ROV Dive Summary
EX2503, Dive 01, April 11, 2025

General Location Map

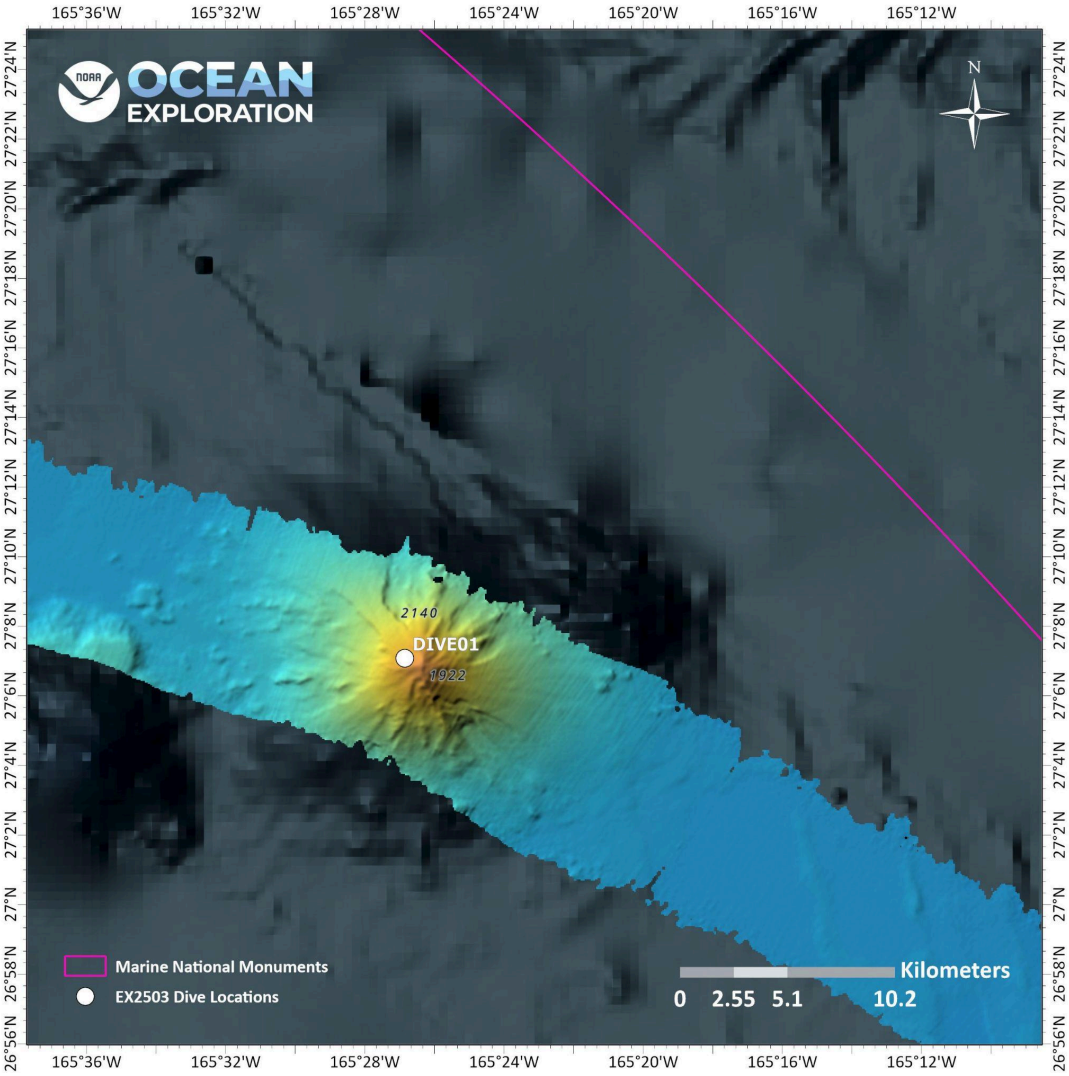


Figure 1.

