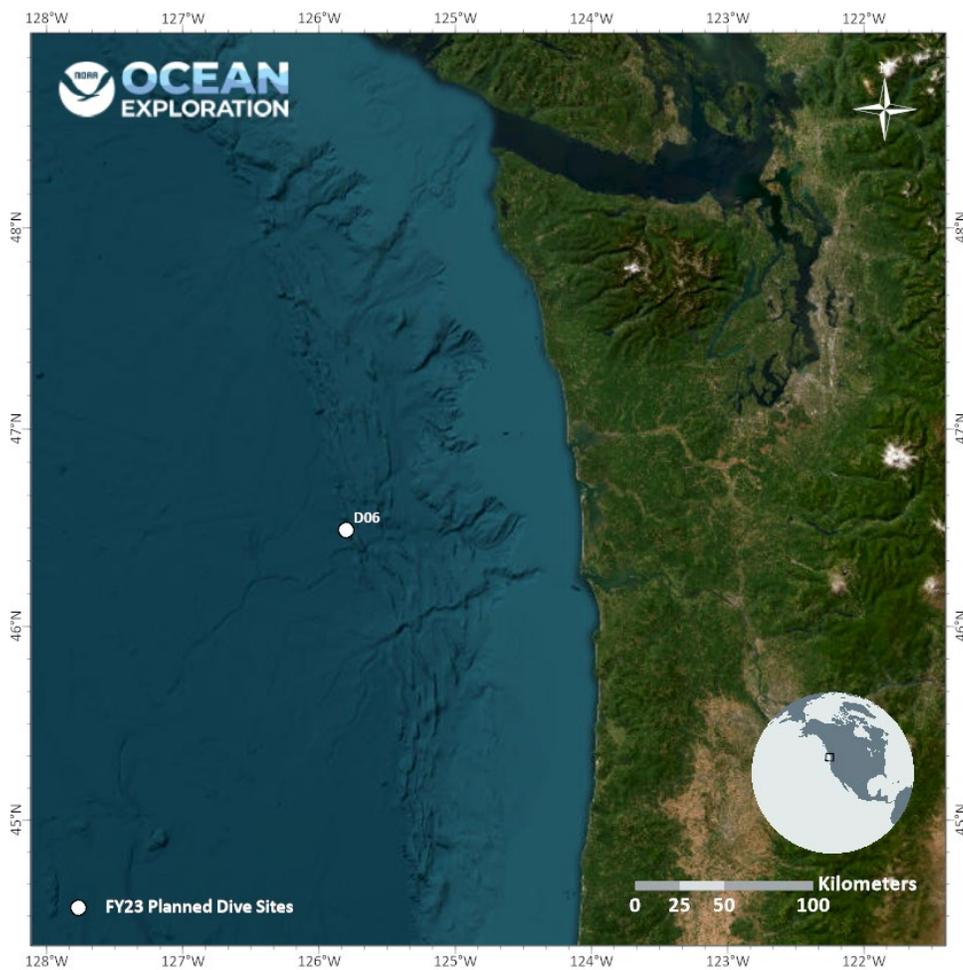


ROV Dive Summary

EX2301, Dive 06, April 23, 2023

General Location Map



Dive Information

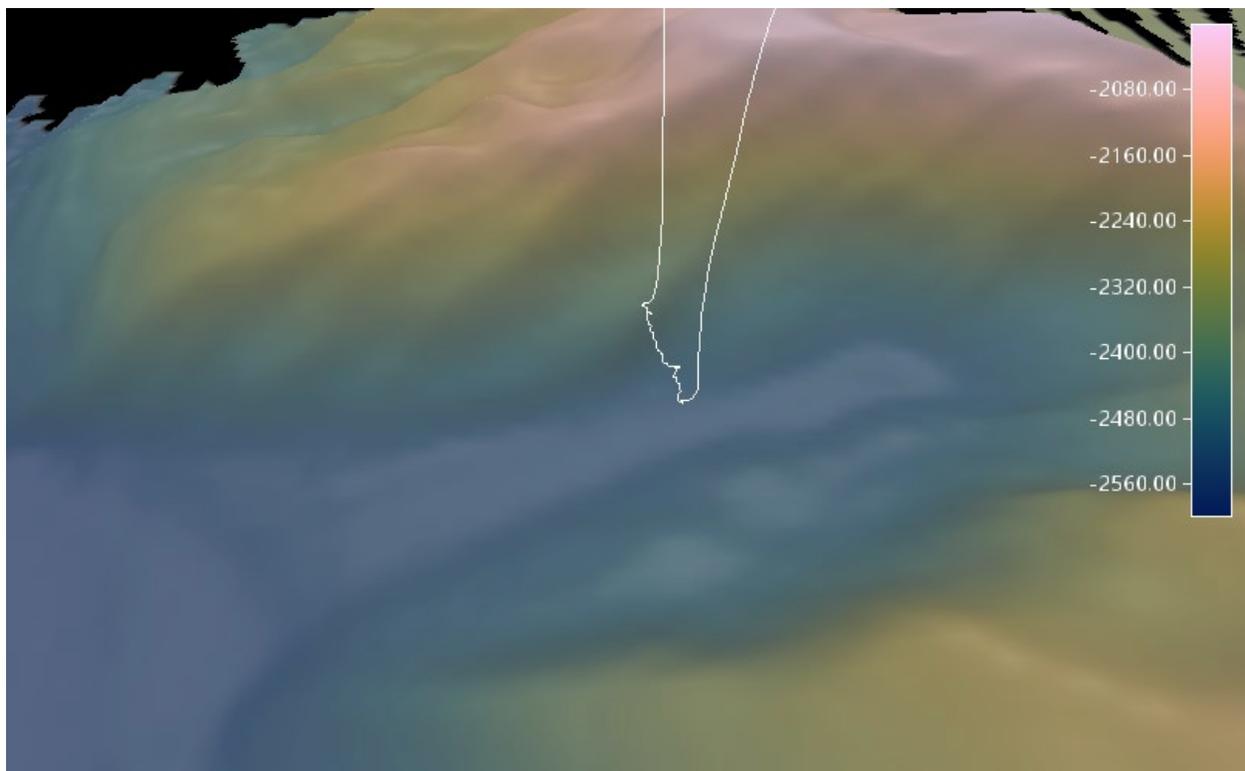
Site Name	North Astoria Canyon (Shakedown)
General Area Descriptor	Sloped region along Cascadia deformation front with max depth of 2530m
Science Team Leads	Alexis Weinnig, Paige Koenig

Dive Description	<p>This was the sixth engineering dive of EX2301 and was located North of Astoria Canyon within the Cascadia deformation front off coast Northern Oregon. The dive site was focused on the north facing slope within a steep (35° - 90°) excavation site in the shape of a ‘horseshoe’ carved out of a zone of uplifted sediment due to thrust faulting. The dive began at approx. -2530m and ascended to approx. -2395m. Geologic features include foliated mudstone scarps, heavily eroded mudstone fragments, and many areas with mudstone rock fall. Some areas on the rock interface contained vertical fractures, likely due to the strong tilt of the steep slope. There were also several scarps that contained holes at ~5cm width holes interpreted to be biologic boreholes since there was no evidence for dissolution or water escaping. We observed a number of fish species (Nezumia, Ophidiidae, Liparidae, Actinernus, Antimora rostrata, Zoarcidae, and Macrouridae). There was Mussoctopus observed “walking” across the seafloor. Goniastrid seastars, <i>Paelopatides confundes</i>, Peniagone seapigs, <i>Sicyonis</i> anemones, Brisingids, Ophiuroidea, spider crabs, bryozoans, and corallimorpharians were observed on the sediment and unconsolidated mudstone. We saw one black coral (<i>Alternatipathes alternata</i>). There was also evidence of past methane seepage indicated by the presence of dead <i>Acharax johnsoni</i> shell hash in the sediment. We were able to successfully sample one biologic sample (Corallimorpharia) that contained one biologic associate and one geologic associate (consolidated mudstone). We successfully captured 5 niskin water samples close to the seafloor for eDNA filtration.</p>
Notable Observations	Foliated mudstone scarps
Community and Habitat Observations	<p>Corals and Sponges — Present Chemosynthetic Community — Absent High biodiversity Community — Absent Active Seep or Vent — Absent Extinct Seep or Vent — Absent Hydrates — Absent</p>
CMECS Feature Type(s)	Slope
SeaTube Link (science annotations)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2803

