Coordinates and description of rocky intertidal sites in the Rocky intertidal shores and nearshore coastal waters throughout the Gulf of Maine (GOMEPRO project)

Website: https://www.bco-dmo.org/dataset/640288
Data Type: Other Field Results
Version: 11 March 2016
Version Date: 2016-03-11

Project
» Intertidal community assembly and dynamics: Integrating broad-scale regional variation in environmental forcing and benthic-pelagic coupling (GOMEPRO)

Contributors	Affiliation	Role
Trussell, Geoffrey C.	Northeastern University	Principal Investigator
Matassa, Catherine M.	Northeastern University	Contact
Rauch, Shannon	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Coverage

Spatial Extent: **N**:44.808 **E**:-66.976 **S**:42.42 **W**:-70.908

Dataset Description

Coordinates of and description of activities conducted at rocky intertidal field sites in the Gulf of Maine.

BCO-DMO Processing Description

- Modified parameter names to conform with BCO-DMO naming conventions;
- Converted original lat/lons from degrees, minutes, seconds to decimal degrees.

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Data Files

File
field_sites.csv (Comma Separated Values (.csv), 3.24 KB) MD5:bfeb7118a4036e5c397530507726ba32 Primary data file for dataset ID 640288

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Parameters

Parameter	Description	Units
site_code	Site code.	dimensionless
site_name	Site name.	dimensionless
region	Region (1, 2, 3).	dimensionless
wave_exposure	Wave exposure (exposed or protected).	dimensionless
lat	Latitiude.	decimal degrees
lon	Longitude.	decimal degrees
consumer_act_2015	Consumer/canopy activities 2015.	dimensionless
barnacle_act_2015	Barnacle activities 2015.	dimensionless
mussel_act_2015	Mussel activities 2015.	dimensionless

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Deployments

Gulf_of_Maine_Sites_Trussell

Website	https://www.bco-dmo.org/deployment/640307
Platform	GOMEPRO_Field_Sites

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Project Information

Intertidal community assembly and dynamics: Integrating broad-scale regional variation in environmental forcing and benthic-pelagic coupling (GOMEPRO)

Coverage: Rocky intertidal shores and nearshore coastal waters throughout the Gulf of Maine

Rocky intertidal habitats in the Gulf of Maine (GoM) provide a model system to examine the structure and dynamics of natural communities. Throughout the Gulf of Maine, the same species are often found in these habitats but community structure, dynamics and productivity differ markedly among 3 distinct regions (southern, central and northern GoM). Past influential work, conducted primarily in the southern and central GoM, focused on the local processes driving intertidal community structure but produced very different conceptual models of how these communities are structured. This project examines whether regional differences in rocky shore community processes are driven by differences in recruitment that are shaped by regional variation in temperature and food availability and nearshore coastal oceanography. This project will improve the understanding of how large-scale environmental forces interact with local processes to control the distribution of species and the structure and dynamics of these communities. Understanding the interaction between processes operating at different scales is fundamentally important to developing more reliable models that can be used to predict community dynamics. In addition, data resulting from this project will have important implications for regional dynamics in commercially important species and for ecosystem and fisheries management within the GoM.

The overarching hypothesis of this project is that regional differences in community-level processes are driven by very different patterns of population connectivity and recruitment in a few key species, and that these differences are ultimately caused by regional variation in temperature and food availability and mediated by physical larval transport processes. Hence, the project will test the following hypotheses with manipulative field

experiments, field sampling, connectivity estimates, and integrative modeling:
1) Locally-dispersing species dominate dynamics in regions with a net export of planktonic larvae (Northern GoM), while species with planktonic larvae dominate the dynamics in regions with high settlement and extensive connectivity among populations (Southern GoM).
2) Settlement density of species with planktonic larvae increases from northern to southern regions in accord with regional variation in food availability.
3) Population connectivity varies greatly among regions, with regions differing in the degree to which they are self-seeded or serve as larval sources vs. sinks; self-seeding leads to relatively localized population dynamics in the middle portion of the GoM.
4) Patterns of population connectivity are driven by physical transport processes and can be represented by coupling basic larval behavior models with circulation models.

At 18 different sites in the GoM across ~ 600 km, surveys will evaluate variation in recruitment, food availability and secondary productivity and experiments will assess community processes in wave-exposed and sheltered habitats. We will use hydrographic, current profile, and larval vertical distribution surveys to collect data for coupled larval/circulation models. Population connectivity will be both modeled and empirically evaluated (for one species) using elemental fingerprinting. A spatially explicit metacommunity model will integrate across all project components and test the relative importance of regional and local processes in controlling community organization and dynamics.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1458150

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