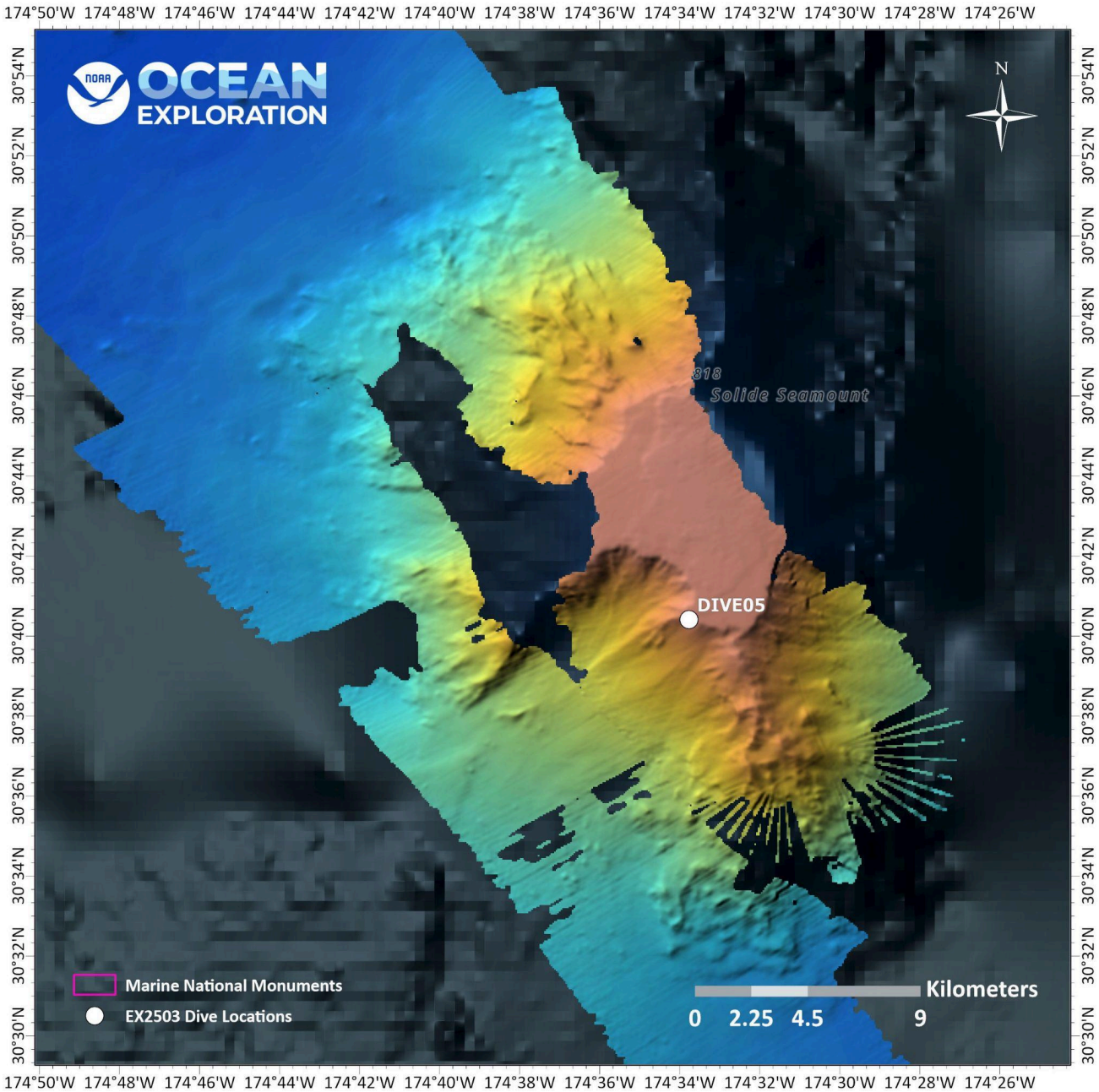
ROV Dive Summary
EX2503, Dive 05, April 17, 2025

