

Counts of larval fishes collected by a 1m2 Multiple Opening Closing Net and Environmental Sampling System (MOCNESS; MOC1) in a subtropical, pelagic environment from R/V F.G. Walton Smith cruise WS15161 in June 2015

Website: <https://www.bco-dmo.org/dataset/713636>

Data Type: Cruise Results

Version: 2

Version Date: 2020-03-31

Project

» [Spatial variability of larval fish in relation to their prey and predator fields: Patterns and interactions from cm to 10s of km in a subtropical, pelagic environment](#) (OSTRICH)

| Contributors | Affiliation | Role |
|----------------------------------|---|---------------------------|
| Cowen, Robert K. | Oregon State University (OSU-HMSC) | Principal Investigator |
| Sponaugle, Su | Oregon State University (OSU-HMSC) | Co-Principal Investigator |
| Gleiber, Miram | Oregon State University (OSU-HMSC) | Contact |
| Switzer, Megan | Woods Hole Oceanographic Institution (WHOI) | BCO-DMO Data Manager |
| York, Amber D. | Woods Hole Oceanographic Institution (WHOI BCO-DMO) | BCO-DMO Data Manager |

Abstract

Counts of larval fishes collected by a 1m2 Multiple Opening Closing Net and Environmental Sampling System (MOCNESS; MOC1) in a subtropical, pelagic environment from R/V F.G. Walton Smith cruise WS15161 in June 2015.

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Coverage

Spatial Extent: N:26.3 E:-79.3307 S:24.3303 W:-82.0005

Temporal Extent: 2015-06-19 - 2015-06-26

Dataset Description

Counts of larval fishes collected by a 1m2 Multiple Opening Closing Net and Environmental Sampling System (MOCNESS; MOC1) in a subtropical, pelagic environment from R/V F.G. Walton Smith cruise WS15161 in June 2015.

Methods & Sampling

Larval fishes were collected at each station using a Multiple Opening Closing Net and Environmental Sensing System (MOCNESS, <http://www.whoi.edu/instruments/viewInstrument.do?id=10008>) with a 1m² opening and 150um mesh nets (MOC1). To capture larval fishes and mesozooplankton on a fine horizontal spatial scale, we sequentially fired each MOCNESS net every ~120-150m. Traveling at a speed of 2 m s⁻¹ each MOC1 net sampled ~120-150 m³. We fired a total of nine nets per tow. One net was open from the surface to depth (net zero), and eight nets sampled discrete depths. Net 0 was not enumerated for larval fish. Net 4 (or Net 5 in a few instances) did not have larval fish enumerated, as sample was collected for a collaborator. At every station, this fine-scale net sampling was repeated at 15m and 30m depth (randomized order). Once onboard, the nets were rinsed with seawater and the contents of each cod end immediately preserved in 95% ethanol. All larval fishes were separated out of the samples, enumerated, and stored for later SL measurements.

Data Processing Description

BCO-DMO data manager processing notes:

Version 1 (2017-08-23):

- Originally submitted Excel file exported as csv
- Changed parameter names to BCO-DMO standards by using same param names as MOC4 dataset (OSTRICH)
- Added a cruise_id column consistent with other datasets in project
- Formatted tow_vol to 1 decimal place
- Added lat_start, lon_start, lat_end, lon_end columns
- Removed comment for Stn 10W net 1 "net did not sample properly" and replaced with "nd"

Version 2 (2020-03-31) replaces version 1 (2017-08-23)

- * ISO_DateTime_start_UTC column added from the date and time_start columns which were in EDT (UTC-4).
- * Parameter descriptions removed for columns not in the data (tow_description, day_or_night, location)

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Data Files

| File |
|--|
| MOC1_2015.csv (Comma Separated Values (.csv), 11.55 KB) MD5:f75c924bfe6a4d1e44e4eed6521a9971 |
| Primary data file for dataset ID 713636 |

