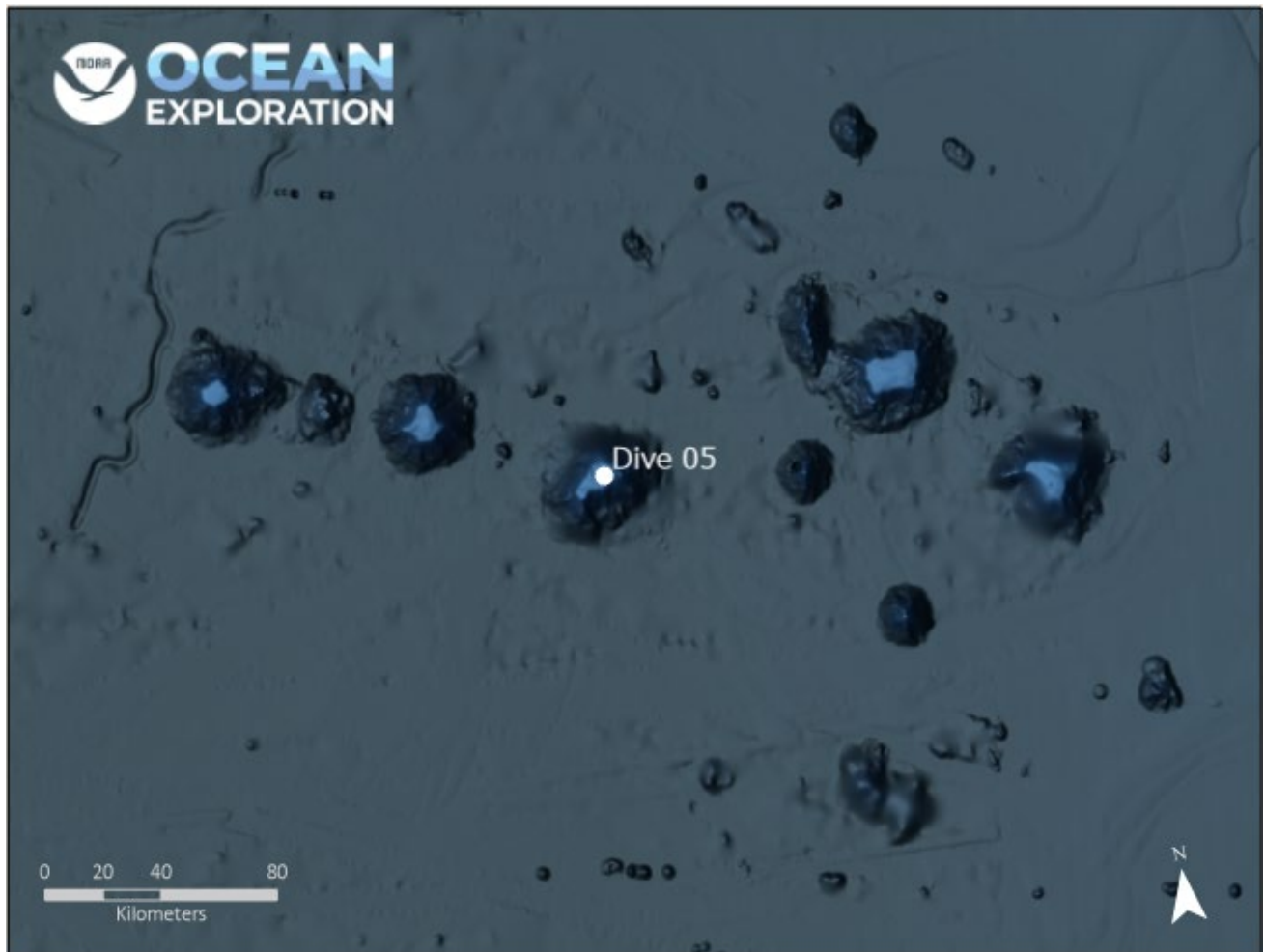


ROV Dive Summary

EX2306, Dive 05, August 28, 2023

General Location Map



Dive Information

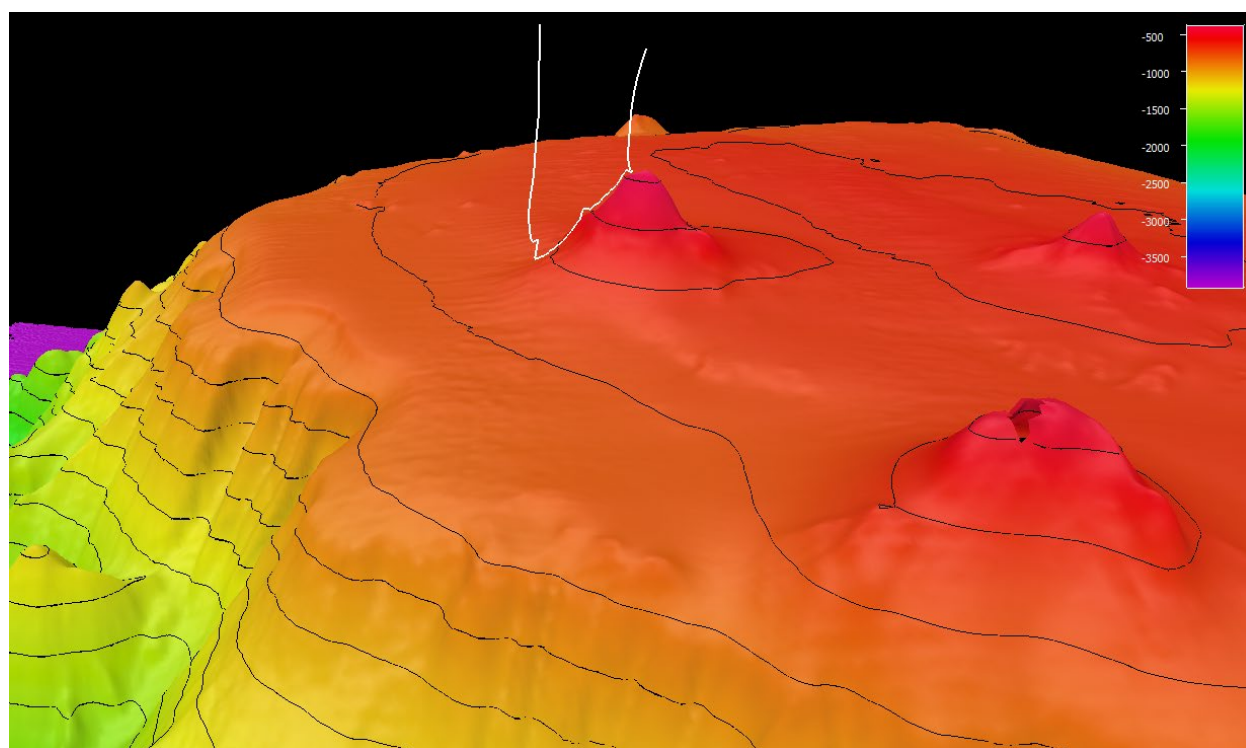
Site Name	Surveyor Seamount
General Area Descriptor	Gulf of Alaska
Science Team Leads	Merlin Best (Bio); Jamie Conrad (Geo)
Expedition Coordinator	Sam Candio
ROV Dive Supervisor	Lars Murphy
Dive Purpose	To explore and characterize a previously unknown cone-shaped mound on the summit plateau of Surveyor Seamount.
Maritime Heritage Restrictions	No
ROV Dive Summary Data	<p>Dive Type: Normal</p> <p>In Water: 2023-08-28T16:31:17.367036 56.0918773195344 ; -144.297352865055</p> <p>On Bottom: 2023-08-28T17:13:55.162277 56.09126415995651 ; -144.29823163078595</p> <p>Off Bottom: 2023-08-29T00:16:00.006806 56.08627360416801 ; -144.30589675710164</p> <p>Out Water: 2023-08-29T00:33:21.380553 56.085526 ; -144.306065</p> <p>Dive Duration: 8:02:04</p> <p>Bottom Time: 7:02:04</p> <p>Max Vehicle Depth: 643.6 m</p> <p>Min Seafloor Depth: 381.0 m</p> <p>Distance Traveled: 778.2 m</p>

