Marine lakes of Palau barcoded specimens from transect survey with both lab identification number (M0D#) and original tube number

Website: https://www.bco-dmo.org/dataset/768180
Data Type: Other Field Results
Version: 1
Version Date: 2019-05-13

Project
» Do Parallel Patterns Arise from Parallel Processes? (PaPaPro)

Program
» Dimensions of Biodiversity (Dimensions of Biodiversity)

Contributors	Affiliation	Role
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Abstract
Marine lakes of Palau barcoded specimens from transect survey with both lab identification number (M0D#) and original tube number. The purpose of this dataset is (1) to link unique identification numbers used in different circumstances and files, specifically tube ID used in the field and the M0D# identifier for the lab's permanent collection, and (2) to summarize the tissue samples collected during biodiversity surveys under this project.

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Coverage

Spatial Extent: **N**:7.3237 **E**:134.5089 **S**:7.1506 **W**:134.3447
Temporal Extent: 2011-06-04 - 2015-07-02

Dataset Description

Marine lakes of Palau barcoded specimens from transect survey with both lab identification number (M0D#) and original tube number. The purpose of this dataset is (1) to link unique identification numbers used in different circumstances and files, specifically tube ID used in the field and the M0D# identifier for the lab's permanent collection, and (2) to summarize the tissue samples collected during biodiversity surveys under this project.

* NOTE: The P.I.'s are using this dataset to write papers. Please contact them before using these data to make sure you are not duplicating efforts.

Methods & Sampling

Sample collection:

Each lake was sampled using the point intercept transect method at no less than 10 randomly chosen sites around its perimeter (unless the small size of a lake precluded this number of non-overlapping sites). At each site, three parallel transects approximately were run 5 m apart from the intertidal (0 m) to the deepest depth accessible to SCUBA divers (i.e. the bottom of the lake, or bottom of the epilimnion, or the divers' maximum certified depth). In lakes 8m or deeper, a line ('the horizontal') was placed, at eight evenly spaced target depths (1–4 m depth intervals, depending on lake), orthogonal to each of the transect lines so that small (2.0 cm diameter) cells fell over four points A–D each at 15 cm increments to the right of the transect line at the same depth. At each depth, from deepest to shallowest, the actual depth was measured in feet with a dive computer, the 'horizontal' was photographed from ~0.5 m distance, the substrate type was recorded, and then each cell photographed in close-up. A tissue sample of the 'primary' organism within each cell, i.e. the organism at the center of the cell, or if no organism in the centre then the first organisms at the periphery going clockwise from noon, or if only sediment visible, the organism within the sediment directly under the Cell was then biopsied for DNA analyses and placed in a container labeled with site, depth, and cell code A–D. Because the benthos may be three dimensional a 'primary' organism might also have many 'secondary' epibionts and/or epiphytes attached. Any organisms in the photographs but not sampled were classified as 'tertiary'. After all four cells were sampled at a depth, the diver ascended to the next shallowest depth on his/her transect and repeated the procedure. Thus, at each randomly chosen site, we surveyed a total of 96 points from the deepest to shallowest depths of the lake habitable by macro-invertebrates and macrophytes, with two categories of exception. (1) If a lake was <8 m deep, the number of depths sampled was equivalent to the maximum depth in meters. (2) Lakes with gently sloping sides could lead to adjacent target depths being >10 m apart leading to undersampling of horizontal patchiness; in which case the transect distance between adjacent target depths was estimated and divided in half or in thirds so that no two samples were more than 10 transect meters apart. At the surface, at the end of each dive, samples were transferred to individual tubes of 95% ethanol labeled with a field number composed of lake, site, collector, depth, and cell IDs. Each evening, new samples were stored in a freezer, dive profiles were downloaded, and fieldnotes were transcribed to a standardized electronic data sheet.

