Sampling data from Gelatinous Zooplankton project from R/V Hugh R. Sharp multiple cruises in Chesapeake Bay from 2010-2011 (DeZoZoo project)

Website: https://www.bco-dmo.org/dataset/521596
Data Type: Cruise Results
Version: working
Version Date: 2014-08-07

Project
» Hypoxia in Marine Ecosystems: Implications for Neritic Copepods (DeZoZoo)

Contributors	Affiliation	Role
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Coverage

Spatial Extent: **N**:39.5371 **E**:-74.9864 **S**:37.4565 **W**:-76.6289
Temporal Extent: 2010-05-24 - 2011-12-21

Dataset Description

Cruise metadata from the Gelatinous Zooplankton portion of the Dead Zone Zooplankton project. Includes gear types and mesh sizes, locations, dissolved oxygen in the water column,depths sampled and volume of water filtered.

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Data Files

File
cruise_data.csv (Comma Separated Values (.csv), 106.79 KB) MD5:15f23171e67a35817f1a06a25bb604b3 Primary data file for dataset ID 521596

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Parameters

Parameter	Description	Units
cruise	Internal cruise identifier: Dead Zone Zooplankton: First two digits denote Year (10=2010; 11=2011) Last two digits denote cruise number for that year	text
cruise_official	UNOLS cruise identifier	text
station	Station Count	number
lat	Latitude	degrees
lon	Longitude	degrees
sample_ID	Unique ID for each Sample (#-AAA-#-#) First number is station; Letters denote gear type; second number is gear deployment sequence [called cast by DMO]; third number is Net number per deployment; broken up into its component parts to be served	alphanumeric
cast	gear deployment sequence	number
net	net number per deployment	number
occupation	relative geolocation: South station near mouth of Rappohannock River; North station near mouth of Choptank River	text
year	Year	4-digit year
month_local	month	number
day_local	day of the month	number
time_local	time of net tow	HH:MM;24-hour clock
gear	type of trawl	text
mesh	Size of Mesh	microns
depth_relative	Depth of a net: surface= surface to above pycnocline; pycnocline = through pycnocline; below pycnocline = between bottom and pycnocline; bottom = bottom to below pycnocline	text

depth_start_nom	Sampling depth at start of tow	meters
depth_end_nom	Sampling depthat end of tow	meters
preservation	Type of preservative used for the samples	text
tow_duration	Time a net actively fished	minutes
vol_filt	Amount of water filtered	cubic meters
O2_mg_L_mean	Dissolved Oxygen averaged over the depth of a fishing net	milligrams per liter
time_accuracy	Percent of time net fished within designated depths to an accuracy of plus or minus 1 minute	minutes
ISO_DateTime_Local	ISO standard formatted Time	alphanumeric
comments	notes	text

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Instruments

Dataset-specific Instrument Name	MOCNESS
Generic Instrument Name	MOCNESS
Generic Instrument Description	The Multiple Opening/Closing Net and Environmental Sensing System or MOCNESS is a family of net systems based on the Tucker Trawl principle. There are currently 8 different sizes of MOCNESS in existence which are designed for capture of different size ranges of zooplankton and micro-nekton Each system is designated according to the size of the net mouth opening and in two cases, the number of nets it carries. The original MOCNESS (Wiebe et al, 1976) was a redesigned and improved version of a system described by Frost and McCrone (1974). (from MOCNESS manual)

Dataset-specific Instrument Name	Tucker Trawl
Generic Instrument Name	Tucker Trawl
Dataset-specific Description	Gelatinous zooplankton samples were collected with a 280 micron-meshed Tucker Trawl.
Generic Instrument Description	The original Tucker Trawl, a net with a rectangular mouth opening first built in 1951 by G.H. Tucker, was not an opening/closing system, but shortly thereafter it was modified so that it could be opened and closed. The original had a 183 cm by 183 cm flexible rectangular mouth opening 914 cm long net with 1.8 cm stretched mesh for the first 457 cm and 1.3 cm mesh for last 457 cm. 152 cm of coarse plankton or muslin netting lined the end of the net. Tucker designed the net to collect animals associated with the deep scattering layers, principally euphausiids, siphonophores, and midwater fish. (from Wiebe and Benfield, 2003). Currently used Tucker Trawls usually have 1-m2 openings and can have a single net or multiple nets on the frame.

