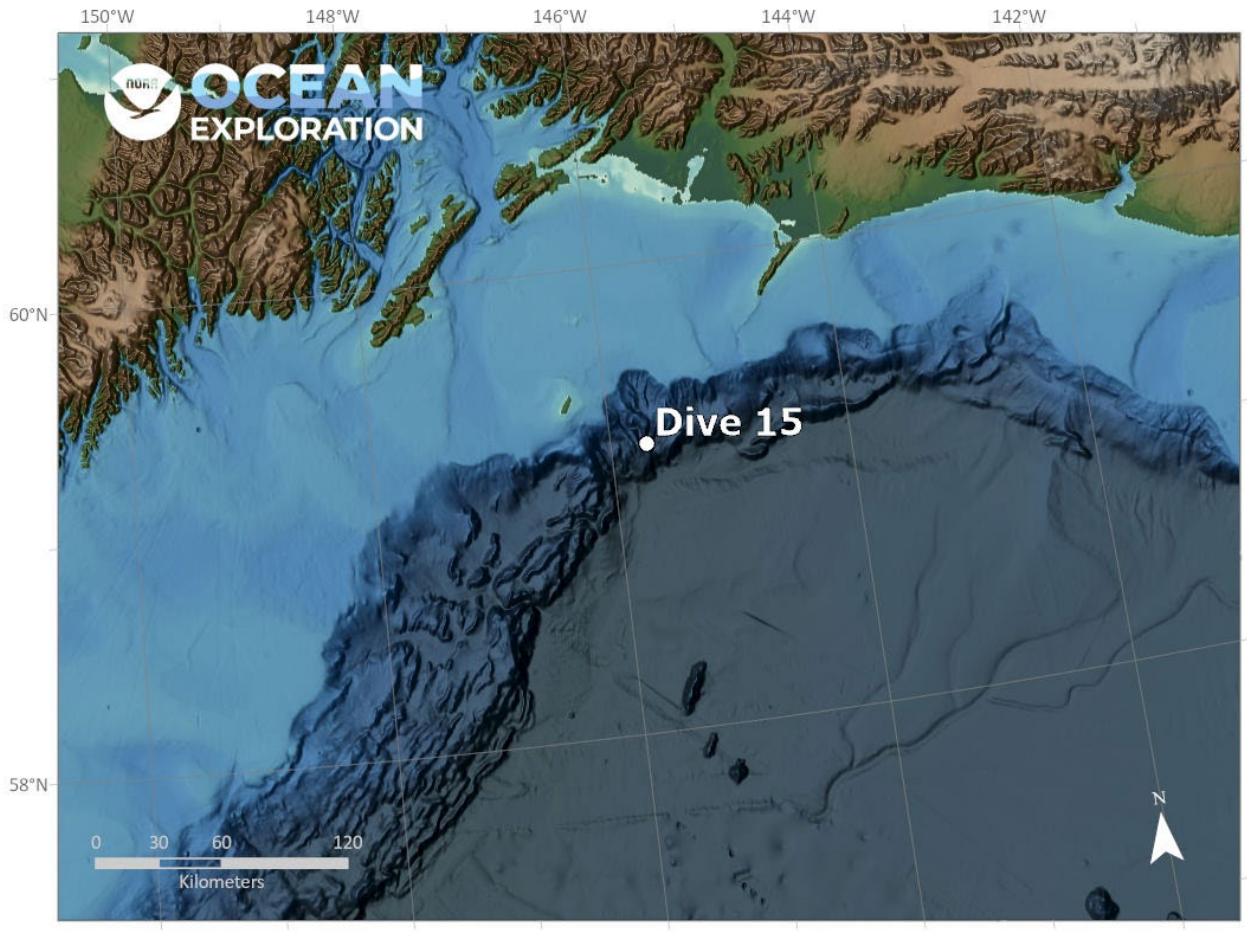
ROV Dive Summary
EX2306, Dive 15, September 10, 2023