Dive Description	<p>Geology</p> <p>This dive ascended one of three roughly cone-shaped mounds perched on the seamount's summit plateau that were revealed by new mapping conducted prior to the dive. The summit plateau, at a depth of about 650 m, was covered with a pavement of rounded pebbles and cobbles in a sandy matrix, with scattered clasts up to boulder size. A suction sample of the pebbly sand and a loose basalt cobble were collected from the summit plateau. The ROV ascended the cone-shaped mound along a ridge that appeared to be underlain by a basalt dike to the summit of the cone about 225 m higher. The lower part of the cone consists of relatively blocky jointed basalt or basaltic flows, but the upper part of the cone has a much more rugged and chaotic appearance, possibly composed of blocky, agglutinous, or scoriaceous debris. Two samples of basalt were collected from the cone and scoriaceous debris from the summit of the cone, collected as a by-product (associate) of a biological suction sample were also recovered.</p> <p>Biology</p> <p>There was a high abundance of biodiversity observed on this dive, as we quickly reached a depth at or adjacent to the oxygen minimum zone (OMZ). Mats of Ophiuroidea dominated the area for most of the dive, petering out near the end with encrusting demosponges becoming more abundant in the shallower depths. We observed a high abundance of large complex habitat-forming corals and sponges, including Paragorgia spp., Keratoisididae, Primnoidae, and Pinulasma sp. A wide array of samples were collected for further analysis.</p>
Notable Observations	Fishing line, Primnoa pacifica, Enteroctopus dofleini, possibly sleeping; unidentified small white organisms in high abundance
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)	<p>Flat</p> <p>Hole/Pit</p> <p>Outcrop/Rock Outcrop</p> <p>Pinnacle</p> <p>Plateau</p> <p>Ridge</p> <p>Seamount</p> <p>Slope</p>
SeaTube Link (science annotations)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=6660

Equipment Deployed

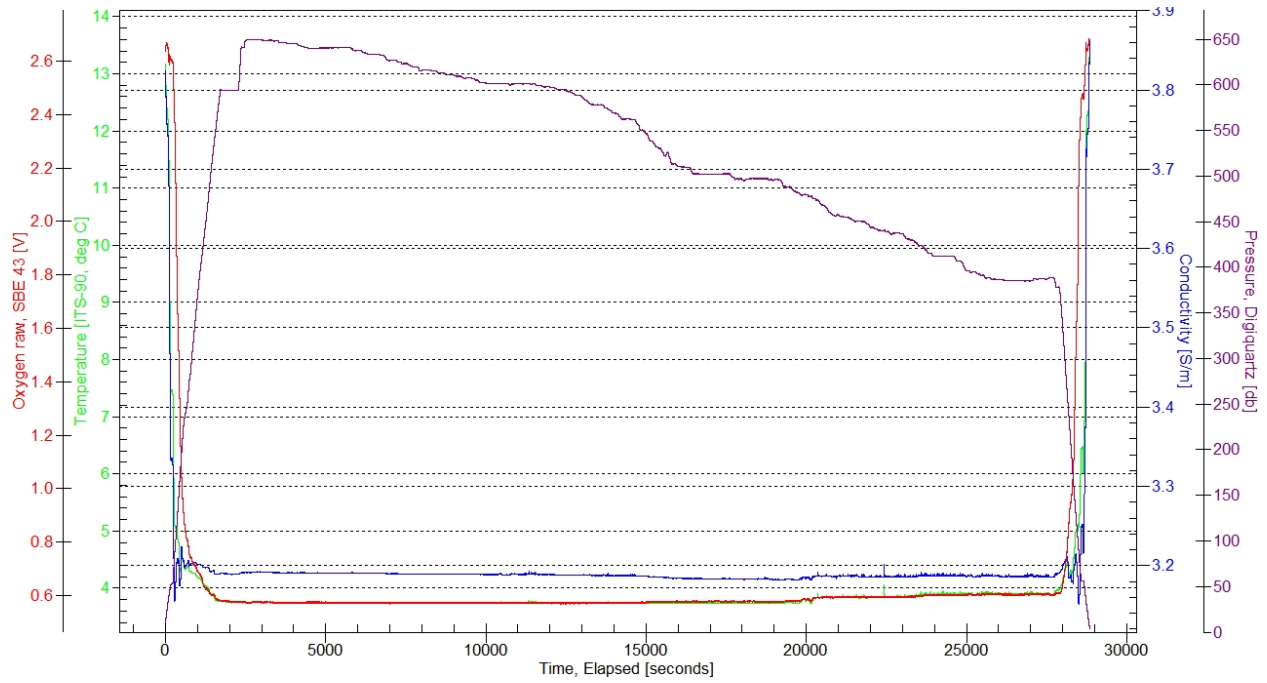
ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The following row notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	Erratic behavior of the Tasman DVL.