Dive Information

Site Name	Unnamed Seamount South of Murray Fracture Zone
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	1. Explore the diversity and distribution of deep-sea benthic communities, particularly those found within coral and sponge habitats, fish habitats, and other vulnerable marine habitats with high conservation value. 2. Document geologic features to better understand the age and volcanic history of the region
Maritime Heritage Restrictions	No

ROV Dive Summary Data	Dive Type: Normal In Water: 2025-04-11T18:47:31.216374 27.11268385239005 ; -165.44710891268326 On Bottom: 2025-04-11T20:00:33.114961 27.114007903666195 ; -165.44397002300985 Off Bottom: 2025-04-12T01:32:30.062692 27.11457206145661 ; -165.44112020485537 Out Water: 2025-04-12T02:31:51.032271 27.11196150990797 ; -165.43172362115072 Dive Duration: 7:44:19 Bottom Time: 5:31:56 Max Vehicle Depth: 1825.9 m Min Seafloor Depth: 1687.0 m Distance Travelled: 425.2 m

Dive Description	EX2503 Dive 01 took place on an unnamed seamount south of the Murray Fracture Zone. The dive began with visualization of the seamount ridge at 0959 HST, at which point a water sample was collected for eDNA analysis. The seamount at this depth was primarily characterized by manganese-encrusted basalt, with sparse sediment patches. Biological communities were relatively homogenous across the dive, with the dominant coral fauna consisting of Paragorgia, Metallogorgia, Paramercidae, and Iridogorgia. We observed a variety of growth forms, from whip corals to branching corals. A number of large glass sponges (likely *Corbitellinae* n. genus) were observed and photographed. Notably largely absent were bamboo corals and Primnoids. Many barnacles (likely representatives of the superfamily Balanoidea) were encrusted on the manganese/basalt fields, and we observed filter-feeding behavior. We observed a solitary, extremely large hydrozoan, exceeding 1 m in diameter (potentially *Branchiocerianthus imperator*), which was the largest observed by this science team. As we approached the seamount summit, sediment patches became more prevalent and larger. Characterization of sediment samples in the lab on EX suggests that these are predominantly composed of planktonic foraminifera at all size fractions, indicative of carbonate ooze. Two geological samples were collected at the bottom and top depths of the dive to support aging this feature. A final water sample was collected at 1707m water depth. Overall, this site is characterized by a relatively homogeneous community structure and a relatively uniform habitat (primarily composed of manganese-encrusted basalt fields interspersed with biogenic carbonate sediments).
Notable Observations	Large solitary hydroid (*Branchiocerianthus* sp.) Xenophyophorida
Community and Habitat Observations	Corals and Sponges — Present Chemosynthetic Community — Absent High biodiversity Community — Absent Active Seep or Vent — Absent Extinct Seep or Vent — Absent Hydrates — Absent
CMECS Feature Type(s)	Seamount>Slope
SeaTube Link (science annotations)	https://data.oceannetworks.ca/app/dive-logs/905