General Location Map



Dive Information

Site Name	Middleton Canyon
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	This is a geologically complex area at the intersection of the subduction zone and the Yakutat Terrane, where the sedimentary cover of the Yakutat Terrane is being accreted to the North American Plate and its oceanic basement is subducting underneath southern Alaska. This is a virtually unexplored area and the rocks potentially encountered encompass a wide variety of potential lithologies and structures. Due to the rocky outcrops known in the area and the target depth (>1000m), trawl and long line surveys have generally avoided this area, leaving a large data gap on the species that occur there. Diving on this site and documenting the fish species, habitat-forming species, associated fauna, and their relative abundances we see will aim to fill in this data gap to contribute to current fisheries research efforts in the Gulf of Alaska.
Maritime Heritage Restrictions	No

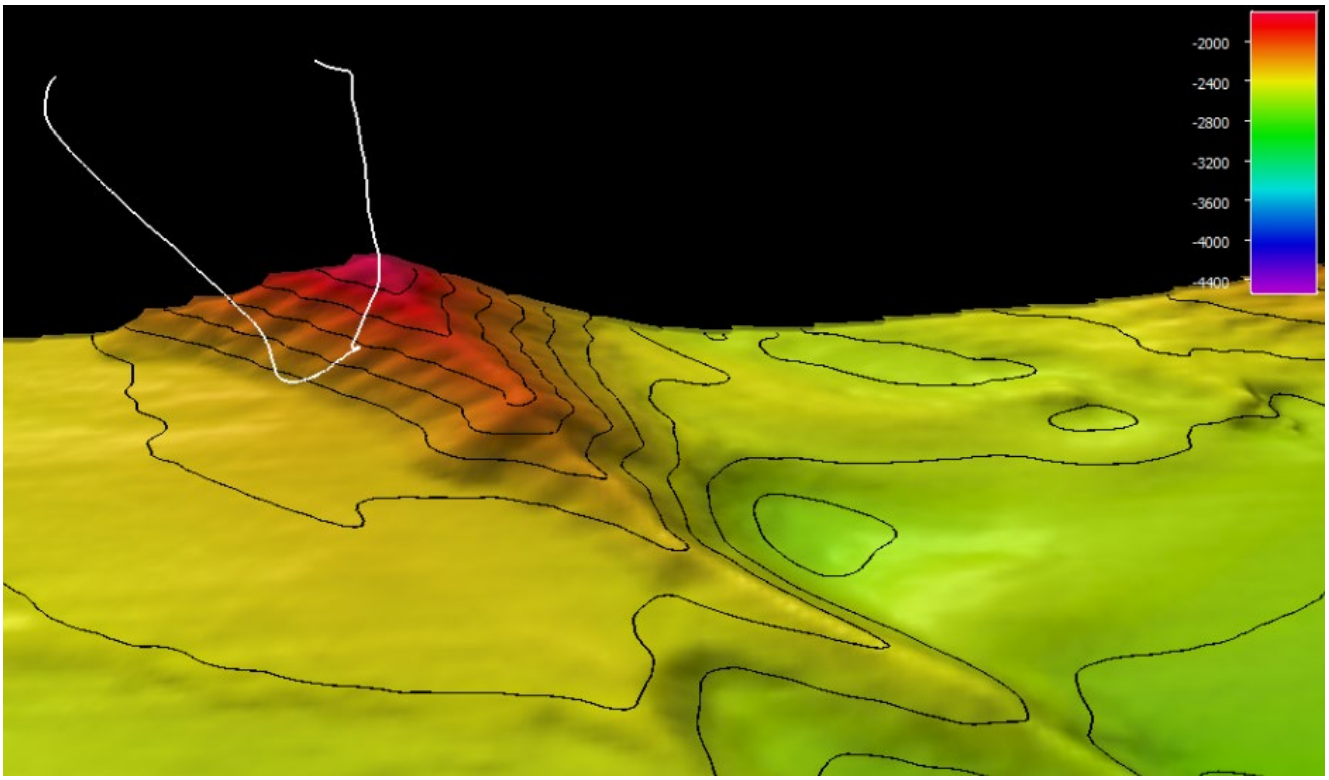
ROV Dive Summary Data	Dive Type: Normal In Water: 2023-09-10T16:58:50.737711 59.25006451273394 ; -145.72872699863925 On Bottom: 2023-09-10T18:20:12.269459 59.24840191737771 ; -145.71595282402043 Off Bottom: 2023-09-10T23:26:03.071895 59.249217 ; -145.712563 Out Water: 2023-09-11T00:39:52.581862 59.25208968423384 ; -145.7140621572185 Dive Duration: 7:41:01 Bottom Time: 5:05:50 Max Vehicle Depth: 2220.1 m Min Seafloor Depth: 2010.4 m Distance Traveled: 318.7 m
Dive Description	***Geology*** This dive was in the Middleton submarine canyon complex offshore Prince William Sound. Starting at a depth of 2200 m in the canyon bottom, soft muddy sediments were encountered at the base of the ridge. The ROV ascended the eastern slope of the channel, encountering a sequence of fractured and deformed thin- to thick-bedded cobble conglomerate, cross-bedded sandstone, and mudstone, mantled in a thin and variable layer of hemipelagic sediment. One sample of friable mudstone was collected. ***Biology*** A diverse biological ecosystem was observed, with large stands of kertoisidid and primnoid corals (Parastenella sp.), anemones (Hormathiidae and Actinernis sp.), all associated with the hard rock and mudstone outcrops. There was also a unique community of soft sediment fauna, notably Balticina sp. seapens with Asteronyx loveni often associated.
Notable Observations	Branched farreid (Hexactinellida) sponge that is believed to be a new species to science, localized dense aggregations of gorgonian corals.