Equipment Deployed

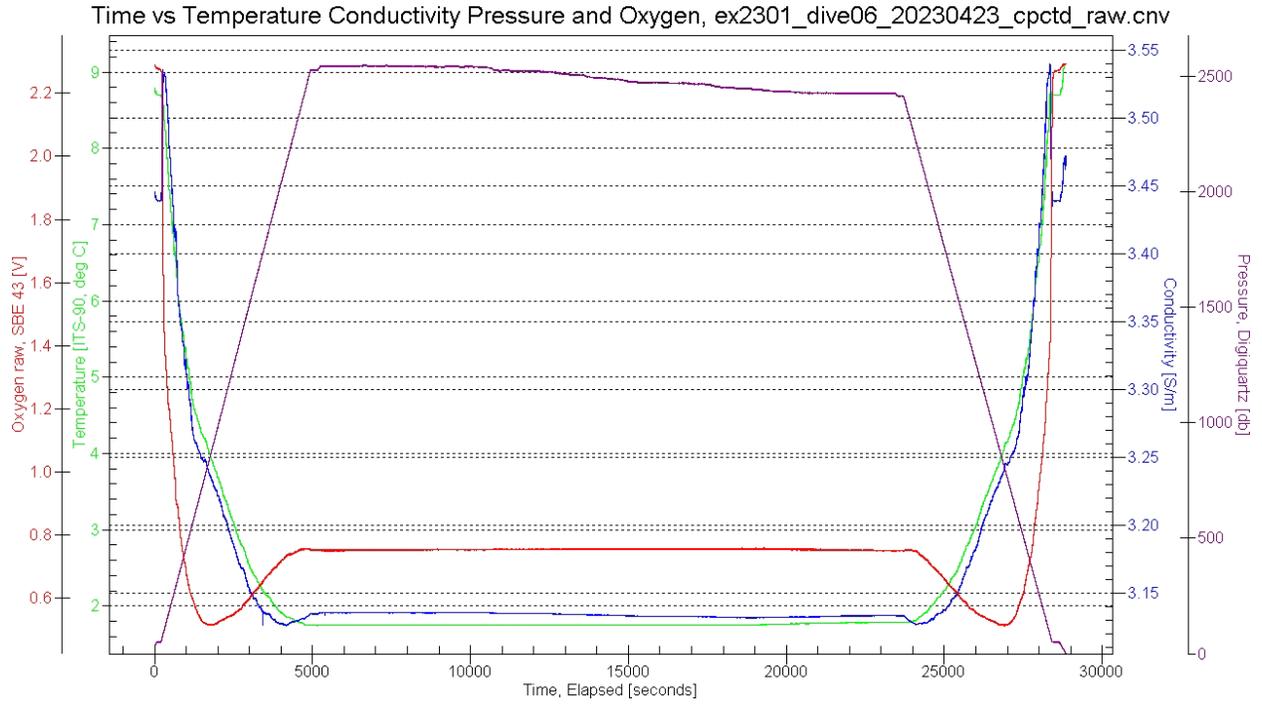
ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, 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