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	none

Close-Up Map of Main Dive Site

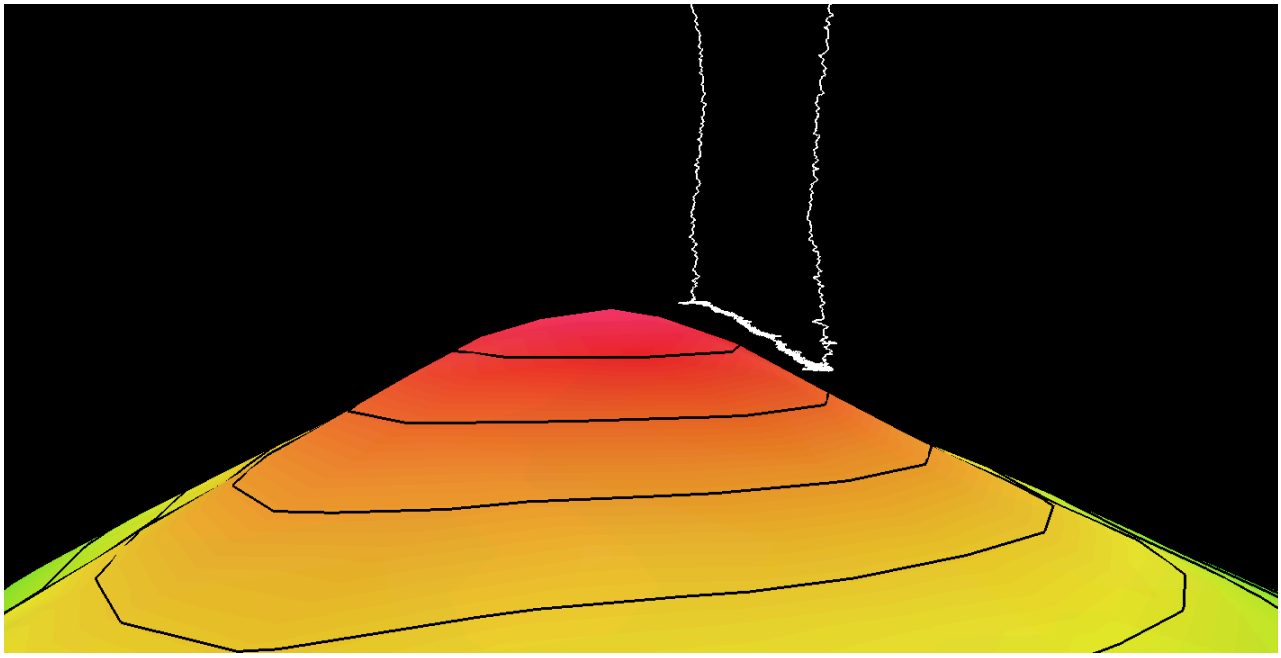


Figure 1. 3D profile of Dive 01. 75x75 cell size bathymetry shown with 2x vertical exaggeration. Depth is reported in meters, with black lines representing 100-meter contours. The smoothed ROV trackline is denoted in white.