General Location Map



Dive Information

Site Name	Solide Seamount
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 05 was to investigate the biological and habitat diversity of ridge arms below the guyot summit and characterize habitat transitions along the way. A major goal was to document coral, sponge, fish, and macrofauna diversity, as well as characterize ecological associations within coral-sponge communities. Geologic goals included understanding the age and geologic history of the guyot as well as characterizing potential sediment accumulations at the guyot summit.
Maritime Heritage Restrictions	No

ROV Dive Summary Data	Dive Type: Normal In Water: 2025-04-17T18:41:57.343155 30.67380274517052 ; -174.56258405018946 On Bottom: 2025-04-17T19:50:12.679961 30.674588114499286 ; -174.5662104627955 Off Bottom: 2025-04-18T01:57:38.756043 30.676732250020084 ; -174.56326044532318 Out Water: 2025-04-18T02:39:03.283932 30.67912733075029 ; -174.55868205140138 Dive Duration: 7:57:05 Bottom Time: 6:07:26 Max Vehicle Depth: 1264.8 m Min Seafloor Depth: 1110.6 m Distance Travelled: 492.0 m

Dive Description	EX2503 Dive 05 explored the southwestern ridge of Solide Seamount that borders a scarp likely formed by a mass failure event. The goal of this dive was to investigate the biological and habitat diversity of ridge arms below the guyot summit and characterize habitat transitions towards the ~1000m summit. Dive 05 began with the visualization of the ridge at 0948 HST. During descent, we noted a pronounced OMZ beginning at ~670m water depth and persisting through our bottom depth (~1260m). While the coral community was relatively sparse at this depth, we noted a few unusual *Callogorgia* with disproportionately large bases. One individual was sampled for further analysis. Scleractinian corals were present throughout the dive, most from the genera *Enallopsammia* and *Madrepora*. While the macrofauna were not strikingly dense at this site as at others surveyed during EX2503, we noted that cup corals (likely genus *Javania*) were particularly abundant. During the dive, we encountered a number of unusual jellyfish, including three sightings of a potential new species of *Ptychogastria*, an epibenthic jellyfish. Our first sampling attempt of *Ptychogastria* failed via a well-timed escape into the strong downcurrent at this site, but the second sampling attempt was successful and will likely aid in the description of this species. We also came across two corallivorous jellyfish, one consuming polyps on a *Paragorgia* (and extensively filmed – great behavioral footage!) and another consuming a *Metallogorgia* (sampled for description and analysis). In the water column, we observed a large individual of *Tiburonia granrojo*, or a “big red jelly” (common name), first described by EX2503 shoreside scientist George Matsumoto. The geology of this guyot was particularly notable as we observed no clear transition to a carbonate cap. The guyot appears to be predominantly basalt, and is extremely sediment-poor, even in the flatter hardgrounds towards the summit. Weathering features in the botryoidal crust occasionally collect sediment (and allow for the growth of partially-infaunal taxa, such as the tube anemones observed multiple times on this dive). Patches of sponge “death assemblages” (potentially remains of *Bolosoma* sponges) accumulate in local depressions along the ridge arm. However, the summit area appears to be scoured. Two geologic samples were collected (near the bottom and top depths) and will be analyzed.

Notable Observations	A marked diversity of benthic and pelagic jellyfish, including a potential new species (*Ptychogastria* sp. nov.) and a corallivorous jelly collected while consuming *Metallogorgia melanotrichos* (and later observed in the lab to have gut contents of partially-digested *M. melanotrichos* polyps). Also present in this *M. melanotrichos* was an assemblage of unusual Ophiuroid sea stars.
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 > Ridge > Boulder Field
SeaTube Link (science annotations)	https://data.oceannetworks.ca/app/dive-logs/1305

