Reef elevation, exposure, and vertical change from GPS grids of Back Sound, North Carolina from 2011 to 2014 (EstuarineMetaDyn project)

Website: https://www.bco-dmo.org/dataset/688080
Data Type: Other Field Results
Version:
Version Date: 2017-04-20

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
- Dataset Description
  - Methods & Sampling
  - Data Processing Description
- Data Files
- Parameters
- Instruments
- Deployments
- Project Information
- Funding

Coverage

Spatial Extent: **N**:34.69881 **E**:-76.61168 **S**:34.68238 **W**:-76.62192

Dataset Description

This dataset includes reef elevation, exposure percentage and average vertical change for reef sites in Back Sound, North Carolina between 2011 to 2014.

Other Back Sound datasets in this project:
Oyster density and length
Laser scans
Water level
Laser scan, density, and GPS grid sampling information

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

Average vertical reef growth was measured using a Trimble 5800 GPS receiver (+-1.5 cm vertical).

Data Processing Description

BCO-DMO Data Manager Processing Notes:
* 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'

[table of contents | back to top]

Data Files

File
GPS_Grids.csv (Comma Separated Values (.csv), 825 bytes) MD5:d936e76453a2d124a7a66b74fa39caaa Primary data file for dataset ID 688080

[table of contents | back to top]

Parameters

Parameter	Description	Units
reef	Site name; the name of the reef	unitless
elevation	Elevation above which 10% of the reef resides at the intitial time step; site sea surface elevation in reference to NAVD88	meters
exposure_percent	Percent aerial exposure at the top 10% of the reef at the intitial time step	percent
avg_vertical_change	Average vertical change at each elevation bin in millimeters divided by the timestep (years) for a specific reef	millimeters per year (mm/yr)
lat	Site latitude	decimal degrees
lon	Site longitude	decimal degrees

[table of contents | back to top]

Instruments

Dataset-specific Instrument Name	Trimble 5800 GPS receiver
Generic Instrument Name	GPS receiver
Dataset-specific Description	Trimble 5800 GPS receiver (+-1.5 cm vertical)
Generic Instrument Description	Acquires satellite signals and tracks your location. This term has been deprecated. Use instead: https://www.bco-dmo.org/instrument/560

[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]