W
Date (UTC)	20250423
Time (UTC)	193712
Depth (m)	1457.458984375
Latitude (decimal degrees)	28.7794017791748
Longitude (decimal degrees)	-179.126815795898
Bottle Number	Niskin Bottle 1
Temperature	2.55399990081787
Dissolved Oxygen (mg/L)	1.62000000476837
Treatment	DNA/RNA Shield

Sample ID	EX2503_D10_10W
Date (UTC)	20250423
Time (UTC)	230819
Depth (m)	1405.18896484375
Latitude (decimal degrees)	28.7811298370361
Longitude (decimal degrees)	-179.127777099609
Bottle Number	Niskin Bottle 2
Temperature	2.75500011444092
Dissolved Oxygen (mg/L)	1.39699995517731
Treatment	DNA/RNA Shield

Sample ID	EX2503_D10_13W
Date (UTC)	20250424
Time (UTC)	012140
Depth (m)	1366.25598144531
Latitude (decimal degrees)	28.7825126647949
Longitude (decimal degrees)	-179.128677368164
Bottle Number	Niskin Bottle 3
Temperature	2.76600003242493
Dissolved Oxygen (mg/L)	1.37100005149841
Treatment	DNA/RNA Shield

Scientists Involved

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