

# 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                   |
|---------------------------------------|---|------------------------|
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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   |
|--|
| <b>field_sites.csv</b> (Comma Separated Values (.csv), 3.24 KB)<br>MD5:bfeb7118a4036e5c397530507726ba32<br>Primary data file for dataset ID 640288 |

## 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               | Latitude.                             | 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   |

## Deployments

### Gulf of Maine Sites Trussell

|          |   |
|----------|---|
| Website  | <a href="https://www.bco-dmo.org/deployment/640307">https://www.bco-dmo.org/deployment/640307</a> |
| Platform | GOMEPRO_Field_Sites   |

## 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                       |
|--|-----------------------------|
| <a href="#">NSF Division of Ocean Sciences (NSF OCE)</a> | <a href="#">OCE-1458150</a> |

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