Close-Up Map of Main Dive Site



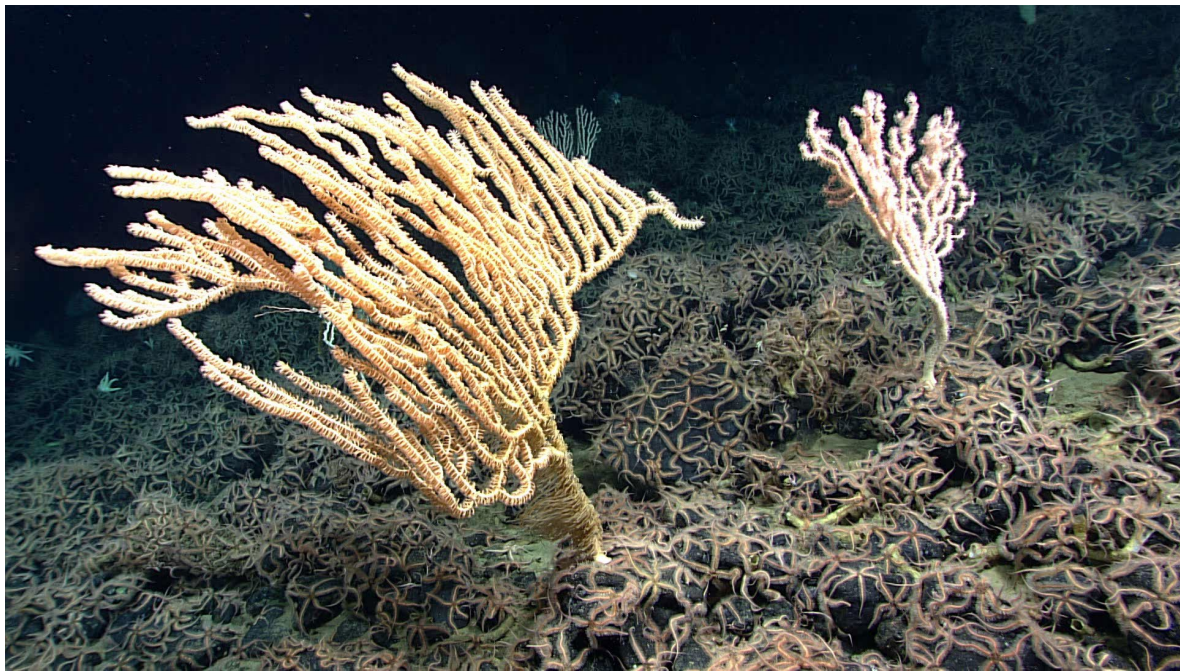
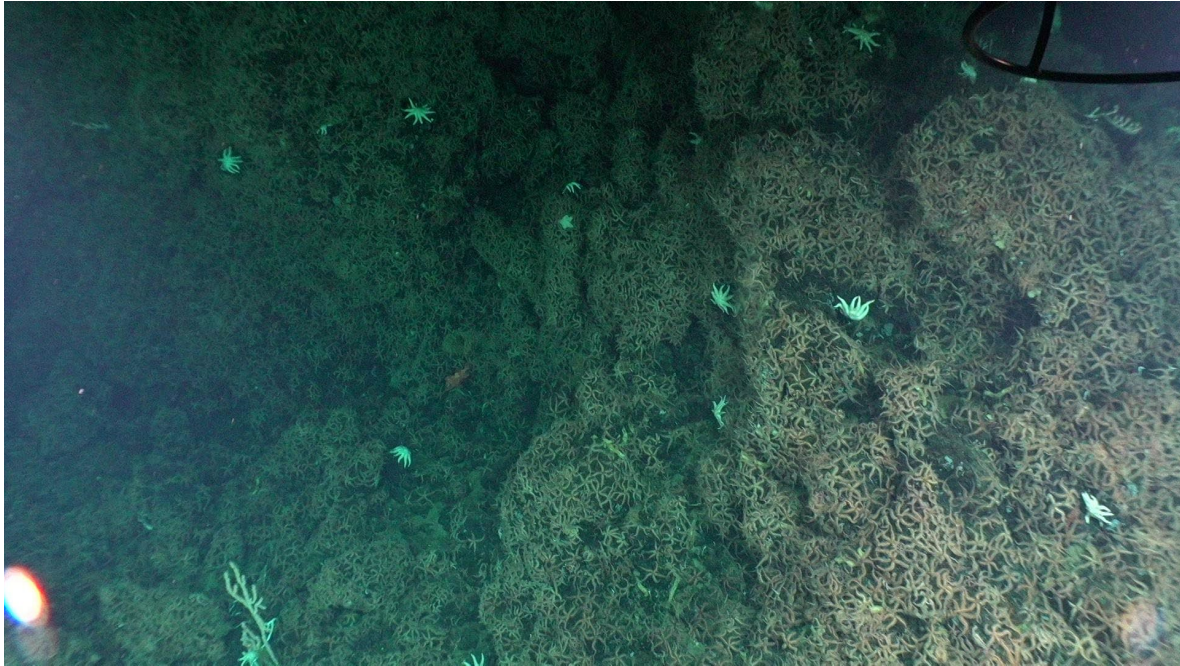
Smoothed ROV dive track in white on 30x30 m cell size bathymetry, 3x vertical exaggeration, depth in meters, 100 meter contours.