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)	Outcrop/Rock Outcrop Ridge Scarp/Wall Slope Submarine Canyon
SeaTube Link (science annotations)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=6780

Equipment Deployed

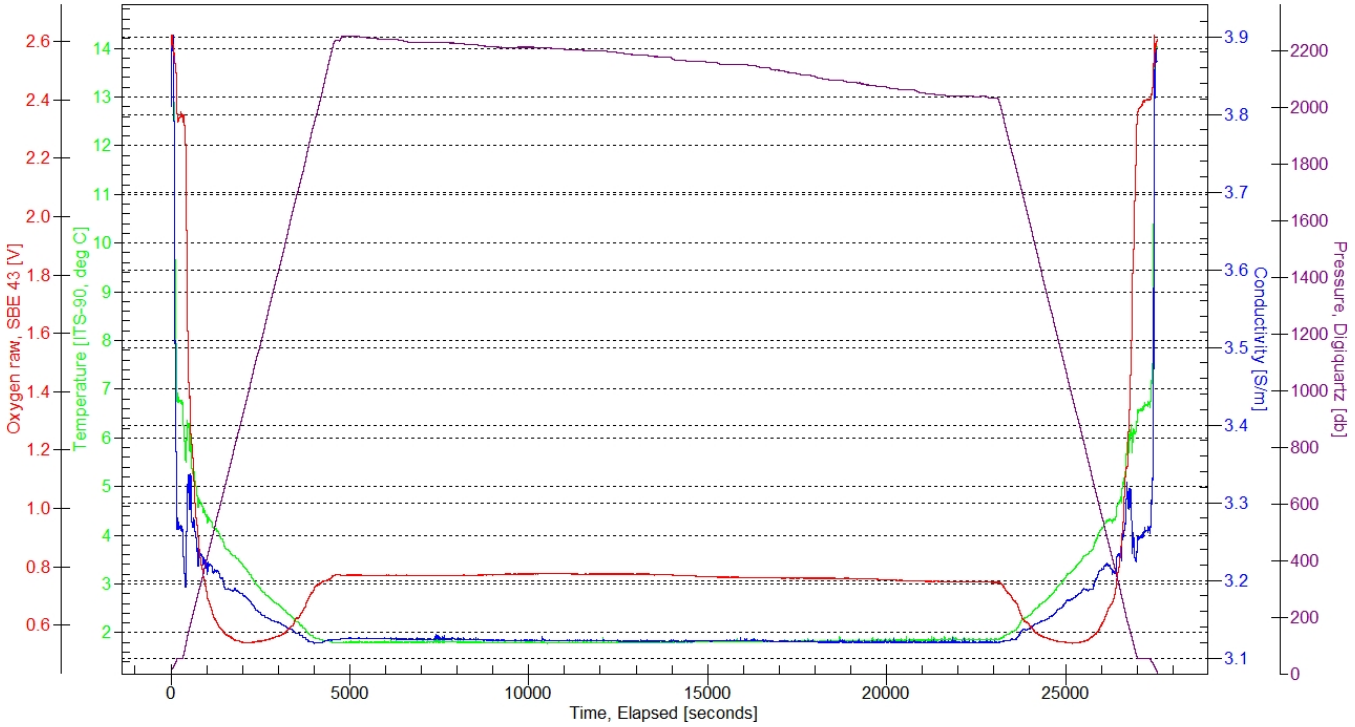
ROV	*Deep Discoverer*
Camera Platform	*Seirios*
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The following row notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	Pilot joybox failure during launch.

