Infauna counts from BoWLs moorings deployed and recovered from R/V Oceanus cruises OC1304A and OC1406B off the Coast of Oregon from 2013-2014 (BOWLS project)

Website: https://www.bco-dmo.org/dataset/724434
Data Type: Cruise Results
Version: 1
Version Date: 2018-01-22

Project
» Biodiversity, connectivity and ecosystem function in organic-rich whale-bone and wood-fall habitats in the deep sea (BOWLS)

Contributors	Affiliation	Role
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Abstract
This dataset contains counts of infaunal organism Phyla from BOWLS moorings deployed in April of 2013 and recovered in June of 2014. Phyla sampled: Annelida, Arthropoda,Chordata, Cnidaria, Echinodermata, Kinorhynca, Mollusca, Nemertea, and Platyhelminthes. Also included are the mooring identifiers, substrate type (control, wood, whale-bone), latitude, longitude, depth, and deployment and recovery dates.

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Coverage

Spatial Extent: **N**:47.9577 **E**:-125.1706 **S**:43.8784 **W**:-127.5929
Temporal Extent: 2013-04-05 - 2014-06-27

Methods & Sampling

Immediately upon recovery of the benthic landers (moorings), wood substrates were transferred to buckets containing chilled, filtered seawater. Following the collection of ecosystem function measurements, each wood block was sub-sectioned into quarters, and fixed whole in 95% ethanol, 4% formaldehyde and frozen.

Wood quarters fixed in 4% formaldehyde were quantitatively sorted in the lab using a stereomicroscope. The "substrate" is the experimental treatment type: Wood. Phylum counts are the number of individuals (or heads for incomplete specimens) per three replicate (quarter, 9x9x9 cm each) substrates at each mooring.

PDF image of the mooring deployment sites.

Data Processing Description

BCO-DMO Data Manager Processing notes:
* Added conventional header with dataset name, PI name, version date
* Added mooring deployment location, dates and depths from BOWLS Moorings dataset (https://www.bco-dmo.org/dataset/568713)

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Data Files

File
mooring_infauna.csv (Comma Separated Values (.csv), 573 bytes) MD5:c819d31d05ac8958c3167c9bfd5bd66a Primary data file for dataset ID 724434

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Supplemental Files

File
BOWL mooring deployment locations map filename: NE_Pacific_Bone-wood_lander_deployment_sites.pdf (Portable Document Format (.pdf), 175.16 KB) MD5:31fb978903448e951f6fb88c3d3eebd4 Location of BOWL mooring deployments, recovered after ~15 month during cruise OC1406B

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Parameters

Parameter	Description	Units
mooring	Mooring ID number.	dimensionless
substrate	Experimental substrate (control/whale-bone/wood); only wood samples were analyzed	dimensionless
date_deployed	Date of mooring deployment formatted as mm/dd/yyyy	dimensionless
date_recovered	Date mooring was recovered formatted as mm/dd/yyyy	dimensionless
lat	Latitude of mooring.	decimal degrees
lon	Longitude of mooring.	decimal degrees
depth	Depth of water at mooring location.	meters
cruise_deploy	ID of cruise during which moorings were deployed.	dimensionless
cruise_recover	ID of cruise during which moorings were recovered.	dimensionless
Annelida	Annelida Phylum organism counts	organisms
Arthropoda	Arthropoda Phylum organism counts	organisms
Chordata	Chordata Phylum organism counts	organisms
Cnidaria	Cnidaria Phylum organism counts	organisms
Echinodermata	Echinodermata Phylum organism counts	organisms
Kinorhynca	Kinorhynca Phylum organism counts	organisms
Mollusca	Mollusca Phylum organism counts	organisms
Nemertean	Nemertea Phylum organism counts	organisms
Platyhelminthes	Platyhelminthes Phylum organism counts	organisms

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Instruments

Dataset-specific Instrument Name	stereo microscope
Generic Instrument Name	Microscope - Optical
Generic Instrument Description	Instruments that generate enlarged images of samples using the phenomena of reflection and absorption of visible light. Includes conventional and inverted instruments. Also called a "light microscope".

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Deployments

OC1304A

Website	https://www.bco-dmo.org/deployment/568472
Platform	R/V Oceanus
Start Date	2013-04-03
End Date	2013-04-15

OC1406B

Website	https://www.bco-dmo.org/deployment/568626
Platform	R/V Oceanus
Start Date	2014-06-22
End Date	2014-07-05

CRS-1464

Website	https://www.bco-dmo.org/deployment/568709
Platform	CRS-1464
Start Date	2013-04-05
End Date	2014-06-27
Description	The investigators deployed four free-vehicle Bone-Wood Landers (BOWLs) as moorings that (1) sink autonomously to the deep-sea floor, (2) expose 9 controlled experimental substrates of whale bone, wood, or inert materials at the seafloor for months to years, and (3) upon acoustic command, enclose each experimental substrate in a sealed 500-micrometer mesh bag and returns to the ocean surface. This new BOWL technology allows controlled quantitative study of biotic colonization, biodiversity, ecosystem function and connectivity for bone, wood and other experimental substrates in the deep sea at relatively low fabrication and ship-time costs. See a PDF image of the mooring deployment sites.