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Deployments

HRS100524JP

Website	https://www.bco-dmo.org/deployment/518664
Platform	R/V Hugh R. Sharp
Report	http://dmoserv3.bco-dmo.org/data_docs/DeZoZoo/DeZoZoo_1001_CruiseReport_FINAL.pdf
Start Date	2010-05-24
End Date	2010-06-01
Description	Cruise in Main Channel of Chesapeake Bay

HRS100819JP

Website	https://www.bco-dmo.org/deployment/518707
Platform	R/V Hugh R. Sharp
Start Date	2010-08-19
End Date	2010-08-26
Description	Cruise in main channel of Chesapeake Bay to collect zooplankton samples.

HRS100920JP

Website	https://www.bco-dmo.org/deployment/518709
Platform	R/V Hugh R. Sharp
Start Date	2010-09-21
End Date	2010-09-27
Description	One of a series of cruises in the main channel of the Chesapeake Bay to collect gelatinous zooplankton.

HRS110525JP

Website	https://www.bco-dmo.org/deployment/518711
Platform	R/V Hugh R. Sharp
Start Date	2011-05-24
End Date	2011-06-01
Description	One of six week-long cruises in the main channel of Chesapeake Bay to collect gelatinous zooplankton.

HRS110719JP

Website	https://www.bco-dmo.org/deployment/518842
Platform	R/V Hugh R. Sharp
Start Date	2011-07-19
End Date	2011-07-26
Description	One of six week-long cruises in the main channel of the Chesapeake Bay to collect gelatinous zooplankton

HRS110922JP

Website	https://www.bco-dmo.org/deployment/518904
Platform	R/V Hugh R. Sharp
Start Date	2011-09-21
End Date	2011-09-26
Description	One of 6 week-long cruises in the main channel of the Chesapeake Bay, collecting gelatinous zooplankton.

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Project Information

Hypoxia in Marine Ecosystems: Implications for Neritic Copepods (DeZoZoo)

Website: http://www.planktoneer.com/research.html#HYPOX

Coverage: Chesapeake Bay

Description from NSF award abstract:
The occurrence of low-oxygen waters, often called "dead zones" in coastal ecosystems throughout the world is increasing. Despite these increases, the pelagic food-web consequences of low-oxygen waters remain poorly understood. Laboratory research has demonstrated that hypoxic water (< 2 mg l-1) can result in mortality, reduced fitness and lower egg production of planktonic copepods, a major link in food webs supporting pelagic fish. Observations in the sea indicate that hypoxic bottom waters usually have depressed abundances of copepods compared to normoxic waters (> 2 mg l-1). The gradient of declining oxygen concentration with respect to depth (oxycline) can be a critical interface in coastal pelagic ecosystems by altering the migratory behavior and depth distribution of copepods and their spatial coherence with potential predators and prey. This project will result in a mechanistic understanding of how behavior and fitness of copepods are affected by hypoxia. The PIs will compare bottom-up and top-down controls on the ecology of copepods in Chesapeake Bay waters experiencing seasonal hypoxia and those that are normoxic.

Specific objectives of this project are to:
1) analyze changes in migratory behavior and fine-scale (meter) distribution of copepods across the oxycline over hourly and diel time scales while simultaneously examining the distribution and abundance of their food (phytoplankton and microzooplankton) and predators (fish, gelatinous zooplankton);
2) estimate effects of hypoxia on the "fitness" of copepods using a suite of measurements (length/weight ratios, feeding, egg production, and egg hatching success) to develop condition indices of copepods captured at different times and depths in hypoxic and normoxic waters; and
3) evaluate effects of hypoxia on copepod mortality by hypoxia-induced, stage-specific copepod mortality in hypoxic bottom waters and by changes in top-down control of copepods from predation by fish and gelatinous zooplankton.

Oxyclines may be a barrier to vertical migration of copepods and thus disruptive to predator avoidance behavior. Faced with increased predation risk from fish and jellyfish, copepods may seek refuge in hypoxic waters for part of the day and/or make short-term vertical excursions between hypoxic and normoxic waters. By regulating vertical migrations, copepods may increase utilization of microzooplankton prey concentrated in the oxycline. Hypoxic waters may elevate consumption of copepods by jellyfish and depress consumption by pelagic fish. This project will evaluate copepod distribution and migration behavior, individual fitness and stage-specific mortality in hypoxic and normoxic waters. It will examine food-web consequences of increased or decreased spatial coherence of copepods and their predators and prey in regions with hypoxic bottom waters and will contribute to fundamental understanding of food-web processes in eutrophic coastal ecosystems.

Project acronym "DeZoZoo" = "Dead Zone Zooplankton"

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0961924

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