Close-Up Map of Main Dive Site



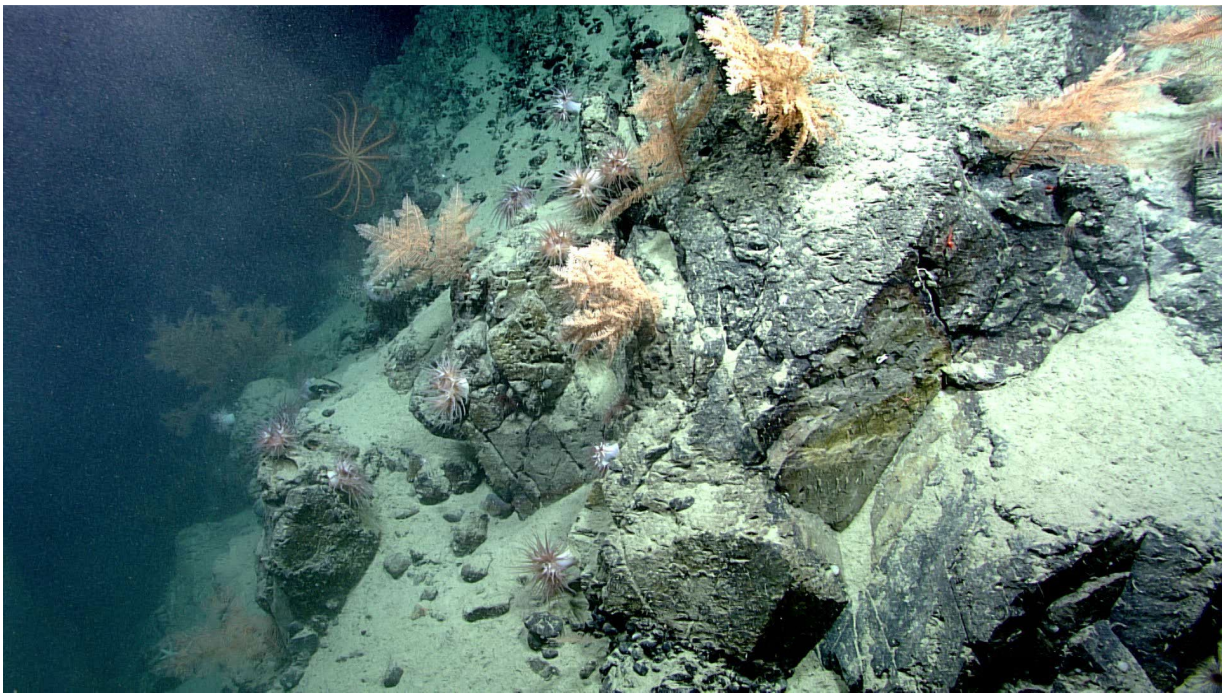
Smoothed ROV dive track in white on 25x25 cell size bathymetry, 1x vertical exaggeration, depth in meters, 100 meter contours.