Sound Speed Manager Image of ROV CTD Profile

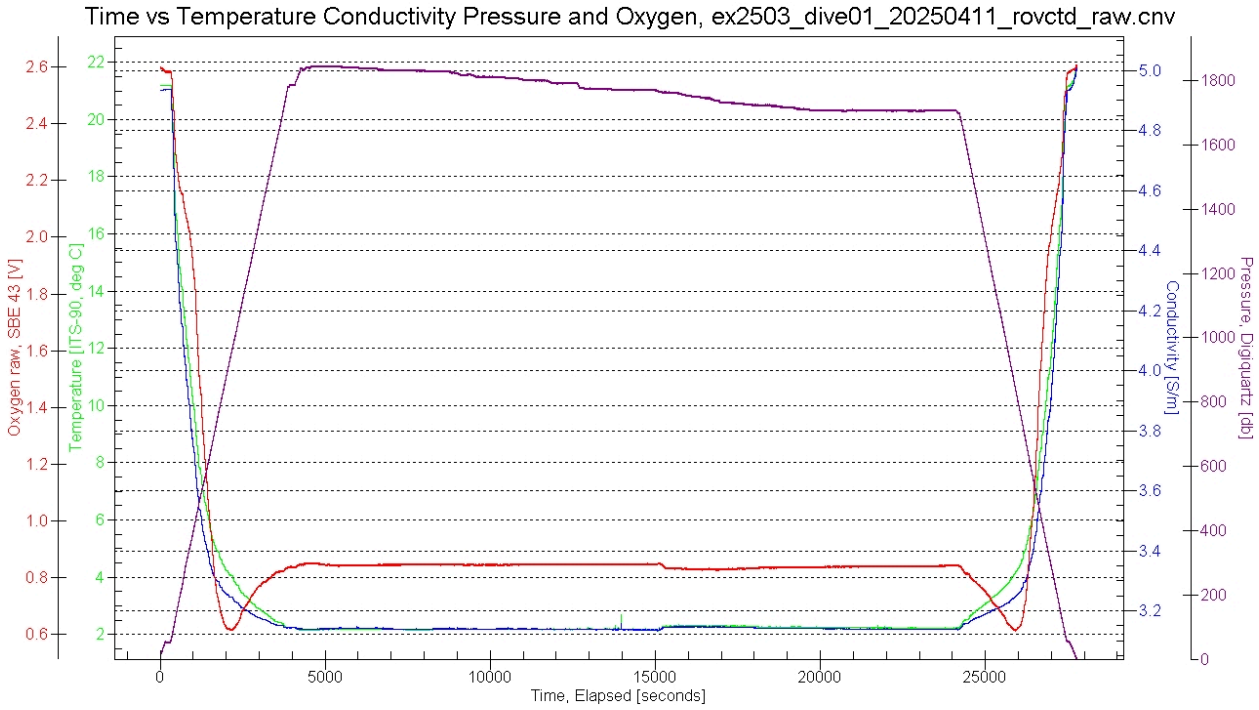


Figure 2. Ambient conditions during Dive 01. Plot shows Temperature (˚C), Conductivity (S/m), Pressure (db), and Oxygen (V; as measured by SBE43).

Representative Photos of the Dive

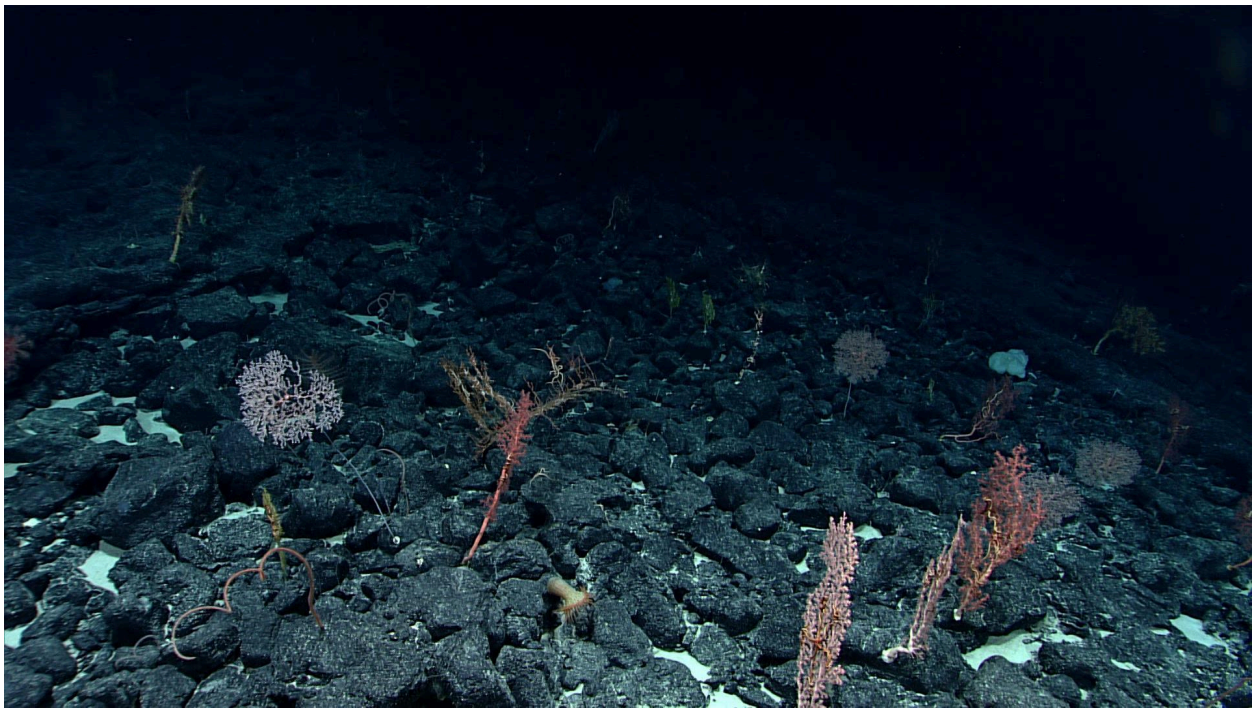


Figure 4. During the majority of the dive we encountered small patches of octocorals that were dominated by *Paragorgia* and *Metaligorgia*.

