Counts of larval fishes collected by a 4m2 MOCNESS in a subtropical, pelagic environment from R/V F.G. Walton Smith cruises WS1406 and WS15161 in the Straits of Florida in 2014 and 2015 (OSTRICH)

Website: https://www.bco-dmo.org/dataset/661268
Data Type: Cruise Results
Version: 2
Version Date: 2018-12-05

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
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Table of Contents

Coverage

Spatial Extent: **N**:26.1208 **E**:-79.22671 **S**:24.2116183 **W**:-82.088827
Temporal Extent: 2014-05-28 - 2015-06-26

Dataset Description

Counts of larval fishes collected by a $4m^2$ Multiple Opening Closing Net and Environmental Sampling System (MOCNESS; MOC4) in a subtropical, pelagic environment.

Restricted dataset: Data are currently restricted pending publication of the manuscript. Please contact the PI for prior access.

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 4 square meter opening and 1 mm mesh nets (MOC4). To capture larval fishes and mesozooplankton on a fine horizontal spatial scale, we sequentially fired each MOCNESS net every ~125-500 m. Traveling at a speed of 2 meters per second each MOC4 net sampled ~500-2600 cubic meters. We fired a total of five nets per tow. One net was open from the surface to depth (net zero), and four nets sampled discrete depths. At every

station, this fine-scale net sampling was repeated with two MOC4 tows at 15 m and 30 m depth (randomized order), thus eight replicate tows per depth. Once onboard, the nets were rinsed with seawater and the contents of each cod end immediately preserved in 95% ethanol.

Data Processing Description

All larval fishes were separated out of the samples, enumerated, and stored for later taxonomic identification.

BCO-DMO Processing:
- added official cruise ID corresponding to the PI-provided cruise name;
- modified parameter names to conform with BCO-DMO naming conventions;
- formatted dates to mm/dd/yyyy and times to hh:mm:ss;
- replaced -999 with "nd" (meaning "no data");
- joined the station location data to the MOC data;
- 05-Dec-2018: replaced v1 of dataset with v2, which has corrections made to volume filtered.

[table of contents | back to top]

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
area	Eddy region sampled	unitless
tow_type	Tow type: S = shallow, M = middle, D = deep	unitless
rep	Replicate MOC4 tow at each station	unitless
tow_descrip	Description of tow area: NS = nearshore tow, Off = offshore tow	unitless
day_or_night	D = daytime tow, N = nighttime tow	unitless
location	In = inside eddy tow, Ed = eddy edge tow, Out = outside eddy tow	unitless
net	MOC4 tow net number	unitless

date	Date of tow (EDT) in mm/dd/yyyy format	unitless
time_open	Time (24h) net opened (EDT) in hh:mm:ss format	unitless
time_closed	Time (24h) net closed (EDT) in hh:mm:ss 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

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	MOC4
Generic Instrument Name	MOCNESS
Dataset-specific Description	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 4m2 opening and 1mm mesh nets (MOC4).
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) This designation is used when the specific type of MOCNESS (number and size of nets) was not specified by the contributing investigator.

[table of contents | back to top]

Deployments

WS1406

Website	https://www.bco-dmo.org/deployment/654157
Platform	R/V F.G. Walton Smith
Start Date	2014-05-28
End Date	2014-06-14
Description	More information about this cruise is available from the Rolling Deck to Repository (R2R).

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).

[table of contents | back to top]

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.

[table of contents | back to top]

Funding

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

[table of contents | back to top]