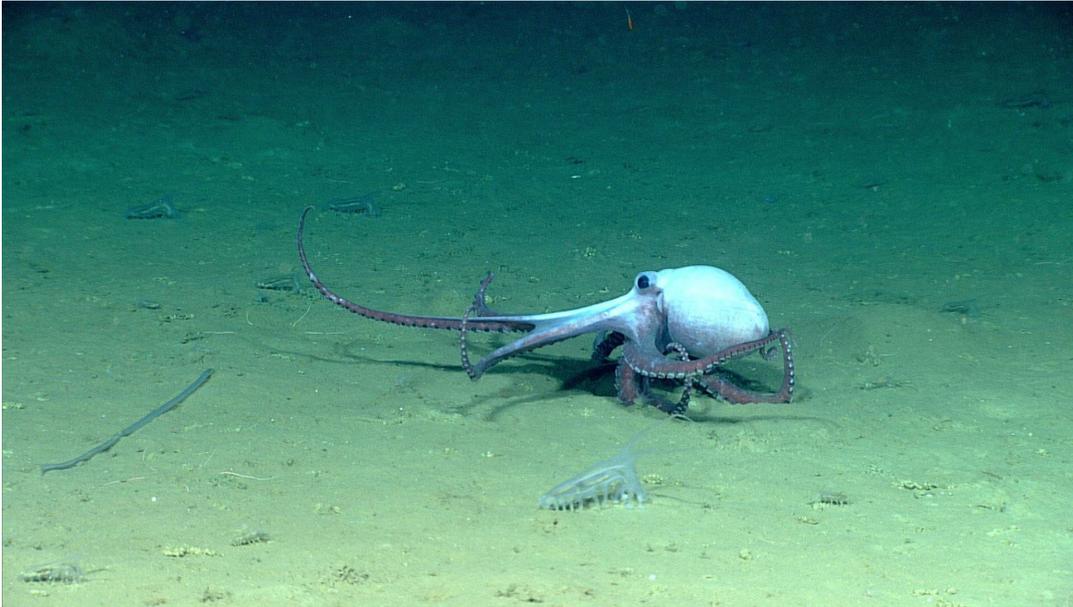
Main dive site for ROV shakedown on 50m bathymetry, depth in meters. 2X vertical exaggeration.