CRS-1467

Website	https://www.bco-dmo.org/deployment/568710
Platform	CRS-1467
Start Date	2013-04-06
End Date	2014-06-26
Description	The investigators deployed four free-vehicle Bone-Wood Landers (BOWLs) as moorings that (1) sink autonomously to the deep-sea floor, (2) expose 9 controlled experimental substrates of whale bone, wood, or inert materials at the seafloor for months to years, and (3) upon acoustic command, enclose each experimental substrate in a sealed 500-micrometer mesh bag and returns to the ocean surface. This new BOWL technology allows controlled quantitative study of biotic colonization, biodiversity, ecosystem function and connectivity for bone, wood and other experimental substrates in the deep sea at relatively low fabrication and ship-time costs. See a PDF image of the mooring deployment sites.

CRS-1471

Website	https://www.bco-dmo.org/deployment/568711
Platform	CRS-1471
Start Date	2013-04-08
End Date	2014-06-23
Description	The investigators deployed four free-vehicle Bone-Wood Landers (BOWLs) as moorings that (1) sink autonomously to the deep-sea floor, (2) expose 9 controlled experimental substrates of whale bone, wood, or inert materials at the seafloor for months to years, and (3) upon acoustic command, enclose each experimental substrate in a sealed 500-micrometer mesh bag and returns to the ocean surface. This new BOWL technology allows controlled quantitative study of biotic colonization, biodiversity, ecosystem function and connectivity for bone, wood and other experimental substrates in the deep sea at relatively low fabrication and ship-time costs. See a PDF image of the mooring deployment sites.

CRS-1472

Website	https://www.bco-dmo.org/deployment/568712
Platform	CRS-1472
Start Date	2013-04-09
End Date	2014-06-22
Description	The investigators deployed four free-vehicle Bone-Wood Landers (BOWLs) as moorings that (1) sink autonomously to the deep-sea floor, (2) expose 9 controlled experimental substrates of whale bone, wood, or inert materials at the seafloor for months to years, and (3) upon acoustic command, enclose each experimental substrate in a sealed 500-micrometer mesh bag and returns to the ocean surface. This new BOWL technology allows controlled quantitative study of biotic colonization, biodiversity, ecosystem function and connectivity for bone, wood and other experimental substrates in the deep sea at relatively low fabrication and ship-time costs. See a PDF image of the mooring deployment sites.

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Project Information

Biodiversity, connectivity and ecosystem function in organic-rich whale-bone and wood-fall habitats in the deep sea (BOWLS)

Website: http://craigrsmithlab.com/bowls-project/

Coverage: Off the Oregon and Washington State coast; roughly 43.833N, 127.5W to 47.3N, 127.4W

Description from NSF award abstract:
Organic-rich habitat islands support specialized communities throughout natural ecosystems and often play fundamental roles in maintaining alpha and beta diversity, thus facilitating adaptive radiation and evolutionary novelty. Whale-bone and wood falls occur widely in the deep-sea and contribute fundamentally to biodiversity and evolutionary novelty; nonetheless, large-scale patterns of biodiversity, connectivity, and ecosystem function in these organic-rich metacommunity systems remain essentially unexplored.

The PIs propose a novel comparative experimental approach to evaluate bathymetric, regional, and inter-basin variations in biodiversity and connectivity, as well as interactions between biodiversity and ecosystem function, in whale-bone and wood-fall habitats at the deep-sea floor. Their experiments will use bottom landers to carry and hold samples of bone and wood and a control substrate (basalt) at two depths (1500 and 3000 m), 250-500 km apart, in the NE Pacific and SW Atlantic basins, with quantitative recovery of the colonizing assemblages 15 month later. Each depth will have three replicates. Their experiments will test fundamental hypotheses concerning biodiversity (genetic and taxonomic) and biogeography of macrofaunal and microbial organisms exploiting these resource-rich habitats in energy limited deep-sea environments, and will explore the utility of whale-bone and wood falls as model experimental systems to address patterns of connectivity and decomposer function in the deep sea.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1155188
NSF Division of Ocean Sciences (NSF OCE)	OCE-1155703

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