Proportion of taxonomic groups from Japanese, oceanic and eastern Pacific waters along the Hawaii, Washington and Oregon coasts during 2012 (JTMD-BF project)

Website: https://www.bco-dmo.org/dataset/552364
Version: 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
Carlton, James T.	Williams College (Williams)	Lead Principal Investigator
Geller, Jonathan	Moss Landing Marine Laboratories (MLML)	Principal Investigator
Miller, Jessica	Oregon State University (OSU-HMSC)	Principal Investigator
Ruiz, Gregory E.	Portland State University (PSU)	Principal Investigator
Chapman, John	Oregon State University (OSU-HMSC)	Co-Principal Investigator
Copley, Nancy	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Methods & Sampling

Biofouling specimens were collected and identified from Japanese tsunami marine debris (JTMD) from 2012-2014 at coastal sites in Hawaii and the western USA from California to Alaska.

Algal diversity identification was courtesy of Gayle Hansen (Hatfield Marine Science Center, Oregon State University).

Data Processing Description

BCO-DMO Processing:

- added conventional header with dataset name, PI name, version date
- renamed parameters to BCO-DMO standard
- changed blanks to zeros
- changed * to lt_1 (less than 1%)
- replaced blanks with underscores

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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
taxon	taxonomic group	unitless
num_spp_Japan	number of Japanese species	species
relative_pcent	relative percentage Japanese species of total	percent
num_spp_ocean	number of oceanic-neustonic species; at sea acquisition	species
num_spp_Epac	number of Eastern Pacific; nearshore acquisition	species

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Instruments

Dataset-specific Instrument Name	microscopes
Generic Instrument Name	Microscope - Optical
Dataset-specific Description	binocular dissecting and compound microscopes
Generic Instrument Description	Instruments that generate enlarged images of samples using the phenomena of reflection and absorption of visible light. Includes conventional and inverted instruments. Also called a "light microscope".

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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) andthrough quantitative replicate samples to determine numerical abundance, density, frequency, and biomass. In addition, species accumulation and rarefaction curves will be determinded 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 *(*δ13C and δ15N*).*
- 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-1266417
NSF Division of Ocean Sciences (NSF OCE)	OCE-1266234
NSF Division of Ocean Sciences (NSF OCE)	OCE-1266397
NSF Division of Ocean Sciences (NSF OCE)	OCE-1266406

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