

Population structure of *Mytilus* from 2011 Japanese tsunami marine debris, based on size/age class distributions along the Hawaii, Washington and Oregon coasts from 2012-2014 (JTMD-BF project)

Website: <https://www.bco-dmo.org/dataset/491257>

Version: 2

Version Date: 2015-02-27

Project

» [Testing the Invasion Process: Survival, Dispersal, Genetic Characterization and Attenuation of Marine Biota on the 2011 Japanese Tsunami Marine Debris Field](#). (JTMD-BF)

Contributors	Affiliation	Role
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Dataset Description

The size frequency as measure by shell length and weight of the blue mussel, *Mytilus galloprovincialis*, on Japanese tsunami marine debris (JTMD), including docks and boats, collected from 2012-2014 at coastal sites in Washington, Oregon and Hawaii.

Access to this data is RESTRICTED for the duration of the project funding period (through 2014).

Methods & Sampling

Mytilus specimens were collected from Japanese tsunami marine debris (JTMD) from 2012-2014 at coastal sites in Washington, Oregon and Hawaii.

More to be added?

Data Processing Description

To be added.

BCO-DMO Processing:

version 2: Submitted on 2015-02-27.

- added conventional header with dataset name, PI name, version date

- renamed parameters to BCO-DMO standard
- replaced blanks with underscores
- replaced '-' with 'nd' if it was the only item in the cell
- reformatted date from m/d/yyyy to yyyy-mm-dd
- removed special characters such as ->, ?
- moved comments to comment column from Ruiz column

version 1: submitted 2013-10-21

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Related Publications

Carlton, J. T., Chapman, J. W., Geller, J. B., Miller, J. A., Carlton, D. A., McCuller, M. I., ... & Ruiz, G. M. (2017). Tsunami-driven rafting: Transoceanic species dispersal and implications for marine biogeography. *Science*, 357(6358), 1402-1406. <https://doi.org/10.1126/science.aao1498>
Results

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Parameters

Parameter	Description	Units
specimen_id	unique ID for any Mytilus used for tissue or shell analysis	unitless
length	shell length in mm	mm
width	shell width in mm	mm
register_num	debris item number in JTMD database of Mytilus individual	unitless
date_coll	collection date of individual	unitless
preservation	preservation history	unitless
reprod	reproductive status: Y=reproductive; N=not reproductive;	unitless
comment	relevant details such as attached organisms	unitless
ruiz_sample	Sample taken by or for Ruiz, Smithsonian Environmental Research Center (Y/N)	unitless
geller_sample	Sample taken by or for Geller, Moss Landing Marine Lab (Y/N)	unitless
miller_sample	Sample taken by or for Miller, Oregon State University (Y/N)	unitless
other	Any other samples taken (SI = stable isotope)	unitless

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Deployments

JTMD_2012

Website	https://www.bco-dmo.org/deployment/552342
Platform	Carlton_shore
Start Date	2012-12-01
End Date	2014-11-30
Description	Japanese tsunami marine debris collection

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Project Information

Testing the Invasion Process: Survival, Dispersal, Genetic Characterization and Attenuation of

Marine Biota on the 2011 Japanese Tsunami Marine Debris Field. (JTMD-BF)

Coverage: North Pacific Ocean (W and E)

I. Biodiversity; Population and Food Web Analysis; Viability and Reproductive Condition; Dispersal Track and Growth History; Shellfish Pathogens/Parasites

This project seeks to document the biodiversity of Japanese species on arriving tsunami-generated debris, through morphological and genetic identification (including massively parallel DNA sequencing of whole community samples) and through quantitative replicate samples to determine numerical abundance, density, frequency, and biomass. In addition, species accumulation and rarefaction curves will be determined to estimate total inbound diversity.

Focuses include:

- Population structure of selected taxa, based on size/age class distributions.
- Viability and reproductive condition of selected taxa, based on fecundity, gonadal indices, and/or spore production, upon arrival.
- Food web analyses based upon tissue stable isotope ratios ($\delta^{13}\text{C}$ and $\delta^{15}\text{N}$).
- Dispersal track and growth history of selected taxa based on oxygen isotopic and elemental composition of shell calcite.
- Identity and prevalence of parasites and pathogens in oysters (*Crassostrea gigas*) and mussels (*Mytilus galloprovincialis*).

II. Biotic Attrition Over Time

Comparison of dead species assemblages on JTMD to live assemblages to assess the fate and alteration of debris communities over time.

III. Genetic Matching of Novel Invasions With JTMD Biota

Genetically characterize populations of target species so that if and when new invasions are detected, or when previously established invasions appear to be newly expanding or appearing in new locations, genetic studies can be undertaken to determine if these events are related to the JTMD phenomenon.

This is a Rapid Response Grant.

2020-09-30: Final data was not submitted for this project. The data for this research are available at the Dryad data depository (<http://dx.doi.org/10.5061/dryad.rh01m>). Contact Dr. Carlton for more information.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1266397

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