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

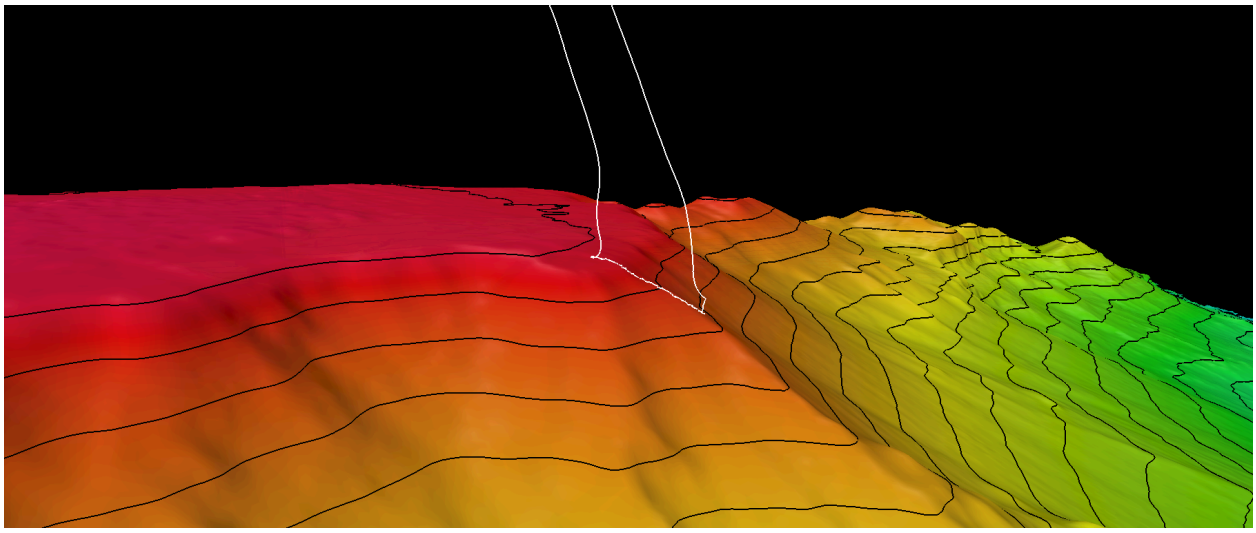


Figure 1: Dive 05 dive site. Shown in 2x vertical exaggeration; smoothed ROV dive track shown in white on 25x25 cell size bathymetry. Depth shown in meters; coloration based on depths with 100-meter contours overlain.

