

Zooplankton densities collected from a seasonally hypoxic fjord on R/V Clifford A Barnes cruises from 2012-2013 (Pelagic Hypoxia project)

Website: <https://www.bco-dmo.org/dataset/682074>

Data Type: Cruise Results

Version: 1

Version Date: 2017-02-08

Project

» [Consequences of hypoxia on food web linkages in a pelagic marine ecosystem](#) (PelagicHypoxia)

Contributors	Affiliation	Role
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Abstract

Zooplankton densities collected from a seasonally hypoxic fjord on R/V Clifford A Barnes cruises from 2012-2013 (Pelagic Hypoxia project)

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Coverage

Spatial Extent: N:47.93 E:-122.26 S:47.38 W:-123.13

Temporal Extent: 2012-06-11 - 2013-10-03

Dataset Description

Depth-stratified zooplankton net sampling in Hood Canal June to October, 2012-2013.

Methods & Sampling

We conducted day/night paired zooplankton sampling in Hood Canal in June-October, 2012 and 2013. Sampling stations included Dabob, Union, Hoodsport, Duckabush, and Twanoh. A Hydrobios MultiNet (five-net capacity) was used to collect depth-stratified and full water column samples. Net mouth area was 0.25 m²;

200- and 335-um mesh nets were used to sample different size zooplankton. Nets were towed obliquely at 1-2.5 knots (slower tows for smaller mesh size), with inner and outer flow meters to measure water volume sampled. For the depth-stratified sampling, depth layers were based on the dissolved oxygen profiles from CTD casts.

In the laboratory, zooplankton were quantitatively subsampled and microscopically counted. All individuals were identified to species or larger taxonomic grouping, and by life stages for some species, within each sample.

Data Processing Description

Densities (#/m³) were calculated by species and life stage from each net.

BCO-DMO Data Processing Notes:

- Replaced spaces with underscores.
- Added ISO_DateTime_UTC column.
- Filled blank cells with "nd"
- Reformatted time to 24 hour time.
- Replaced commas with semicolons.

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Data Files

File
zooplankton.csv (Comma Separated Values (.csv), 844.58 KB) MD5:fb99ba2a017e1591491eaec61973b3e0 Primary data file for dataset ID 682074

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Parameters

Parameter	Description	Units
sample_code	PI issued sample ID; sampling date + Station + D (day) or N (night) + Net code (e.g. m1) _mesh	unitless
date	Date sample was collected; Local time (PDT); YYYYMMDD	unitless
time_start	Start time of sampling; HH:MM	unitless
station	Station code where sampling occurred; DB=Dabob; UN=Union; HP=Hoodsport; DU=Duckabush; TW=Twanoh.	unitless
day_night	Indication of whether sampling occurred at day or night.	unitless
mesh_size	Size of mesh used in sampling.	microns
depth_max	Maximum depth sampled.	meters
depth_min	Minimum depth sampled.	meters
FWC_DS	Full whole column (FWC) sampling or depth-stratified (DS) sampling	unitless
species	Species sampled	unitless
life_history_stage	Description of life history stage at which sample was found	unitless
density	Density of species sampled	count per meter cubed
ISO_DateTime_UTC	Date/Time (UTC) ISO formatted	yyyy-MM-ddT'HH:mm:ss
lat	Latitude; N is positive	decimal degrees
lon	Longitude; S is positive	decimal degrees

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Instruments

Dataset-specific Instrument Name	Hydrobios MultiNet (five-net capacity)
Generic Instrument Name	MultiNet
Dataset-specific Description	Used to collect water column samples
Generic Instrument Description	The MultiNet© Multiple Plankton Sampler is designed as a sampling system for horizontal and vertical collections in successive water layers. Equipped with 5 or 9 net bags, the MultiNet© can be delivered in 3 sizes (apertures) : Mini (0.125 m ²), Midi (0.25 m ²) and Maxi (0.5 m ²). The system consists of a shipboard Deck Command Unit and a stainless steel frame to which 5 (or 9) net bags are attached by means of zippers to canvas. The net bags are opened and closed by means of an arrangement of levers that are triggered by a battery powered Motor Unit. The commands for actuation of the net bags are given via single or multi-conductor cable between the Underwater Unit and the Deck Command Unit. Although horizontal collections typically use a mesh size of 300 microns, mesh sizes from 100 to 500 may also be used. Vertical collections are also common. The shipboard Deck Command Unit displays all relevant system data, including the actual operating depth of the net system.