ROV CTD Profile



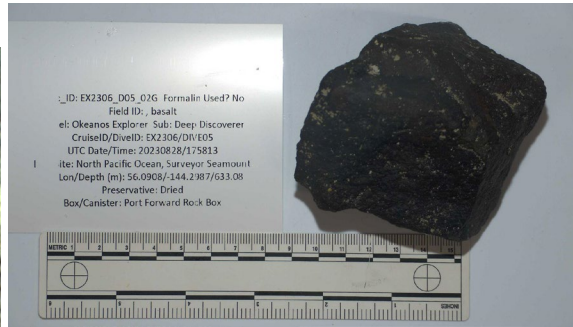
Plot of the ROV CTD profile, showing temperature, conductivity, pressure, and dissolved oxygen over time.

Representative Photos of the Dive

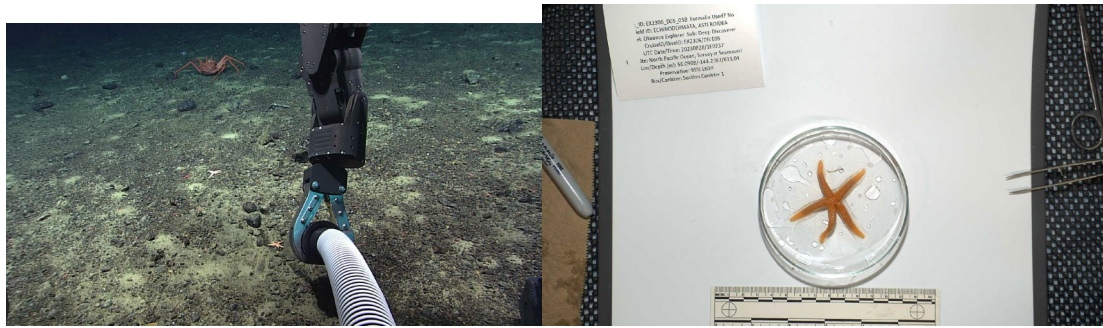


Top: Dense mats of ophiuroids covering a steep hard rock feature, with *Solaster* sp. and bare patches around them; Bottom: dense mats of ophiuroids with *Isidella tentaculum* and *Paragorgia* sp.