Sound Speed Manager Image of ROV CTD Profile

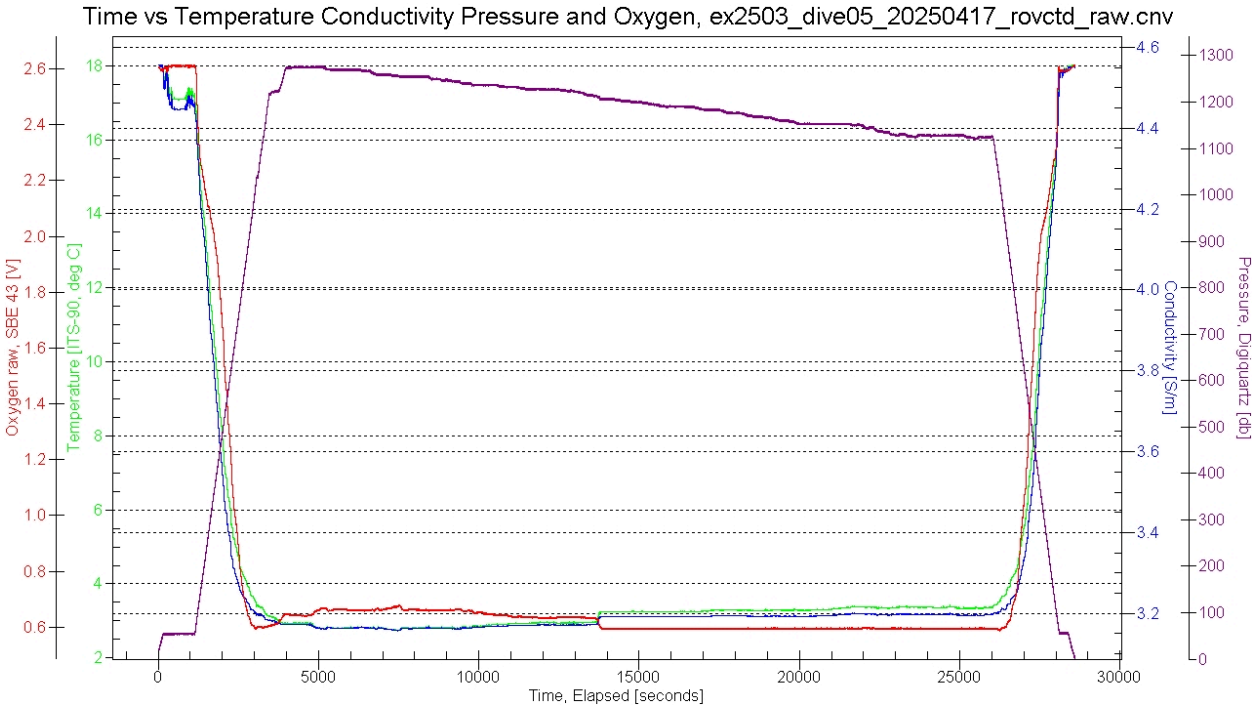