Sound Speed Manager Image of ROV CTD Profile

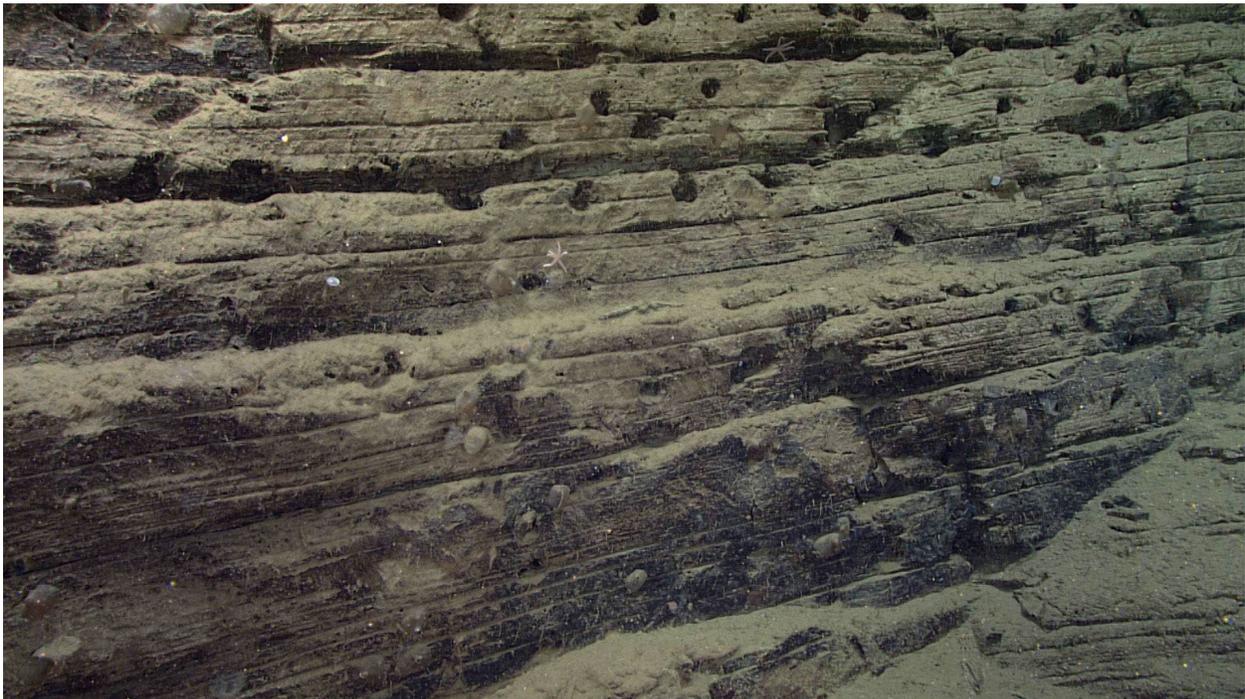


ROV CTD profiles for Dive 06

Representative Photos of the Dive



Mussu octopus observed “walking” across the seafloor

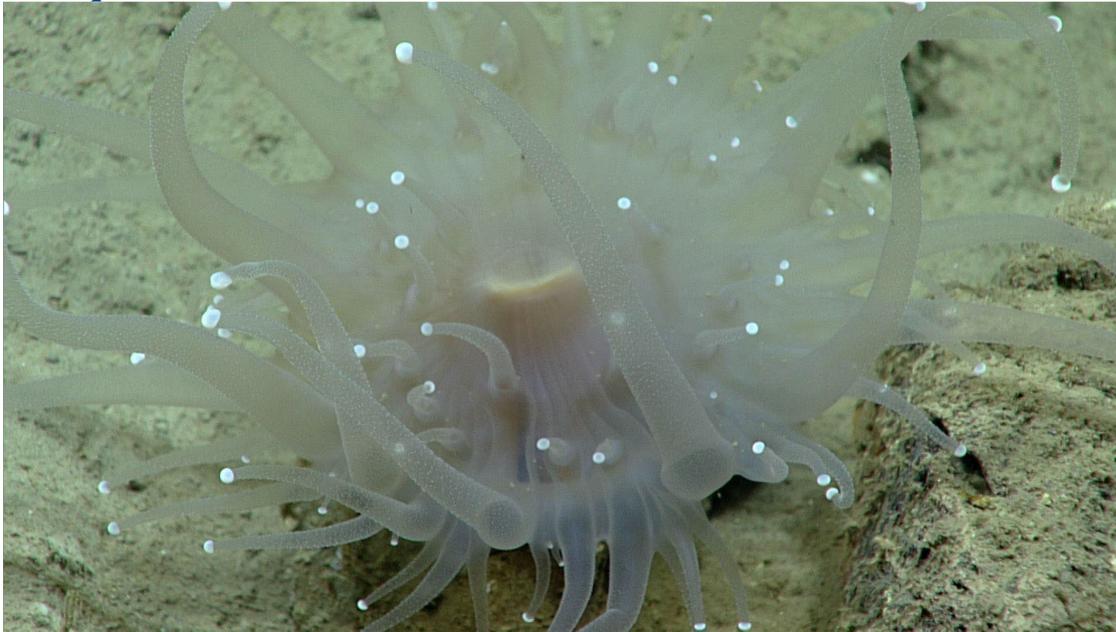


Possible biogenic holes in mudstone outcrops



Outcropping rocks provided a suitable habitat for sponge and coral communities

Samples Collected



In situ image of Corallimorpharia prior to collection



Collecting Corallimorpharia sample with suction sampler



Corallimorpharia sample with colorbar, scale, and sample label in lab after recovery. Note corallimorpharia is still attached to geologic associate in this photo.



Corallimorpharia sample with scale bar in lab after recovery. Note corallimorpharia is still attached to geologic associate in this photo.