Samples Collected



Sample ID	EX2306_D05_02G
Date (UTC)	20230828
Time (UTC)	175813
Depth (m)	633.077026367188
Latitude (decimal degrees)	56.0907707214355
Longitude (decimal degrees)	-144.298721313477
Temp. (°C)	3.73600006103516
Field ID(s)	basalt
Comments	Basalt with thin Fe-Mn coating



Sample ID	EX2306_D05_03B
Date (UTC)	20230828
Time (UTC)	180237
Depth (m)	633.043029785156
Latitude (decimal degrees)	56.0907897949219
Longitude (decimal degrees)	-144.298721313477
Temp. (°C)	3.73300004005432
Field ID(s)	Asteroidea

Associates Sample ID:	EX2306_D05_03B_A01B
Field Identification:	Ophiuroidea
Count	1



Sample ID	EX2306_D05_04G
Date (UTC)	20230828
Time (UTC)	180542
Depth (m)	633.294006347656
Latitude (decimal degrees)	56.0907745361328
Longitude (decimal degrees)	-144.298721313477
Temp. (°C)	3.73300004005432
Field ID(s)	pebbly sediment
Comments	pebbles with sand and silt

Associates Sample ID:	EX2306_D05_04G_A01B
Field Identification:	Ophiuroidea
Count	10



Sample ID	EX2306_D05_05B
Date (UTC)	20230828
Time (UTC)	193049

Depth (m)	595.223999023438
Latitude (decimal degrees)	56.0900115966797
Longitude (decimal degrees)	-144.300384521484
Temp. (°C)	3.73099994659424
Field ID(s)	Stolonifera

Associates Sample ID:	EX2306_D05_05B_A01B
Field Identification:	Pectinidae
Count	1

Associates Sample ID:	EX2306_D05_05B_A02B
Field Identification:	Ophiuroidea
Count	1

Associates Sample ID:	EX2306_D05_05B_A03G
Field Identification:	basalt
Count	1



Sample ID	EX2306_D05_06B
Date (UTC)	20230828

Time (UTC)	194116
Depth (m)	594.713989257813
Latitude (decimal degrees)	56.0900573730469
Longitude (decimal degrees)	-144.300476074219
Temp. (°C)	3.73399996757507
Field ID(s)	PARAGORGIA
Comments	Paragorgia sp., likely Paragorgia stephencairnsi species-complex

Associates Sample ID:	EX2306_D05_06B_A01B
Field Identification:	Ophiuroidea
Count	1



Sample ID	EX2306_D05_07B
Date (UTC)	20230828
Time (UTC)	211753
Depth (m)	496.460998535156
Latitude (decimal degrees)	56.0885925292969
Longitude (decimal degrees)	-144.301879882813

Temp. (°C)	3.74200010299683
Field ID(s)	PRIMNOA PACIFICA

Associates Sample ID:	EX2306_D05_07B_A01B
Field Identification:	Ophiuroidea
Count	1



Sample ID	EX2306_D05_08B
Date (UTC)	20230828
Time (UTC)	212612
Depth (m)	497.570007324219
Latitude (decimal degrees)	56.0886154174805
Longitude (decimal degrees)	-144.301895141602
Temp. (°C)	3.73699998855591
Field ID(s)	Keratoisidae



Sample ID	EX2306_D05_10G
Date (UTC)	20230828
Time (UTC)	214314
Depth (m)	491.684997558594
Latitude (decimal degrees)	56.0882759094238
Longitude (decimal degrees)	-144.302261352539
Temp. (°C)	3.73300004005432
Field ID(s)	basalt w/ sponge
Comments	vesicular basalt

Associates Sample ID:	EX2306_D05_10G_A01B
Field Identification:	Porifera
Count	1

Associates Sample ID:	EX2306_D05_10G_A02B
Field Identification:	Ophiuroidea
Count	5