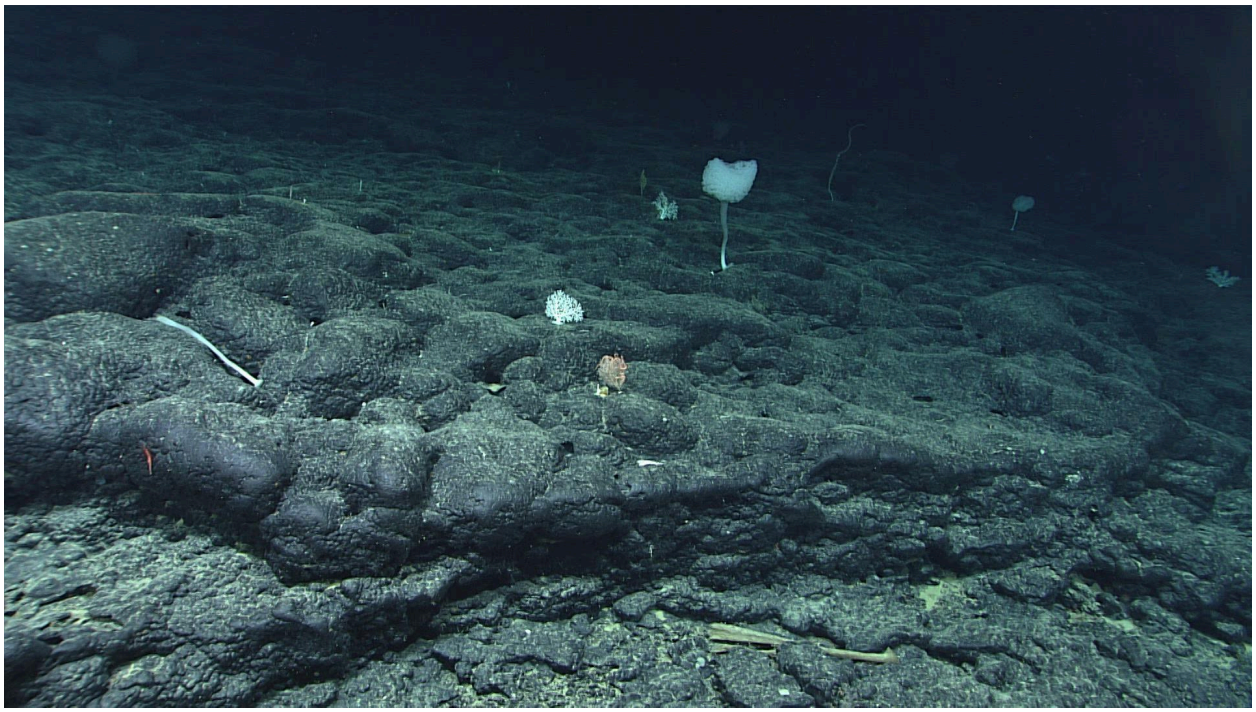
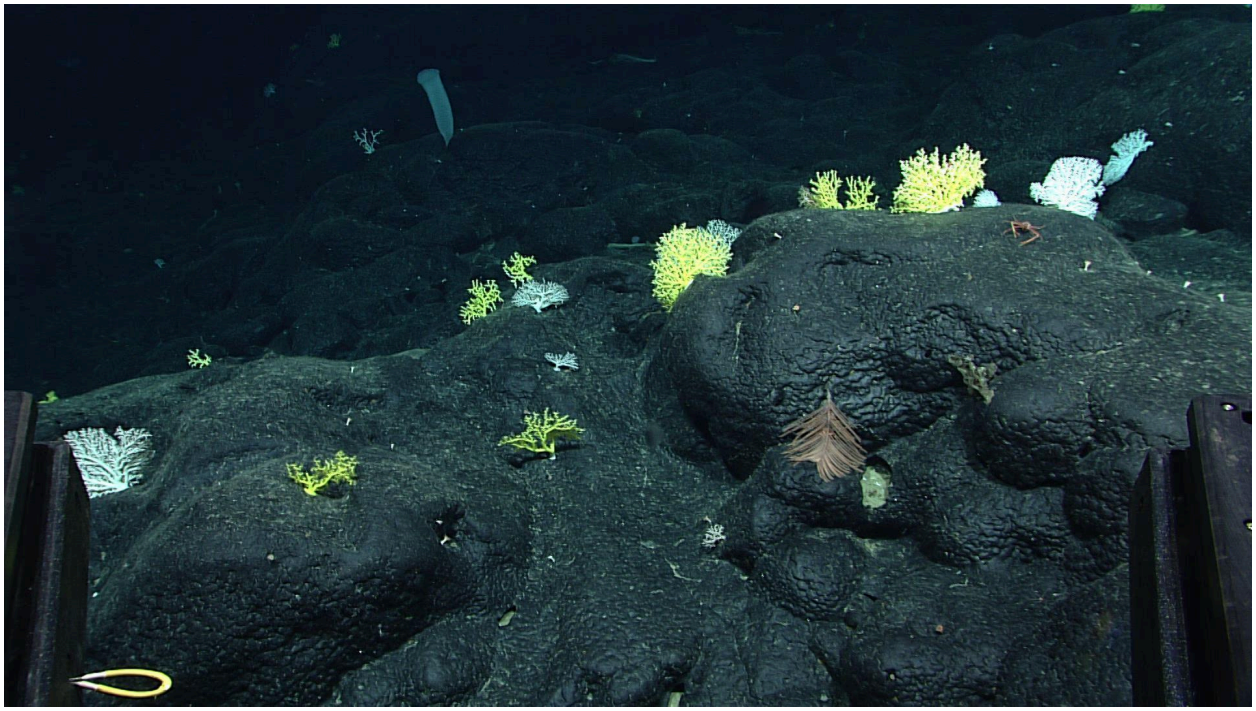