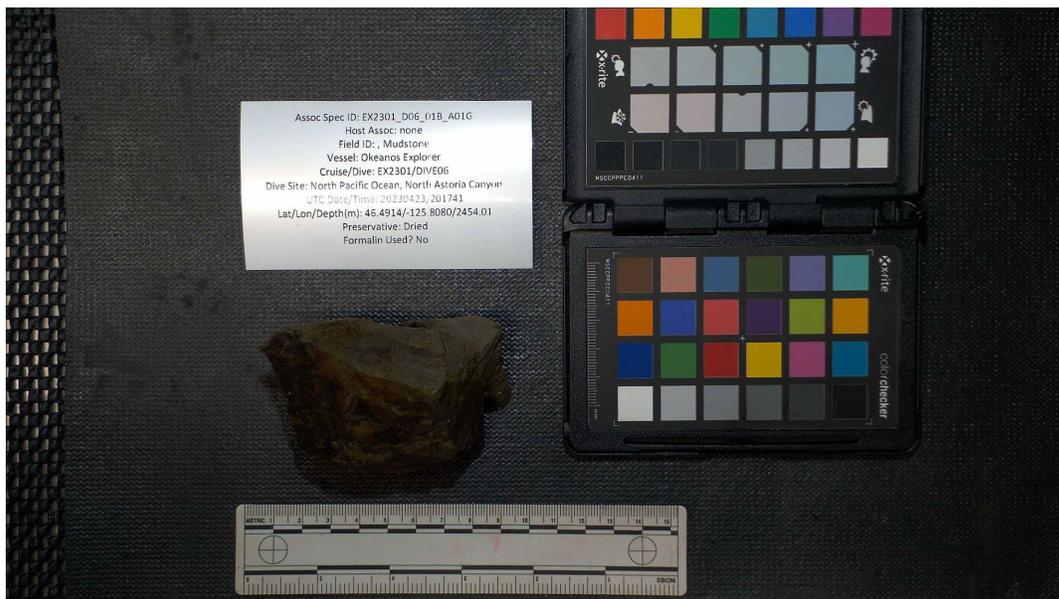


Close up of corallimorpharia orifice in lab after recovery.



Close up photo of corallimorpharia orifice. Note corallimorpharia is still attached to geologic associate in this photo.

Sample ID	EX2301_D06_01B
Date (UTC)	20230423
Time (UTC)	201741
Depth (m)	2454
Latitude (decimal degrees)	46.491417
Longitude (decimal degrees)	-125.807990
Temp. (°C)	1.753
Field ID(s)	Corallimorpharia
Comments	5cm in diameter. Mouth opening is 1cm in diameter. Peach / light pink in color. White dots on the end of each tentacle. Non retracted, even after collection.



Geologic associate sample with sample label, scale, and color chart



Close up photo of geologic associate



Close up photo of geologic associate



Biologic associate arthropoda with sample label, scale, and color chart.



Biologic associate arthropoda, dorsal view.