Dataset-specific Instrument Name	SBE 43
Generic Instrument Name	Sea-Bird SBE 43 Dissolved Oxygen Sensor
Generic Instrument Description	The Sea-Bird SBE 43 dissolved oxygen sensor is a redesign of the Clark polarographic membrane type of dissolved oxygen sensors. more information from Sea-Bird Electronics

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Deployments

CB975

Website	https://www.bco-dmo.org/deployment/648944
Platform	R/V Clifford A. Barnes
Start Date	2012-06-10
End Date	2012-06-15

CB979

Website	https://www.bco-dmo.org/deployment/648969
Platform	R/V Clifford A. Barnes
Start Date	2012-07-08
End Date	2012-07-13

CB982

Website	https://www.bco-dmo.org/deployment/648970
Platform	R/V Clifford A. Barnes
Start Date	2012-08-05
End Date	2012-08-10

CB986

Website	https://www.bco-dmo.org/deployment/648971
Platform	R/V Clifford A. Barnes
Start Date	2012-09-01
End Date	2012-09-06

CB988

Website	https://www.bco-dmo.org/deployment/648972
Platform	R/V Clifford A. Barnes
Start Date	2012-09-30
End Date	2012-10-05

CB1002

Website	https://www.bco-dmo.org/deployment/648973
Platform	R/V Clifford A. Barnes
Start Date	2013-06-09
End Date	2013-06-14
Description	Start and end date, and Chief Scientist information from NSF R2R data catalog. (Cruise DOI: 10.7284/902746)

CB1003

Website	https://www.bco-dmo.org/deployment/648974
Platform	R/V Clifford A. Barnes
Start Date	2013-07-07
End Date	2013-07-12

CB1007

Website	https://www.bco-dmo.org/deployment/648976
Platform	R/V Clifford A. Barnes
Start Date	2013-08-30
End Date	2013-09-07

CB1009

Website	https://www.bco-dmo.org/deployment/648986
Platform	R/V Clifford A. Barnes
Start Date	2013-09-29
End Date	2013-10-04

CB1005

Website	https://www.bco-dmo.org/deployment/648975
Platform	R/V Clifford A. Barnes
Start Date	2013-08-04
End Date	2013-08-09

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Project Information

Consequences of hypoxia on food web linkages in a pelagic marine ecosystem (PelagicHypoxia)

Coverage: Puget Sound, WA (47 N, 123 W)

Description from NSF award abstract:

Low dissolved oxygen (hypoxia) is one of the most pronounced, pervasive, and significant disturbances in marine ecosystems. Yet, our understanding of the ecological impacts of hypoxia on pelagic food webs is incomplete because of our limited knowledge of how organism responses to hypoxia affect critical ecosystem processes. In pelagic food webs, distribution shifts of mesozooplankton and their predators may affect predator-prey overlap and dictate energy flow up food webs. Similarly, hypoxia may induce shifts in zooplankton community composition towards species that impede energy flow to planktivorous fish. However, compensatory responses by species and communities might negate these effects, maintaining trophic coupling and sustaining productivity of upper trophic level species. The PIs propose to answer the question "Does hypoxia affect energy flow from mesozooplankton to pelagic fish?" They approach this question with a nested framework of hypotheses that considers two sets of processes alternatively responsible for either changes or maintenance of pelagic ecosystem energy flows. They will conduct their study in the Hood Canal, WA. Unlike most hypoxia-impacted estuaries, hypoxic regions of Hood Canal are in close proximity to sites that are not affected. This makes it logistically easier to conduct a comparative study and reduces the number of potential confounding factors when comparing areas that are far apart.

Improved understanding of how hypoxia impacts marine ecosystems will benefit the practical application of ecosystem-based management (EBM) in coastal and estuarine ecosystems. Effective application of EBM requires that the impacts of human activities are well understood and that ecological effects can be tracked using indicators. This project will contribute to both of these needs. The PIs will share their findings on local and national levels with Federal, State, Tribal, and County biologists. To increase exposure of science to underrepresented groups, the PIs also will provide Native American youth with opportunities to participate in field collections and laboratory processing through summer internships. The PIs will collaborate with the NSF-funded Pacific Northwest Louis Stokes Alliance for Minority Participation and tribes from the Hood Canal region to recruit and mentor students for potential careers in marine science. This project will support several undergraduate researchers, two Ph.D. students, a post-doc, and two early-career scientists.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1154648

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