

CTD stations in coastal eastern Maine between June 2014 and August 2015 (MuLTI-2 project)

Website: <https://www.bco-dmo.org/dataset/614710>

Version:

Version Date: 2015-10-29

Project

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

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Coverage

Spatial Extent: N:44.6616851 E:-67.3446914 S:44.238717 W:-68.2755757

Dataset Description

CTD Stations occupied during the MuLTI-2 Project between June of 2014 to August of 2015.

Methods & Sampling

CTD header information logged in real time using a YSI CTD

Data Processing Description

CTD Stations/Header information extracted (grep'd out) from the individual .csv files

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Data Files

File
CTD_Stations.csv (Comma Separated Values (.csv), 39.72 KB) MD5:37a32919ff663bb66decadaba0bd29e815
Primary data file for dataset ID 614710

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Parameters

Parameter	Description	Units
Deployment_Id	MuLTI-2 Deployment Id	text
Transect_Id	MuLTI-2 Transect Id	text
Station_Id	CTD Station Id	text
ISO_DateTime_UTC	Date/Time of CTD station (UTC) ISO formatted	YYYY-MM-DDTHH:MM:SS[.xx]Z
date	Date of CTD station (UTC)	YYYYMMDD
time	Time of CTD station (UTC)	HHMMSS
lat	CTD Station latitude (South is negative)	decimal degrees
lon	CTD Station longitude (West is negative)	decimal degrees

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Instruments

Dataset-specific Instrument Name	YSi Castaway CTD
Generic Instrument Name	Global Positioning System Receiver
Dataset-specific Description	YSI Castaway CTD with internal GPS sensor
Generic Instrument Description	The Global Positioning System (GPS) is a U.S. space-based radionavigation system that provides reliable positioning, navigation, and timing services to civilian users on a continuous worldwide basis. The U.S. Air Force develops, maintains, and operates the space and control segments of the NAVSTAR GPS transmitter system. Ships use a variety of receivers (e.g. Trimble and Ashtech) to interpret the GPS signal and determine accurate latitude and longitude.

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Deployments

MuLTI-2_Across_Shelf

Website	https://www.bco-dmo.org/deployment/614681
Platform	R/V C-HAWK
Start Date	2014-06-20
End Date	2015-07-30
Description	A series of across shelf transects associated with the MuLTI-2 Project

MuLTI-2_Along_Shelf

Website	https://www.bco-dmo.org/deployment/614685
Platform	R/V C-HAWK
Start Date	2014-06-06
End Date	2015-08-27
Description	A series of along shelf transects associated with the MuLTI-2 Project

MuLTI-2_Mixed

Website	https://www.bco-dmo.org/deployment/614687
Platform	R/V C-HAWK
Start Date	2015-07-07
End Date	2015-08-11
Description	A series of mixed (across/along) shelf transects associated with the MuLTI-2 Project

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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-1334022
NSF Division of Ocean Sciences (NSF OCE)	OCE-1333755
NSF Division of Ocean Sciences (NSF OCE)	OCE-1333797

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