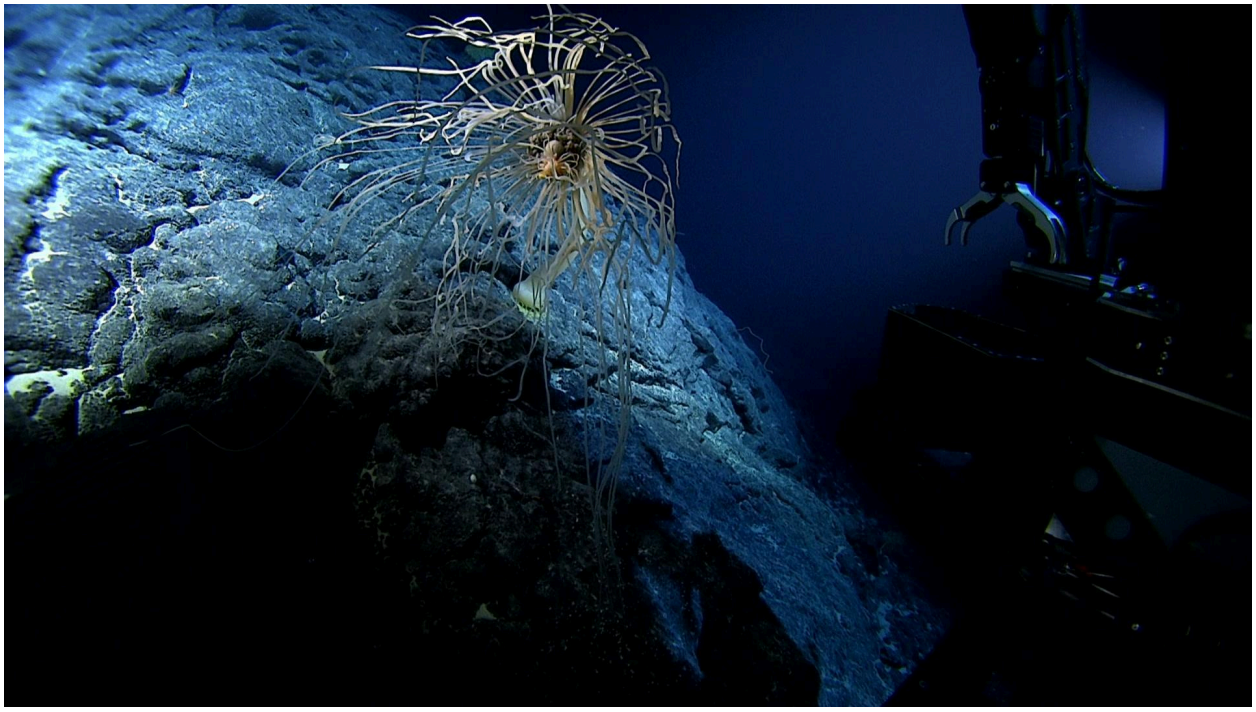
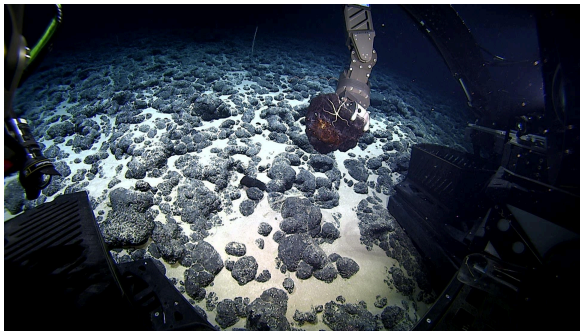


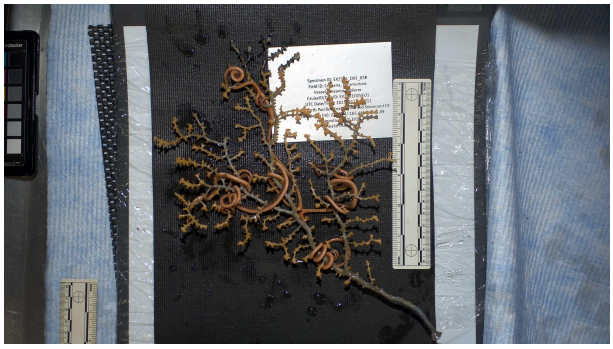
Figure 5. We encountered an extremely large solitary hydroid (potentially *Branchiocerianthus imperator)*. The diameter was well in excess of 1 meter.