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Parameters

| Parameter | Description | Units |
|------------------------|---|--------------------------------|
| study | Study type: Spatial, Lagrangian, or Eddy | unitless |
| cruise_name | Cruise name | unitless |
| cruise_id | Official cruise identifier | unitless |
| station | Station identifier | unitless |
| tow_type | Tow type: S = shallow, M = middle, D = deep | unitless |
| net | MOC1 tow net number | unitless |
| date | Date of tow (EDT) in m/d/yyyy format | unitless |
| time_open | Time (24h) net opened (EDT) in hh:mm format | unitless |
| time_closed | Time (24h) net closed (EDT) in hh:mm format | unitless |
| depth_open | Depth net opened | meters (m) |
| depth_close | Depth net closed | meters (m) |
| tow_vol | Colume of water towed by net; "nd" if volume was not recorded. | cubic meters (m ³) |
| larval_fish_count | Number of larval fish in net | unitless |
| lat_start | Latitude when net tow started | decimal degrees |
| lon_start | Longitude when net tow started | decimal degrees |
| lat_end | Latitude when net tow ended | decimal degrees |
| lon_end | Longitude when net tow ended | decimal degrees |
| ISO_DateTime_start.UTC | Timestamp when net opened (time zone UTC) in ISO 8601 format yyyy-mm-ddTHH:MMZ | unitless |

Instruments

| | |
|---|--|
| Dataset-specific Instrument Name | MOC1; MOCNESS1 |
| Generic Instrument Name | MOCNESS1 |
| Dataset-specific Description | Multiple Opening Closing Net and Environmental Sensing System with a 1m2 opening and 150um mesh nets (MOC1). http://www.whoi.edu/instruments/viewInstrument.do?id=10008 |
| 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. The MOCNESS-1 carries nine 1-m2 nets usually of 335 micrometer mesh and is intended for use with the macrozooplankton. All nets are black to reduce contrast with the background. A motor/toggle release assembly is mounted on the top portion of the frame and stainless steel cables with swaged fittings are used to attach the net bar to the toggle release. A stepping motor in a pressure compensated case filled with oil turns the escapement crankshaft of the toggle release which sequentially releases the nets to an open then closed position on command from the surface. -- from the MOCNESS Operations Manual (1999 + 2003). |

Deployments

WS15161

| | |
|--------------------|---|
| Website | https://www.bco-dmo.org/deployment/654144 |
| Platform | R/V F.G. Walton Smith |
| Start Date | 2015-06-10 |
| End Date | 2015-06-27 |
| Description | More information about this cruise is available from the Rolling Deck to Repository (R2R). |

Project Information

Spatial variability of larval fish in relation to their prey and predator fields: Patterns and interactions from cm to 10s of km in a subtropical, pelagic environment (OSTRICH)

Coverage: Straits of Florida, Western Atlantic

Description from NSF award abstract:

The spatial pattern of organisms within pelagic marine environments is of significant ecological importance, and this is particularly true for larval fishes. Patchy prey and predator environments should lead to variation in predator-prey interactions, and thus to variations in larval fish growth and survival. These have proven very difficult to resolve in nature, due in large part to the broad range of spatial scales involved and technological challenges with adequately sampling the various processes simultaneously. This study will use new technology (In Situ Ichthyoplankton Imaging System - ISIIS) to simultaneously measure the fine-scale distribution of larval fishes in relation to their prey, their planktonic predators, and the physical environment of the Straits of Florida.

This will be combined with targeted fine-scale net sampling and analyses of individual recent daily larval growth. By sampling a series of water masses at very high resolution, this study will address specific hypotheses concerning: i) the drivers of aggregations and patchiness, and ii) the biological consequences of predator-prey interactions at fine scales.

The primary intellectual merit of the study is the unprecedented examination of plankton processes at scales of relevance to biological interactions among larval fishes, their prey, and their predators. This field study will further our understanding of the predator-prey interactions contributing to spatially explicit larval growth and mortality patterns. The focus on subtropical planktonic food webs will enhance scientific knowledge of these understudied pelagic ecosystems and provide valuable data for comparative analyses with pelagic food web dynamics at higher latitudes. A deeper understanding of pelagic planktonic ecosystems over a range of spatial and temporal scales is increasingly important as the oceans undergo major environmental changes. Substantial increases in the relative dominance of gelatinous organisms, for example, have the potential to cause major shifts in pelagic food webs. A better understanding of the fine-scale interactions of such food webs will help society anticipate and respond to the consequences of such changes.

Note (07 Oct 2014): Funding for this project transferred from award OCE-1333800 to OCE-1419987, coincident with the Principal Investigator's affiliation change from University of Miami to Oregon State University.

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Funding

| Funding Source | Award |
|--|-----------------------------|
| NSF Division of Ocean Sciences (NSF OCE) | OCE-1419987 |

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