## Blue mussel (Mytilus edulis) gonad index station sampling information from coastal eastern Maine between 2014 and 2016 (MuLTI-2 project)

Website: https://www.bco-dmo.org/dataset/658758

Data Type: Other Field Results Version: 1 Version Date: 2017-11-30

#### Project

» An integrated theoretical and empirical approach to across-shelf mixing and connectivity of mussel populations (MuLTI-2)

| Contributors      | Affiliation  | Role                               |
|-------------------|--|------------------------------------|
| Yund, Philip O.   | Downeast Institute for Applied Marine Research and Education (DEI) | Principal Investigator,<br>Contact |
| York, Amber<br>D. | Woods Hole Oceanographic Institution (WHOI BCO-DMO)                | BCO-DMO Data Manager               |

#### Abstract

Blue mussel (Mytilus edulis) gonad index station sampling information from coastal eastern Maine between 2014 and 2016.

## **Table of Contents**

- <u>Coverage</u>
- Dataset Description
  - Methods & Sampling
    - Data Processing Description
- Data Files
- <u>Parameters</u>
- <u>Deployments</u>
- <u>Project Information</u>
- Funding

## Coverage

**Spatial Extent**: N:44.825311 **E**:-66.986325 **S**:44.45134 **W**:-68.344405 **Temporal Extent**: 2014-04-24 - 2015-08-17

## **Dataset Description**

This dataset identifies when Gonal Index (GI) sampling occurred at each station. Collections occurred in coastal waters of eastern Maine, from Frenchman Bay to the Canadian border from 2014 to 2016.

For results of the survey, see the dataset Gonad Index (GI).

#### Methods & Sampling

Locations and descriptions for station codes used in this dataset can be found in the dataset: <u>MuLTI-2 Mussel</u> <u>Station List</u> 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

## [ table of contents | back to top ]

#### **Data Files**

#### File

GI\_sampled\_stations.csv(Comma Separated Values (.csv), 2.42 KB) MD5:5f1bddae6f67730e3c974fd7b7a9b9d1

Primary data file for dataset ID 658758

[ table of contents | back to top ]

#### **Parameters**

| Parameter | Description   | Units    |
|-----------|---|----------|
| Cruise    | Cruise identifier   | unitless |
| Year      | year sample was taken   | untiless |
| CBC_LBC   | Cabscook Bay - Lubec Channel sampling status (YES or NO)          | unitless |
| MCH_FBB   | Machias Bay - Finn Beach sampling status (YES or NO)              | unitless |
| LKB_CHR   | Little Kennebec Bay - Chandler River sampling status (YES or NO)  | unitless |
| MBR_CMP   | Moosabec Reach - Campground sampling status (YES or NO)           | unitless |
| WST_DEI   | Western Bay - DEI sampling status (YES or NO)                     | unitless |
| WAH_WRL   | Wahoa Bay - West River Landing sampling status (YES or NO)        | unitless |
| PLS_PLR   | Pleasant Bay - Pleasant River sampling status (YES or NO)         | unitless |
| HAB_HBR   | Harrington Bay - Harrington Boat Ramp sampling status (YES or NO) | unitless |
| PHB_BAR   | Pigeon Hill Bay - Bar Island sampling status (YES or NO)          | unitless |
| DYB_FSH   | Dyer Bay - Fish Island sampling status (YES or NO)                | unitless |
| GLB_STL   | Gouldsboro Bay - Steuben Town Landing sampling status (YES or NO) | unitless |
| FRB_EST   | Frenchmen Bay - East sampling status (YES or NO)                  | unitless |
| FRB_TFP   | Frenchmen Bay - Tidal Falls Preserve sampling status (YES or NO)  | unitless |
| FRB_WST   | Frenchmen Bay - West sampling status (YES or NO)                  | unitless |
| FRB_RAC   | Frenchmen Bay - Raccoon Cove sampling status (YES or NO)          | unitless |
| FRB_JRD   | Frenchmen Bay - Jordan River sampling status (YES or NO)          | unitless |

[ table of contents | back to top ]

## Deployments

MuLTI-2\_Mussel\_Sampling

| Website     | https://www.bco-dmo.org/deployment/658775   |
|-------------|---|
| Platform    | Maine_Coast   |
| Start Date  | 2014-04-24  |
| Description | These locations were sampled using The Uglement, an automobile. Mussel Gonad Index (GI), size frequency, settlement, and density were surveyed. |

#### [ table of contents | back to top ]

#### **Project Information**

# An integrated theoretical and empirical approach to across-shelf mixing and connectivity of mussel populations (MuLTI-2)

**Coverage**: Gulf of Maine: Frenchmen Bay (44 28.239 N -68 15.927 W) to Machais Bay (44 39.350 N -67 21.320 W)

Acronym "MuLTI-2" (Mussel Larval Transport Initiative-2)

Extracted from the NSF award abstract:

Existing larval transport models focus mainly on along-shelf transport and have done little to explicitly incorporate the effects of cross-shelf mixing and transport processes. Yet cross-shelf transits (both outgoing and incoming legs) are critical components of the dispersal paths of coastal invertebrates. This project will explore the role of cross-shelf mixing in the connectivity of blue mussel populations in eastern Maine. Previous work has shown that the Eastern Maine Coastal Current (EMCC) begins to diverge from shore southwest of the Grand Manan Channel and creates a gradient in cross-shelf mixing and larval transport, with cross-shelf mixing being more common on the northeastern end, episodic in the transitional middle area, and then becoming rare in the southwestern half of the region of the Gulf of Maine. As a result, the investigators predict that northeastern populations of mussels are seeded mostly from up-stream sources, while a significant component of self-seeding (local retention) exists in southwestern populations. Larvae settling in the intervening bays are expected to be derived from a mixture of local and up-stream sources. Using a combined empirical and theoretical approach hydrographic, current profile, and larval vertical migration data will be collected and used to develop and validate a high-resolution coastal circulation model coupled to a model of larval behavior. The investigators will model simulations in different years using the empirical data from mussel reproductive output and spawning times. Connectivity predicted from this model will be then tested against independent empirical estimates of connectivity based on trace element fingerprinting for larvae which can be connected to specific natal habitats. Regions of agreement and discrepancy in the model will be identified to guide additional data collection and model refinement. This iterative process will ensure an understanding of both larval transport patterns and processes, and provide estimates of inter-annual variability in connectivity for blue mussel populations in the Gulf of Maine.

#### [ table of contents | back to top ]

#### Funding

| Funding Source                           | Award              |
|--|--------------------|
| NSF Division of Ocean Sciences (NSF OCE) | <u>OCE-1333755</u> |

[ table of contents | back to top ]