Samples Collected

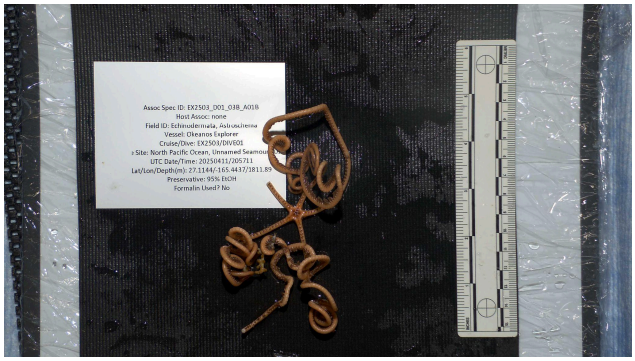


Sample ID	EX2503_D01_02G
Date (UTC)	20250411
Time (UTC)	202530
Depth (m)	1822.06896972656
Latitude (decimal degrees)	27.1142024993896
Longitude (decimal degrees)	-165.443832397461
Temperature (°C)	2.17799997329712
Field ID(s)	Basalt with Manganese Crust
Comments	~22 cm lengthwise. Lots of dead encrusting barnacles. Some potential encrusting tube worms. Possible dead coral.

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



Sample ID	EX2503_D01_03B
Date (UTC)	20250411
Time (UTC)	205711
Depth (m)	1811.89196777344
Latitude (decimal degrees)	27.1144008636475
Longitude (decimal degrees)	-165.443725585938
Temperature (°C)	2.15599989891052
Field ID(s)	Paramuricea
Comments	30cm, one astroschema brittle star



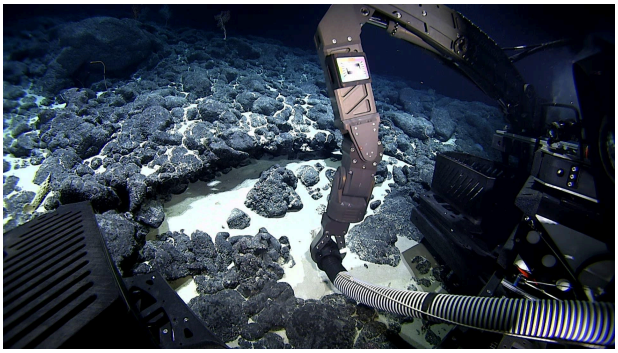
Associates Sample ID:	EX2503_D01_03B_A01B
Field Identification:	Astroschema
Count:	1

Associates Sample ID:	EX2503_D01_03B_A02G
Field Identification:	Manganese Encrusted Basalt
Count:	1

Sample ID	EX2503_D01_04B
Date (UTC)	20250411
Time (UTC)	223443
Depth (m)	1754.37805175781
Latitude (decimal degrees)	27.1144046783447
Longitude (decimal degrees)	-165.442779541016
Temperature (°C)	2.17799997329712
Field ID(s)	Pennatulidae
Comments	smelly, raw chicken smell, red color, bristly

	polyps, light mucus

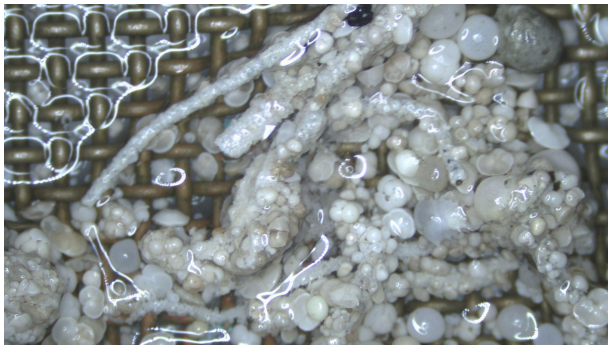
Associates Sample ID:	N/A
Field Identification:	N/A
Count:	N/A

