Squidpop predation data collected at various temperatures from multiple sites in San Cristobal, Galapagos from 2021-2022 (Galapagos 2021 project)

Website: https://www.bco-dmo.org/dataset/898371
Data Type: Other Field Results
Version: 1
Version Date: 2023-07-03

Project
» Temperature Regulation of Top-Down Control in a Pacific Upwelling System (Galapagos 2021)

Contributors	Affiliation	Role
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Abstract
These data set contain results from trials used to measured predation rates by fish across time and sites showing a temperature gradient in San Cristobal, Galapagos. We used the squidpop protocol, an assay based in setting 25 stakes with squid bait for one hour in the reefs. Afterward we count how many bait were eaten to have a measure of predation rate. We did this on 15 sites. In 6 of this sites we conducted the assay every two months for 15 months. Measuring the relationship between temperature and predation on reefs will allow us to understand better the role of temperature on moderating predation on marine communities.

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Coverage

Spatial Extent: **N**:-0.702778 **E**:-89.247778 **S**:-0.929 **W**:-89.518588
Temporal Extent: 2021-08-01 - 2022-11-08

Methods & Sampling

Samples were collected using the squidpop protocol (Duffy et al., 2015). In each trial we set 20-25 stakes with squid attached to one end and the other end buried into the sand. We left the stakes for one hour. Afterward, we count how many bait were eaten to have an estimation of predation rates.

Data Processing Description

BCO-DMO Processing Notes:

- "Cod" values in dataset corrected to "Cold" within the Season column

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Data Files

File
squidpopdataanalysis_nsf.csv (Comma Separated Values (.csv), 124.81 KB) MD5:2cf262106fac88c7339f7a481037ba5c Primary data file for Squidpop 2021 2022 dataset.

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Related Publications

Duffy, J. E., Ziegler, S. L., Campbell, J. E., Bippus, P. M., & Lefcheck, J. S. (2015). Squidpops: A Simple Tool to Crowdsource a Global Map of Marine Predation Intensity. PLOS ONE, 10(11), e0142994. doi:10.1371/journal.pone.0142994
Methods

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Parameters

Parameter	Description	Units
Year	Year of squidpop sampling trial	unitless
Month	Month of squidpop sampling trial	unitless
Locality	Locality of squidpop sampling trial	unitless
SamplingTrial	Sampling trial identifier; identifiers are comprised of the year, month, and locality of the sample	unitless
Season	Season based on temperature sampling trial occured; documented seasons include, "Cold" and "Warm"	unitless
Habitat	Habitat category where sample trial was documented; habitats include, "CoralReef," "Beach," "Mangrove," "RockyReef"	unitless
Depth	Depth of squidpop deployment	meters
Temperature	Water temerature at sampling trial locality	Celcius
Time	Time of sampling trial	unitless
Squidpop	Squidpop stake number	unitless
Eaten	Whether the bait was eaten "1" or not eaten "0"; Blank values in the dataset indicate if the stake was removed or not found	unitless
Code	Squidpop stake identifier, where the codes are comprised of year, month, locality and stake	unitless
Note	Field notes	unitless

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Project Information

Temperature Regulation of Top-Down Control in a Pacific Upwelling System (Galapagos 2021)

Coverage: Galapagos Islands

NSF Award Abstract:
Nearly all the animals that inhabit the ocean are "cold-blooded" or ectothermic, meaning their body temperatures match the temperature of the ocean around them. This has important consequences for their

physiology and more broadly for the way marine ecosystems function. When ectotherms warm up, their metabolism increases; meaning they breathe more rapidly, and eat more just to stay alive. This is bad news for prey since a warm predator is a hungry predator. But warming also enables prey species to crawl or swim away more quickly when being hunted. Thus, everything speeds up in warm water. Energy flows more quickly from the sun to seaweeds (via photosynthesis), to the herbivores, then on up to the large predators at the top of the food chain. The research team is testing these ideas in the Galápagos Islands to determine how temperature influences marine ecosystems. Ongoing work in this iconic natural laboratory is helping marine ecologists understand the role of temperature and how this and other ecosystems could function in the future as climate change warms the ocean. Other broader impacts of the project include student training and on-site outreach to tourists and the local community about ocean warming and some of the lesser-known species that inhabit the Galápagos.

The broad goal of this project is to understand the effect that temperature has on patterns and processes in upwelling systems. Specifically, the team is measuring the temperature-dependence of herbivory and carnivory in rocky subtidal habitats of the Galápagos. They are performing field experiments to measure the relative and interactive effects of temperature, herbivory, and nutrient flux on the productivity and standing biomass of benthic macroalgae. Additionally, they are using in situ predation assays across spatial and temporal temperature gradients and mesocosm experiments to determine the relationship between ocean temperature and predation intensity for predator-prey pairings including whelk–barnacle, sea star–urchin, and fish–squid.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-2128592

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