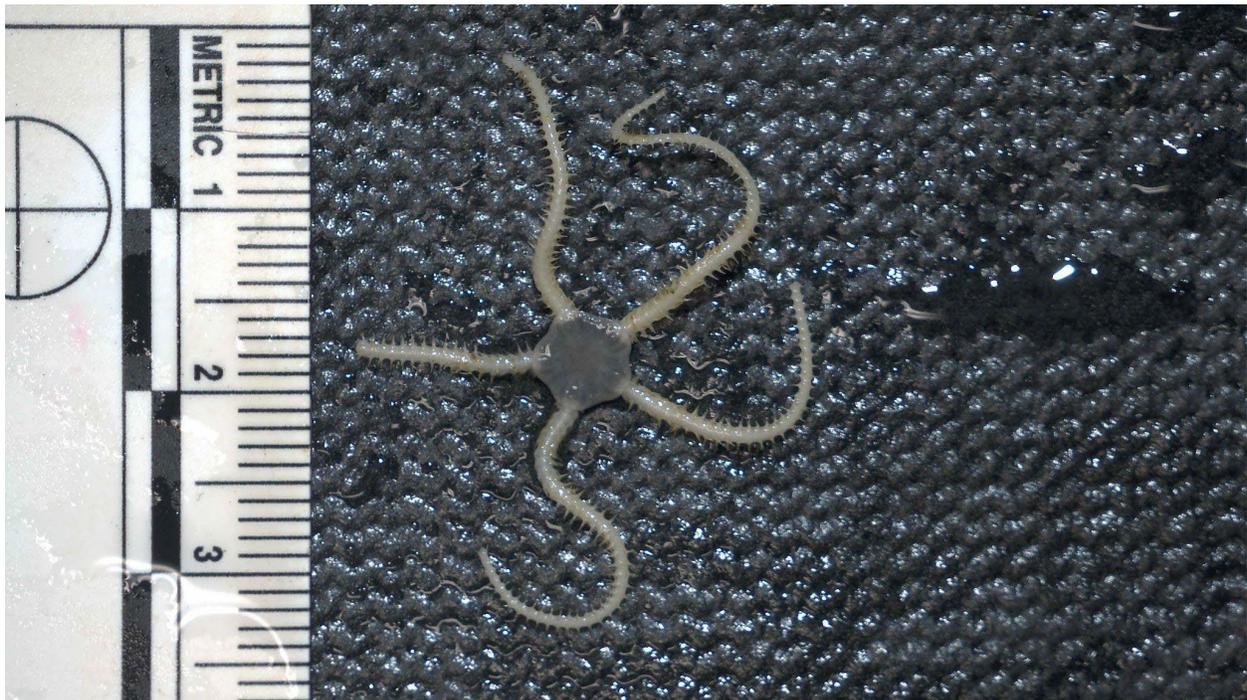
Biologic associate arthropoda, ventral view.



Biologic associate ophiuroidea with scale bar, sample label, and color chart.



Close up of biologic associate ophiuroidea with scale bar, ventral view.



Close up of biologic associate ophiuroidea with scale bar, dorsal view.

Associates Sample ID	Field Identification	Count
EX2301_D06_01B_A01G	Mudstone	1
EX2301_D06_01B_A02B	Arthropoda	1
EX2301_D06_01B_A03B	Ophiuroidea	1

Niskin Sampling Summary

Sample ID	EX2301_D06_02W
Date (UTC)	20230423
Time (UTC)	211810
Depth (m)	2412.4
Latitude (decimal degrees)	46.4920692443848
Longitude (decimal degrees)	-125.80810546875
Bottle Number	1
Temperature (°C)	1.771
Dissolved Oxygen (ml/L)	2.297
Treatment	Frozen

Sample ID	EX2301_D06_03W
Date (UTC)	20230423
Time (UTC)	211919
Depth (m)	2413.0
Latitude (decimal degrees)	46.4919662475586
Longitude (decimal degrees)	-125.808235168457
Bottle Number	2
Temperature (°C)	1.765
Dissolved Oxygen (ml/L)	2.348
Treatment	Frozen

Sample ID	EX2301_D06_04W
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Date (UTC)	20230423
Time (UTC)	212005
Depth (m)	2411.3
Latitude (decimal degrees)	46.4920082092285
Longitude (decimal degrees)	-125.808296203613
Bottle Number	3
Temperature (°C)	1.764
Dissolved Oxygen (ml/L)	2.349
Treatment	Frozen

Sample ID	EX2301_D06_05W
Date (UTC)	20230423
Time (UTC)	212107
Depth (m)	2410
Latitude (decimal degrees)	46.4920310974121
Longitude (decimal degrees)	-125.808372497559
Bottle Number	4
Temperature (°C)	1.761
Dissolved Oxygen (ml/L)	2.396
Treatment	Frozen

Sample ID	EX2301_D06_06W
Date (UTC)	20230423
Time (UTC)	212827
Depth (m)	2409.4
Latitude (decimal degrees)	46.4921035766602
Longitude (decimal degrees)	-125.808464050293
Bottle Number	5
Temperature (°C)	1.768

Dissolved Oxygen (ml/L)	2.38
Treatment	Frozen

Sample ID	EX2301_D06_BLW
Date (UTC)	20230417
Treatment	500 mL of distilled water. Filter stored in freezer.

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