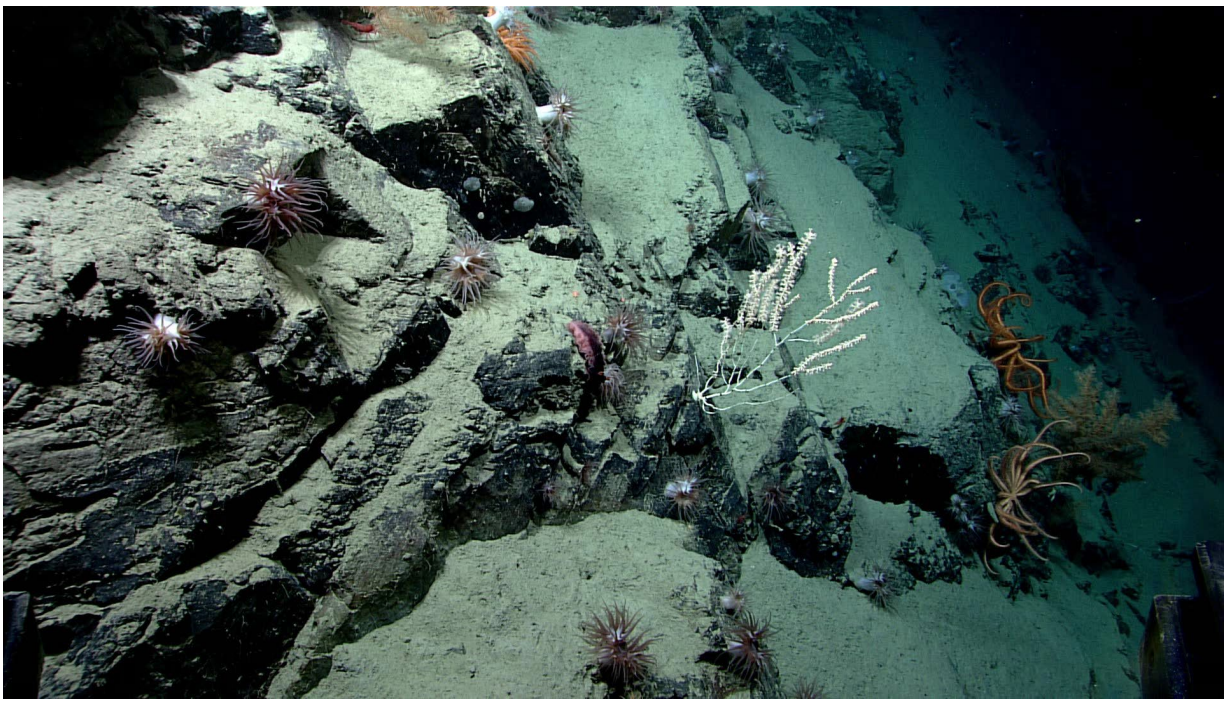
Sound Speed Manager Image of ROV CTD Profile



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

Representative Photos of the Dive





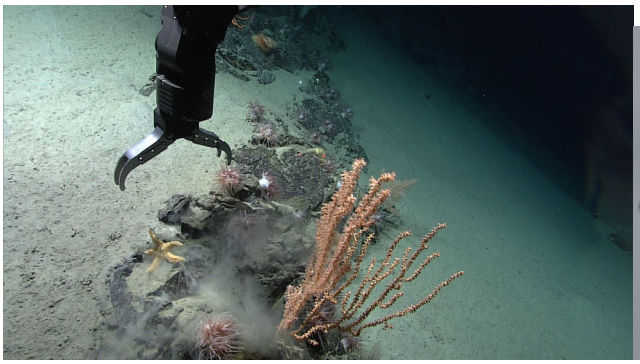
Benthic fauna on rocky outcrops; Top: Antipatharian corals and Actinernus sp. anemones; Bottom: Bamboo coral (Keratoisididae), Actinernus sp., brisingids, and Tochuina nigritigris

Samples Collected

Sample ID	EX2306_D15_02B
Date (UTC)	20230910
Time (UTC)	190535
Depth (m)	2195.63989257813
Latitude (decimal degrees)	59.248405456543
Longitude (decimal degrees)	-145.715545654297
Temp. (°C)	1.80499994754791
Field ID(s)	Cladopathidae
Comments	Label mistakenly says 95% EtOH is used. But formalin is used in whole sample.