Figure 2. Ambient conditions during Dive 05. Plot shows Temperature (˚C), Conductivity (S/m), Pressure (db), and Oxygen (V; as measured by SBE43).

Representative Photos of the Dive

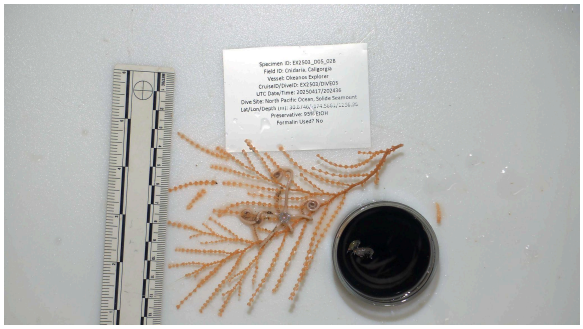


Early in the dive sessile fauna was sparse



Later in the dive, we encountered numerous yellow and white morph *enallopsammia*

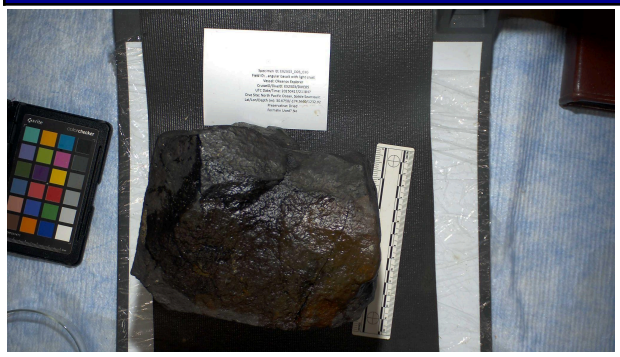
Samples Collected

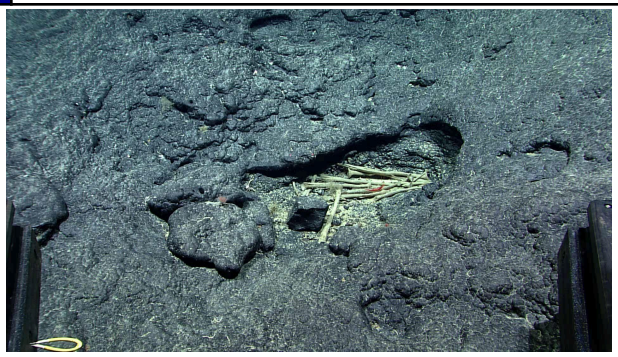


Sample ID	EX2503_D05_02B
Date (UTC)	20250417
Time (UTC)	202436
Depth (m)	1256.96105957031
Latitude (decimal degrees)	30.6745777130127
Longitude (decimal degrees)	-174.56608581543
Temp. (°C)	2.82500004768372
Field ID(s)	Caligorgia
Comments	

Associates Sample ID:	EX2503_D05_02B_A01B
Field Identification:	amphopod
Count:	1

Associates Sample ID:	EX2503_D05_02B_A02B
Field Identification:	Euryalae
Count:	1



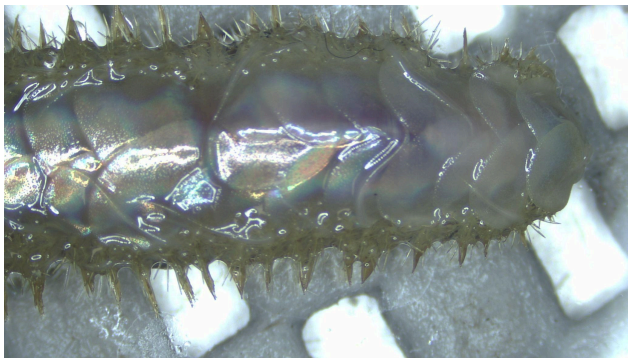


Sample ID	EX2503_D05_03G
Date (UTC)	20250417
Time (UTC)	211847
Depth (m)	1232.9189453125
Latitude (decimal degrees)	30.6749992370605
Longitude (decimal degrees)	-174.565994262695
Temp. (°C)	2.80100011825562
Field ID(s)	angular basalt with light crust
Comments	angular basalt with fine scale FeMn criust and some visable fractures. Sampled out of context, likley not in situ. Iron oxydation.

	Aparent fractures. Baby sponge present.

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

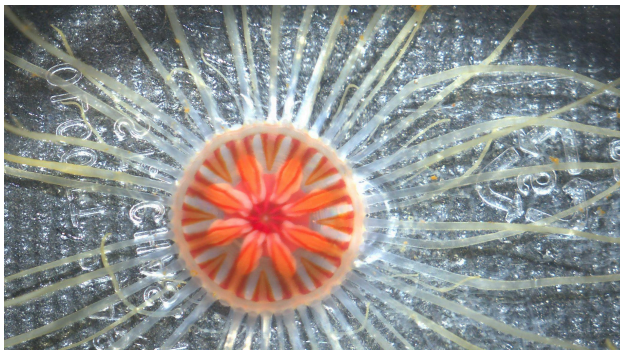
Sample ID	EX2503_D05_04B
Date (UTC)	20250417
Time (UTC)	213712
Depth (m)	1224.07299804688
Latitude (decimal degrees)	30.675048828125
Longitude (decimal degrees)	-174.565734863281
Temp. (°C)	2.89499998092651
Field ID(s)	Farrea
Comments	Farrea type sponge with extensive Edwardsiidae associates



Associates Sample ID:	EX2503_D05_04B_A01B
Field Identification:	Polychaeta
Count:	1

Sample ID	EX2503_D05_05B
Date (UTC)	20250417
Time (UTC)	214640
Depth (m)	1220.6240234375
Latitude (decimal degrees)	30.6750392913818
Longitude (decimal degrees)	-174.56559753418
Temp. (°C)	2.93300008773804
Field ID(s)	Korethrasteridae
Comments	per Chris Mah, unknown in this region. 5 arms. Yellowish sacks all over body. One arm removed for genetics.