Associates Sample ID:	EX2306_D05_10G_A03B
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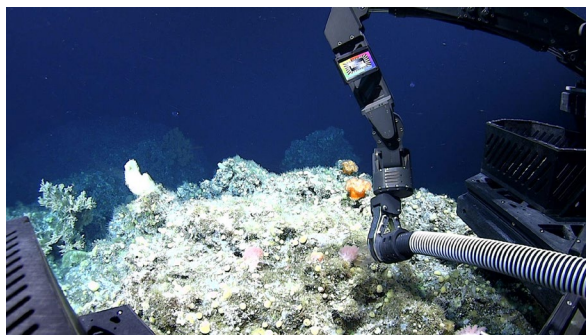
Field Identification:	Serpulidae
Count	1



Sample ID	EX2306_D05_11B
Date (UTC)	20230828
Time (UTC)	232209
Depth (m)	407.423004150391
Latitude (decimal degrees)	56.0867729187012
Longitude (decimal degrees)	-144.305023193359
Temp. (°C)	3.88800001144409
Field ID(s)	OTHER

Associates Sample ID:	EX2306_D05_11B_A01B
Field Identification:	Cladorhizidae
Count	1

Associates Sample ID:	EX2306_D05_11B_A02G
Field Identification:	BASALTIC CINDERS
Count	1



Sample ID	EX2306_D05_13B
Date (UTC)	20230828
Time (UTC)	235816
Depth (m)	381.239013671875
Latitude (decimal degrees)	56.0864944458008
Longitude (decimal degrees)	-144.305572509766
Temp. (°C)	3.89599990844727
Field ID(s)	porifera

Associates Sample ID:	EX2306_D05_13B_A01B
Field Identification:	Nudibranchia
Count	1

Associates Sample ID:	EX2306_D05_13B_A02B
Field Identification:	Hydrozoa
Count	1

Associates Sample ID:	EX2306_D05_13B_A03B
Field Identification:	Amphipoda

Count	7
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Associates Sample ID:	EX2306_D05_13B_A04B
Field Identification:	miscellaneous
Count	1

Associates Sample ID:	EX2306_D05_13B_A05B
Field Identification:	Caprellidea
Count	1

Niskin Sampling Summary

Sample ID	EX2306_D05_01W
Date (UTC)	20230828
Time (UTC)	172118
Depth (m)	642.809997558594
Latitude (decimal degrees)	56.0912208557129
Longitude (decimal degrees)	-144.298370361328
Bottle Number	Niskin Bottle 1
Temperature	3.74900007247925
Dissolved Oxygen (mg/L)	0.638999998569489
Treatment	DNA/RNA Shield

Sample ID	EX2306_D05_09W
Date (UTC)	20230828
Time (UTC)	213054
Depth (m)	490.933990478516
Latitude (decimal degrees)	56.088451385498
Longitude (decimal degrees)	-144.302108764648
Bottle Number	Niskin Bottle 2
Temperature	3.74200010299683
Dissolved Oxygen (mg/L)	0.629000008106232
Treatment	DNA/RNA Shield

Sample ID	EX2306_D05_12W
Date (UTC)	20230828
Time (UTC)	235310
Depth (m)	381.665008544922
Latitude (decimal degrees)	56.0864944458008
Longitude (decimal degrees)	-144.305572509766
Bottle Number	Niskin Bottle 3
Temperature	3.8970000743866
Dissolved Oxygen (mg/L)	0.769999980926514
Treatment	DNA/RNA Shield

Scientists Involved

Name	Affiliation
Alexis Weinnig	USGS
Amanda Maxon	NOAA
Arvind Shantharam	NCEI
Christa Rabenold	NOAA
Christina Conrath	NOAA
Christopher Mah	NMNH, Smithsonian Institution
Emily Ashe	NOAA
George Matsumoto	MBARI
Hugh MacIntosh	Royal BC Museum
Jamie Conrad	USGS
Jane Rudebusch	USGS
John Deitz	Long Island University
Kelly Markello	California Academy of Sciences
Merlin Best	Fisheries and Oceans Canada
Michael Vecchione	NOAA
Mitchell Hebner	NOAA
Nolan Barrett	Georgia Institute of Technology
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