Sample ID	EX2306_D15_03B
Date (UTC)	20230910
Time (UTC)	194515
Depth (m)	2180.77197265625
Latitude (decimal degrees)	59.2484703063965
Longitude (decimal degrees)	-145.715270996094
Temp. (°C)	1.78699994087219
Field ID(s)	Hydrozoa
Comments	Interesting branched hydrozoa on dead stalk of bamboo coral

Associates Sample ID:	EX2306_D15_03B_A01B
Field Identification:	Nemertea
Count:	5

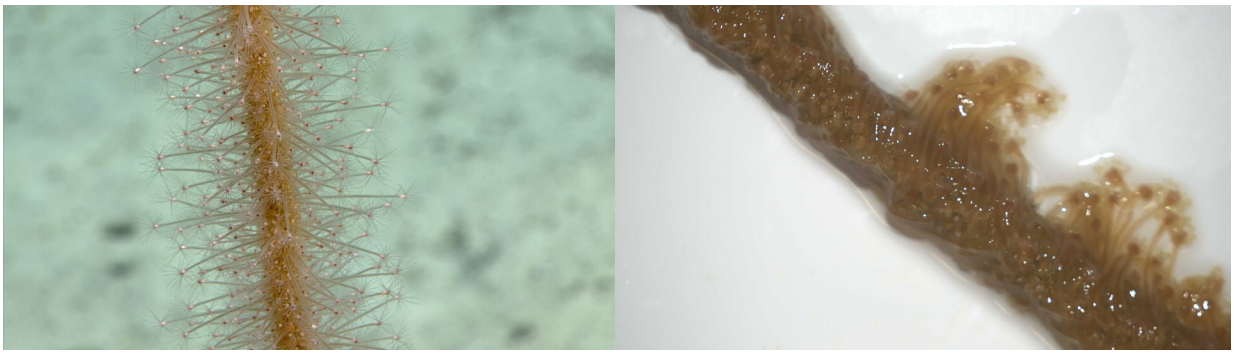


Sample ID	EX2306_D15_05G
Date (UTC)	20230910
Time (UTC)	212159
Depth (m)	2121.8701171875
Latitude (decimal degrees)	59.248779296875
Longitude (decimal degrees)	-145.713851928711
Temp. (°C)	1.81500005722046
Field ID(s)	Mudstone
Comments	medium gray friable mudstone w/ dark brown rind/stain

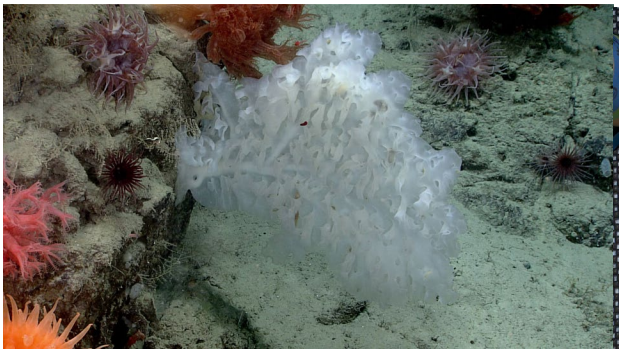
Sample ID	EX2306_D15_06B
Date (UTC)	20230910
Time (UTC)	222038
Depth (m)	2056.23291015625
Latitude (decimal degrees)	59.2494354248047
Longitude (decimal degrees)	-145.712829589844
Temp. (°C)	1.8400000333786
Field ID(s)	Decapoda
Comments	Rare genus