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

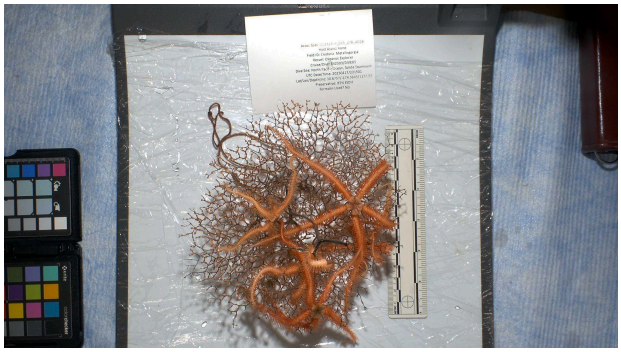


Sample ID	EX2503_D05_06B
Date (UTC)	20250417
Time (UTC)	220547
Depth (m)	1215.09204101563
Latitude (decimal degrees)	30.6752166748047
Longitude (decimal degrees)	-174.565521240234
Temp. (°C)	2.94899988174438
Field ID(s)	Ptychogastria
Comments	red and yellow stripes on bell. Numerous tentacle swith numerous lengths stemming from bell. Tentacles start translucent stemming from bell and transition to yellow towards the tips of tentacles. Very symetrical. 5 tentacles removed for genetics.

Associates Sample ID:	N/A

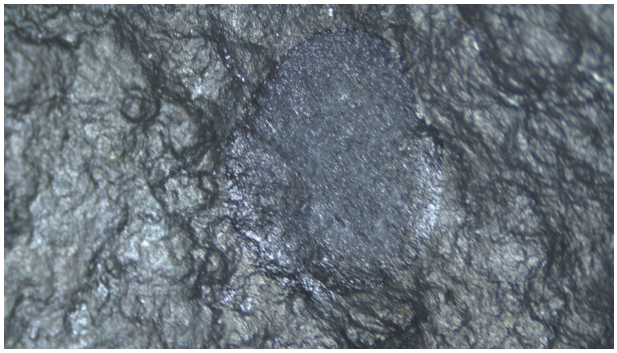
Field Identification:	N/A
Count:	N/A

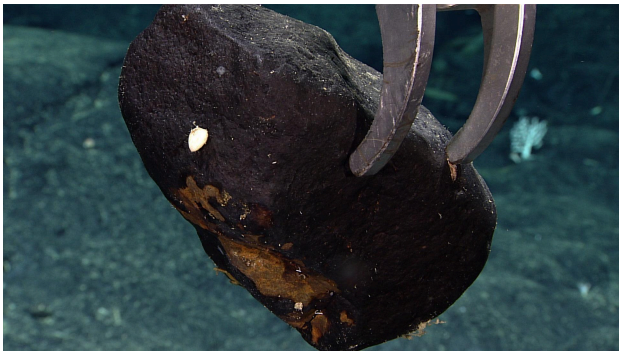
Sample ID	EX2503_D05_07B
Date (UTC)	20250417
Time (UTC)	231501
Depth (m)	1177.56604003906
Latitude (decimal degrees)	30.6757164001465
Longitude (decimal degrees)	-174.564529418945
Temp. (°C)	3.25399994850159
Field ID(s)	Corallivorous Jelly
Comments	red. Found on mettaligorgial. Light semi transparent outer bell. Darker red core. 4 "tentacles". Stomach contents ejected. Slight rip in bell most likely during sampling. 2 "tentacles" removed for genetic subsample.



