

Epifauna 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/676064>

Data Type: Cruise Results

Version: 1

Version Date: 2017-01-24

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 epifaunal organism Phyla from BOWLS moorings deployed in April of 2013 and recovered in June of 2014. Phyla sampled: Annelida, Arthropoda, Chaetognatha, Chordata, Cnidaria, Echinodermata, Kinorhynca, Mollusca, Nematoda, 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), experimental substrates and associated mesh bags were transferred to buckets containing chilled, filtered seawater. Following the collection of ecosystem function measurements, epifaunal individuals were:

- 1) washed from the mesh bag over a 500 μ m sieve, split and fixed in each 95% ethanol and 4% formaldehyde
- 2) picked from the surface of each substrate using forceps and fixed in each 95% ethanol and 4% formaldehyde

3) washed from the bucket over a 500 um sieve, split and fixed in each 95% ethanol and 4% formaldehyde following removal of the substrate.

Epifaunal samples, preserved in both 95% ethanol and 4% formaldehyde were quantitatively sorted in the lab using a stereomicroscope. The “substrate” is the experimental treatment type; Control, Whale-bone or Wood. Phylum counts are the number of individuals (or heads for incomplete specimens) per three replicate substrates at each mooring.

[PDF image](#) of the mooring deployment sites.

Data Processing Description

No further processing.

BCO-DMO Data Manager Processing notes:

- * Added conventional header with dataset name, PI name, version date
- * Column names reformatted to comply with BCO-DMO standards
- * Combined individual files for cruise epifauna into one dataset
- * Added mooring deployment location, dates and depths from [BOWLS Moorings](https://www.bco-dmo.org/dataset/568713) dataset (<https://www.bco-dmo.org/dataset/568713>)

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Data Files

File
BOWLS_epifauna.csv (Comma Separated Values (.csv), 1.47 KB) MD5:1629d18e1ef95fc87a3fb866a90d25fc
Primary data file for dataset ID 676064

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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
date_deployed	Date of mooring deployment.	mm/dd/yyyy
date_recovered	Date mooring was recovered.	mm/dd/yyyy
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	unitless
Arthropoda	Arthropoda Phylum organism counts	unitless
Chaetognatha	Chaetognatha Phylum organism counts	unitless
Chordata	Chordata Phylum organism counts	unitless
Cnidaria	Cnidaria Phylum organism counts	unitless
Echinodermata	Echinodermata Phylum organism counts	unitless
Kinorhynca	Kinorhynca Phylum organism counts	unitless
Mollusca	Mollusca Phylum organism counts	unitless
Nematoda	Nematoda Phylum organism counts	unitless
Nemertea	Nemertea Phylum organism counts	unitless
Platyhelminthes	Platyhelminthes Phylum organism counts	unitless
substrate_type	Experimental substrate (control/whale-bone/wood)	unitless

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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://craigsmithlab.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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