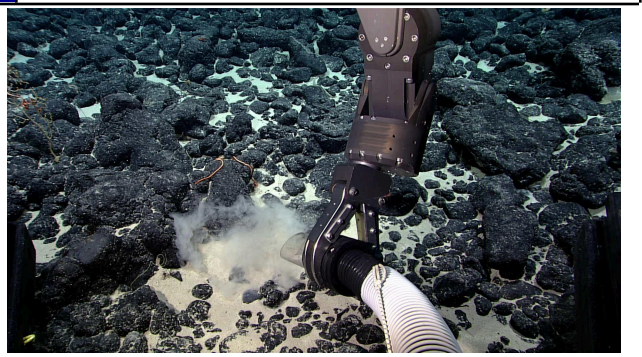


Sample ID	EX2503_D01_05G
Date (UTC)	20250411
Time (UTC)	225744
Depth (m)	1752.37902832031
Latitude (decimal degrees)	27.1144008636475
Longitude (decimal degrees)	-165.442749023438
Temperature (°C)	2.16400003433228
Field ID(s)	Bulk Sediment- 1752m
Comments	primarily planktonic foraminifera. Suspected carbonate ooze. >500 microns

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

Count:	N/A





Sample ID	EX2503_D01_07G
Date (UTC)	20250412
Time (UTC)	005303
Depth (m)	1690.15405273438
Latitude (decimal degrees)	27.1143188476563
Longitude (decimal degrees)	-165.441207885742
Temperature (°C)	2.23099994659424
Field ID(s)	Bulk Sediment- 1609m
Comments	>500 microns. Mostly planktonic foraminifera, high density of agglutinated unilocular (tubular) foraminifera that make their shells out of planktonic foraminifera tests.

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

Sample ID	EX2503_D01_08G
Date (UTC)	20250412
Time (UTC)	010637
Depth (m)	1688.39904785156
Latitude (decimal degrees)	27.1142959594727
Longitude (decimal degrees)	-165.441024780273
Temperature (°C)	2.2260000705719
Field ID(s)	basalt with manganese crust
Comments	25cm lengthwise, there is a small amount of tubeworm encrusters, one of the surfaces has an exposed patch that is shiny, some visible iron oxidation

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

Sample ID	EX2503_D01_10B
Date (UTC)	20250412
Time (UTC)	012856
Depth (m)	1691.27697753906
Latitude (decimal degrees)	27.1142349243164
Longitude (decimal degrees)	-165.440658569336
Temperature (°C)	2.20300006866455
Field ID(s)	Xenophyophoroidea
Comments	agglutinated, unicellular, protist, test delicate and contains lots of mucus. Falls apart with touch. Test is composed of mainly planktonic foraminifera. Dominant species is G. menardii and G. ruber. Some benthics as well. It's probably taking whatever is around it.

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

Niskin Sampling Summary

Sample ID	EX2503_D01_01W
Date (UTC)	20250411
Time (UTC)	201019
Depth (m)	1824
Latitude (decimal degrees)	27.1139888763428
Longitude (decimal degrees)	-165.443862915039
Bottle Number	Niskin Bottle 1
Temperature (°C)	2.18300008773804
Dissolved Oxygen (mg/L)	2.48000001907349
Treatment	DNA/RNA Shield

Sample ID	EX2503_D01_06W
Date (UTC)	20250411
Time (UTC)	234405
Depth (m)	1708.82702636719
Latitude (decimal degrees)	27.1144695281982
Longitude (decimal degrees)	-165.441757202148
Bottle Number	Niskin Bottle 2
Temperature (°C)	2.29500007629395
Dissolved Oxygen (mg/L)	2.31100010871887

Treatment	DNA/RNA Shield

Sample ID	EX2503_D01_09W
Date (UTC)	20250412
Time (UTC)	011722
Depth (m)	1689.82104492188
Latitude (decimal degrees)	27.1143665313721
Longitude (decimal degrees)	-165.440826416016
Bottle Number	Niskin Bottle 3
Temperature (°C)	2.21799993515015
Dissolved Oxygen (mg/L)	2.45600008964539
Treatment	DNA/RNA Shield

Scientists Involved

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