Associates Sample ID:	EX2503_D05_07B_A01B
Field Identification:	Metallogorgia
Count:	1

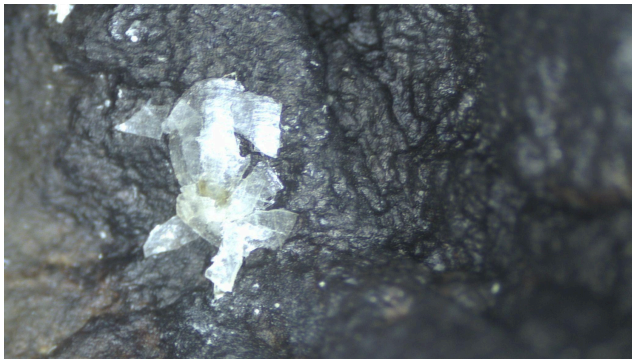
Associates Sample ID:	EX2503_D05_07B_A02B
Field Identification:	Ophiuroidea
Count:	6





Sample ID	EX2503_D05_08G
Date (UTC)	20250418

Time (UTC)	012924
Depth (m)	1117.59204101563
Latitude (decimal degrees)	30.6767177581787
Longitude (decimal degrees)	-174.562881469727
Temp. (°C)	3.35599994659424
Field ID(s)	lose basalt from pile at 1115
Comments	aparent basalt. Sampled from tallus pile. Likely out of context. Attached epuphaunal rhinconella bracchiopod. With fine peduncle. Nearby on rock likely larval bracchiopod. Multiple potential juveline sponges and notable iron oxydation.



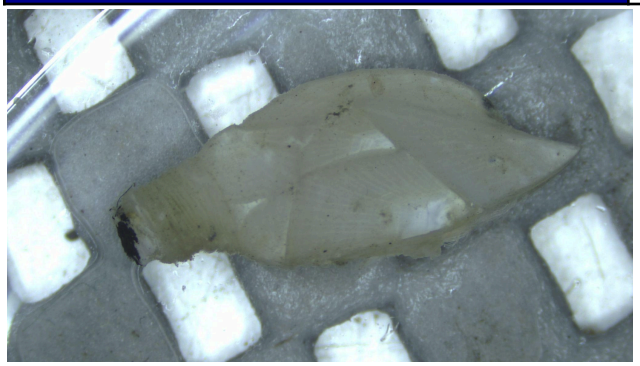
Associates Sample ID:	EX2503_D05_08G_A01B
Field Identification:	rhinconella
Count:	1

Sample ID	EX2503_D05_09B
Date (UTC)	20250418
Time (UTC)	013732
Depth (m)	1116.74597167969
Latitude (decimal degrees)	30.6767921447754
Longitude (decimal degrees)	-174.562911987305
Temp. (°C)	3.35999989509583
Field ID(s)	Javania
Comments	pink

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

Sample ID	EX2503_D05_10B
Date (UTC)	20250418
Time (UTC)	013948
Depth (m)	1116.20202636719
Latitude (decimal degrees)	30.6767330169678

Longitude (decimal degrees)	-174.562911987305
Temp. (°C)	3.33299994468689
Field ID(s)	Javania
Comments	



Associates Sample ID:	EX2503_D05_10B_A01B
Field Identification:	Cirripedia
Count:	1

Niskin Sampling Summary

Sample ID	EX2503_D05_01W
Date (UTC)	20250417
Time (UTC)	200031
Depth (m)	1263.08703613281
Latitude (decimal degrees)	30.674524307251
Longitude (decimal degrees)	-174.566223144531
Bottle Number	Niskin Bottle 1
Temperature	2.92899990081787
Dissolved Oxygen (mg/L)	1.03999996185303

Treatment	DNA/RNA Shield

Sample ID	EX2503_D05_11W
Date (UTC)	20250418
Time (UTC)	014118
Depth (m)	1116.48400878906
Latitude (decimal degrees)	30.6767482757568
Longitude (decimal degrees)	-174.562850952148
Bottle Number	Niskin Bottle 2
Temperature	3.3289999961853
Dissolved Oxygen (mg/L)	0.737999975681305
Treatment	DNA/RNA Shield

Sample ID	EX2503_D05_12W
Date (UTC)	20250418
Time (UTC)	021616
Depth (m)	502.386993408203
Latitude (decimal degrees)	30.6772422790527
Longitude (decimal degrees)	-174.561996459961
Bottle Number	Niskin Bottle 3
Temperature	7.24499988555908
Dissolved Oxygen (mg/L)	4.88899993896484
Treatment	DNA/RNA Shield

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