Water level in Back Sound, North Carolina from June to December of 2011 (EstuarineMetaDyn project)

Website: https://www.bco-dmo.org/dataset/688067
Data Type: Other Field Results
Version:
Version Date: 2017-07-12

Project
» Interacting Effects of Local Demography and Larval Connectivity on Estuarine Metapopulation Dynamics (EstuarineMetaDyn)

Contributors	Affiliation	Role
Fodrie, F. Joel	University of North Carolina at Chapel Hill (UNC-Chapel Hill-IMS)	Principal Investigator, Contact
York, Amber D.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Table of Contents

Coverage

Spatial Extent: **Lat**:34.69346 **Lon**:-76.62106

Dataset Description

This dataset contains water level data from Back Sound, North Carolina collected with a stationary logger deployed from June to December of 2011.

Other Back Sound datasets in this project:
Oyster density and length
Laser scans
Reef elevation, exposure, and vertical change

These data are published in:

Ridge, J. T., Rodriguez, A. B., Fodrie, F. J., Lindquist, N. L., Brodeur, M. C., Coleman, S. E., ... & Theuerkauf, E. J. (2015). Maximizing oyster-reef growth supports green infrastructure with accelerating sea-level rise. Scientific reports, 5. doi: 10.1038/srep14785

Methods & Sampling

Three HOBO(R) U20 Water Level Loggers (Onset Computer Corporation;+- 0.3 cm accuracy) were deployed in Middle Marsh (site MF-1). The loggers were placed in a stilling well (slotted PVC pipe) attached to rebar that was driven into the substrate to refusal (~3 m deep).

The water level was initially sampled every ten minutes from 2011-12-13 to 2011-08-25 and increased to every five minutes for the rest of the deployment.

Three deployment series at site MF-1:
2011-06-18T12:10Z to 2011-08-25T09:40Z (10-minute sampling)
2011-08-25T12:05Z to 2011-09-23T09:35Z (5-minute sampling)
2011-09-28T17:30Z to 2011-12-13T01:05Z (5-minute sampling)

See Ridge et al. 2017 for additional deployment information.

Ridge, J. T., Rodriguez, A. B., Fodrie, F. J., Lindquist, N. L., Brodeur, M. C., Coleman, S. E., ... & Theuerkauf, E. J. (2015). Maximizing oyster-reef growth supports green infrastructure with accelerating sea-level rise. Scientific reports, 5. doi: 10.1038/srep14785

BCO-DMO Processing Description

* added a conventional header with dataset name, PI name, version date
* modified parameter names to conform with BCO-DMO naming conventions
* blank values replaced with no data value 'nd'
* added site name and lat/lon
* removed lines that said "Break" with no data. Date ranges for the three series in this deployment were added to the Methods & Sampling.
* data version 2017-07-12 is an update of version 2017-04-20 which includes both local and UTC time

[table of contents | back to top]

Data Files

File
water_level.csv (Comma Separated Values (.csv), 2.16 MB) MD5:4d93d493dd1ad58775feec4345a19891 Primary data file for dataset ID 688067

[table of contents | back to top]

Parameters

Parameter	Description	Units
site	Site name; reef name	unitless
lat	Site latitude	decimal degrees
lon	Site longitude	decimal degrees
ISO_DateTime_UTC	ISO timestamp based on the ISO 8601:2004(E) standard in format YYYY-mm-ddTHH:MMZ (UTC)	unitless
date_local	Date (local; UTC-4) in format yyyy-mm-dd	unitless
time_local	Time (local; UTC-4) in format hh:mm	unitless
water_level	Water level elevation binned by centimeter (NAVD88) for establishing a water level histogram	centimeter

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	HOBO(R) U20 Water Level Loggers
Generic Instrument Name	Temperature Logger
Dataset-specific Description	HOBO(R) U20 Water Level Loggers (Onset Computer Corporation;+- 0.3 cm accuracy)
Generic Instrument Description	Records temperature data over a period of time.

[table of contents | back to top]

Deployments

Fodrie_EstuarineMetaDyn

Website	https://www.bco-dmo.org/deployment/688049
Platform	Back_Sound_NC
Description	Sampling between 2010 and 2015.

[table of contents | back to top]

Project Information

Interacting Effects of Local Demography and Larval Connectivity on Estuarine Metapopulation Dynamics (EstuarineMetaDyn)

Coverage: North Carolina Estuaries

Description from NSF award abstract:
The PIs will use the eastern oyster (*Crassostrea virginica*) in Pamlico Sound, North Carolina, as a model system and will attempt to optimize the design of networks of no-take reserves as a strategy for maintaining metapopulations of this commercially harvested species. The project specifically recognizes that network persistence depends on (1) the potential for growth, survival, and reproduction within reserves, and (2) the potential to distribute offspring among reserves. Thus, demographic processes within reserves and settling areas play important roles, along with variability of physical transport. The PIs plan to:
(1) test and refine 3D bio-physical models of connectivity due to oyster larval transport in a shallow, wind-dominated system;
(2) test, refine, and apply technology to detect natal origins of larvae using geochemical tags in larval shell; and
(3) integrate regional connectivity and demographic rates to model metapopulation dynamics.

This study will produce new tools and test and refine others used for studying larval connectivity, a fundamentally important process in the maintenance of natural populations, and thus in biological conservation and resource management. The tools include a hydrodynamic modeling tool coupled with an open-source particle tracking model that will be available on-line with computer code and user guide. The project will use integrated modeling approaches to evaluate the design of reserve networks: results will be directly useful to improving oyster and ecosystem-based management in Pamlico Sound, and the methods will inform approaches to network design in other locations.

[table of contents | back to top]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1155628

[table of contents | back to top]