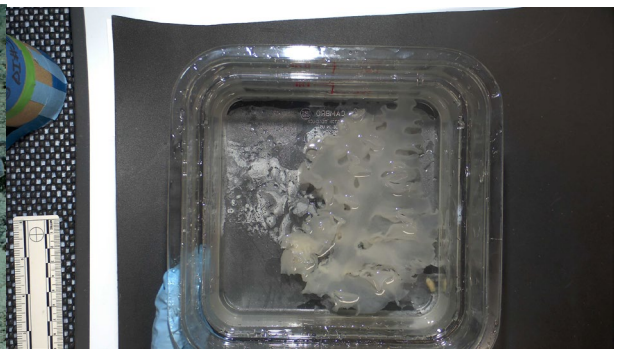
Associates Sample ID:	EX2306_D15_06B_A01B
Field Identification:	Amphipoda
Count:	3

Associates Sample ID:	EX2306_D15_06B_A02B
Field Identification:	Ophiuroidea
Count:	1



Sample ID	EX2306_D15_07B
Date (UTC)	20230910
Time (UTC)	223137
Depth (m)	2044.73596191406
Latitude (decimal degrees)	59.2494926452637
Longitude (decimal degrees)	-145.712554931641
Temp. (°C)	1.84399998188019
Field ID(s)	Hydrozoa
Comments	Interesting hydroids on the stalk of dead sea pen





Sample ID	EX2306_D15_09B
Date (UTC)	20230910
Time (UTC)	231814
Depth (m)	2011.38903808594
Latitude (decimal degrees)	59.2496719360352
Longitude (decimal degrees)	-145.711959838867
Temp. (°C)	1.85399997234344
Field ID(s)	Farrea
Comments	No known sponge in the northeast Pacific with this unique morphology, very likely a new species

Niskin Sampling Summary

Sample ID	EX2306_D15_01W
Date (UTC)	20230910
Time (UTC)	182616
Depth (m)	2217.3740234375
Latitude (decimal degrees)	59.2484436035156
Longitude (decimal degrees)	-145.715866088867

Bottle Number	Niskin Bottle 1
Temperature	1.807000041008
Dissolved Oxygen (mg/L)	2.23799991607666
Treatment	DNA/RNA Shield

Sample ID	EX2306_D15_04W
Date (UTC)	20230910
Time (UTC)	195315
Depth (m)	2180.73901367188
Latitude (decimal degrees)	59.2484550476074
Longitude (decimal degrees)	-145.715057373047
Bottle Number	Niskin Bottle 2
Temperature	1.78900003433228
Dissolved Oxygen (mg/L)	2.25
Treatment	DNA/RNA Shield

Sample ID	EX2306_D15_08W
Date (UTC)	20230910
Time (UTC)	223359
Depth (m)	2041.51000976563
Latitude (decimal degrees)	59.2495727539063
Longitude (decimal degrees)	-145.712509155273

Bottle Number	Niskin Bottle 3
Temperature	1.83899998664856
Dissolved Oxygen (mg/L)	2.05200004577637
Treatment	DNA/RNA Shield

Sample ID	EX2306_D15_10W
Date (UTC)	20230910
Time (UTC)	232039
Depth (m)	2008.06604003906
Latitude (decimal degrees)	59.2498016357422
Longitude (decimal degrees)	-145.711898803711
Bottle Number	Niskin Bottle 4
Temperature	1.86000001430511
Dissolved Oxygen (mg/L)	1.99600005149841
Treatment	DNA/RNA Shield

Sample ID	EX2306_D15_11W
Date (UTC)	20230911
Time (UTC)	002033
Depth (m)	351.403991699219
Latitude (decimal degrees)	59.2510681152344
Longitude (decimal degrees)	-145.711929321289

Bottle Number	Niskin Bottle 5
Temperature	4.44500017166138
Dissolved Oxygen (mg/L)	1.4559999704361
Treatment	DNA/RNA Shield

Scientists Involved

Name	Affiliation
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