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
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Abstract
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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: MuLTI-2 Mussel Station List

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

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Data Files

File
GI_sampled_stations.csv (Comma Separated Values (.csv), 2.42 KB) MD5:5f1bddae6f67730e3c974fd7b7a9b9d1 Primary data file for dataset ID 658758

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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

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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.

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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.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1333755

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