Error-checking biodiversity transect files

Each evening, or as soon thereafter as possible, divers compared specimens to standardize field-identifications and all tissue samples were reconciled to the electronic data sheet for each lake using tube labels, original field notes, photographs of specimens in the field, and visual inspection of tube contents. If necessary, primary and secondary specimens were placed in individually labelled tubes of ethanol. In cases of discrepancy between electronic notes and original field notes, we edited the electronic data sheet to be consistent with original notes and corroborated this by double-checking the original photographs and inspecting tube contents. Significant changes—i.e. samples that could not be reconciled after accounting for tube transpositions, mislabeling, or mis-identification in the field—were logged in a separate file highlighting the specific change and justification. If a specimen was unable to be reconciled with notes it was discarded (this was necessary for only one specimen). Subsequently, every tissue sample was assigned an unique identifying number (M0D#) for curation; during this process, every tenth sample was double-checked for agreement between the original field number and new M0D#.

Data Processing Description

BCO-DMO Processing:
- added conventional header with dataset name, PI name, version date
- replaced blanks cells with nd

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Data Files

File
4_tissue_archive.csv (Comma Separated Values (.csv), 632.29 KB) MD5:3d3a26a0454833f163e31ba503bfc278 Primary data file for dataset ID 768180

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Parameters

Parameter	Description	Units
M0D	Unique lab number assigned to curate specimens and sequences.	unitless
Tube_Number	The tube number assigned in the field and comprised of the location code; transect/site number; the collector's initials; the target depth in meters; and the cell (i.e. A; B; C; or D).	unitless
Field_assigned_phylum	The phylum of the specimen or high level categorization assigned in the field.	unitless
Instant_Field_ID	Identification assigned in the field; In some cases a single tube can contain multiple species but assigned phylum will only reflect one for specimens that were not separated (i.e. multiple taxa in a single logged tube)	unitless
lake_code	3-letter code for sampled lake name	unitless

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Deployments

Palau_lakes

Website	https://www.bco-dmo.org/deployment/542180
Platform	Small boats - CRRF
Start Date	2010-08-21
End Date	2016-06-14
Description	Palau marine lakes

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Project Information

Do Parallel Patterns Arise from Parallel Processes? (PaPaPro)

Website: http://marinelakes.ucmerced.edu/

Coverage: Western Pacific; Palau; Indonesia (West Papua)

This project will survey the taxonomic, genetic, and functional diversity of the organisms found in marine lakes, and investigate the processes that cause gains and losses in this biodiversity. Marine lakes formed as melting ice sheets raised sea level after the last glacial maximum and flooded hundreds of inland valleys around the world. Inoculated with marine life from the surrounding sea and then isolated to varying degrees for the next 6,000 to 15,000 years, these marine lakes provide multiple, independent examples of how environments and interactions between species can drive extinction and speciation. Researchers will survey the microbes, algae, invertebrates, and fishes present in 40 marine lakes in Palau and Papua, and study how diversity has changed over time by retrieving the remains of organisms preserved in sediments on the lake bottoms. The project will

test whether the number of species, the diversity of functional roles played by organisms, and the genetic diversity within species increase and decrease in parallel; whether certain species can greatly curtail diversity by changing the environment; whether the size of a lake determines its biodiversity; and whether the processes that control diversity in marine organisms are similar to those that operate on land.

Because biodiversity underlies the ecosystem services on which society depends, society has a great interest in understanding the processes that generate and retain biodiversity in nature. This project will also help conserve areas of economic importance. Marine lakes in the study region are important for tourism, and researchers will work closely with governmental and non-governmental conservation and education groups and with diving and tourism businesses to raise awareness of the value and threats to marine lakes in Indonesia and Palau.

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Program Information

Dimensions of Biodiversity (Dimensions of Biodiversity)

Website: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503446

Coverage: global

(adapted from the NSF Synopsis of Program)
Dimensions of Biodiversity is a program solicitation from the NSF Directorate for Biological Sciences. FY 2010 was year one of the program. [MORE from NSF]

The NSF Dimensions of Biodiversity program seeks to characterize biodiversity on Earth by using integrative, innovative approaches to fill rapidly the most substantial gaps in our understanding. The program will take a broad view of biodiversity, and in its initial phase will focus on the integration of genetic, taxonomic, and functional dimensions of biodiversity. Project investigators are encouraged to integrate these three dimensions to understand the interactions and feedbacks among them. While this focus complements several core NSF programs, it differs by requiring that multiple dimensions of biodiversity be addressed simultaneously, to understand the roles of biodiversity in critical ecological and evolutionary processes.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1241255

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