

Abalone recruitment data from Baja California and Baja California Sur, Mexico in 2019

Website: <https://www.bco-dmo.org/dataset/907383>

Data Type: Other Field Results

Version: 1

Version Date: 2023-10-18

Project

» [Collaborative Research: Evaluating how abalone populations in the California Current are structured by the interplay of large-scale oceanographic forcing and nearshore variability](#) (Abalone Safe Places)

Contributors	Affiliation	Role
Micheli Fiorenza	Stanford University	Principal Investigator
Hernández-Velasco, Arturo	Comunidad y Biodiversidad, A.C. (COBI)	Scientist
Rogers-Bennett, Laura	University of California-Davis (UC Davis)	Scientist
Smith, Alexandra	Stanford University	Scientist
Aguilar, Arquimedes	Sociedad Cooperativa de Producción Pesquera Buzos y Pescadores de la Baja California (SCPP Buzos y Pescadores de la BC)	Technician
Bracamontes, Miguel	Cooperativa Ensenada	Technician
Martinez, Ramon	Sociedad Cooperativa de Producción Pesquera Buzos y Pescadores de la Baja California (SCPP Buzos y Pescadores de la BC)	Technician
Romero, Alfonso	Comunidad y Biodiversidad, A.C. (COBI)	Technician
Jacobson, Carolina Olgún	Stanford University	Data Manager
York, Amber D.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

Abstract

Abalone support commercial and recreational fishery, however their population have decline dramatically since 1950's. To understand the recruitment of abalone populations, standarized abalone recruitment modules made of half cinder blocks inside cages were deployed in Baja California and Baja California Sur, Mexico. 12 cages were deployed at three sites (i.e., El Rosario, Isla Natividad and La Bocana) in Mexico. The abundances of abalone and invertebrates found in the cages were checked after 12months. This dataset presents all the information collected from the cages deployed at three sites (El Rosario, Isla Natividad and La Bocana) in Baja California and Baja California Sur, Mexico.

Table of Contents

- [Coverage](#)
- [Dataset Description](#)
 - [Methods & Sampling](#)
 - [Data Processing Description](#)
 - [BCO-DMO Processing Description](#)
- [Data Files](#)
- [Supplemental Files](#)
- [Related Publications](#)
- [Parameters](#)

- [Instruments](#)
 - [Project Information](#)
 - [Funding](#)
-

Coverage

Spatial Extent: N:29.79086 E:-113.70034 S:26.77558 W:-115.79903
Temporal Extent: 2019-06-18 - 2019-06-25

Methods & Sampling

LOCATION:

Baja California, Mexico. El Rosario
Baja California Sur, Mexico. Isla Natividad and La Bocana

DEPLOYMENT OF CAGES

Twelve cages per site were deployed between 5-40ft, at the three locations (El Rosario, Isla Natividad and La Bocana) and left for 12 months before surveys.

SURVEY OF CAGES

1. Diver 1 opens cage and holds the blocks 1 at a time while Diver 2 fills in the data sheet
2. Diver 2 fills in the datasheet and sets the blocks in a pile off to the side

Part 1 - count and measure focal species

- Stop measuring after 30 measurements
- Stop counting after 100 counts
- Organisms outside or on the cage should not be sampled.

Part 2 - identify and qualitatively measure the dominant cover on each block

- For each block identify what the most common cover is (CCA, red algae, other)
- Determine whether it covers 25, 50, 75 or 100% of the block
- But a tally point in the corresponding cell
- Each block should only have 1 tally

Part 3 - note presence/absence of *Macrocystis/Eisenia* algae or sessile invertebrates for each block

3. Once the cage is empty divers inspect the cage and lines, making any minor repairs that are possible
4. Diver 1 puts the blocks back into the cage 1 at a time while diver 2 keeps track (comments section) of the number of blocks and broken pieces.
5. Close the cage with line and cable ties, ascend for surface interval

INSTRUMENTS:

SCUBA diving equipment
Calipers (150mm)
Ruler
Mesh bag
Transect tape
Slate
Datasheet
Pencils
Snipes/knife
Cable ties
Extra line
GoPro camera

Data Processing Description

The data from each cage was checked and transferred into an excel file, to keep all the three sites (i.e., El Rosario, Isla Natividad, La Bocana) together.

BCO-DMO Processing Description

* "907383_v1_abalone_recruitment_modules_COJ_18Oct2023.csv" was imported into the BCO-DMO data system with values "NA" as missing data values.

** Missing data values are displayed differently based on the file format you download. They are blank in csv files, "NaN" in MatLab files, etc.

* After discussion with the submitter about identifications with name Organism_Identification "megastrea" or "megastrae" or "Megastraea sp." and taxon id Megastraea gibberosum/giberosum or "Megastraea spp", the decision was made to changes these to Organism_Identification: "turban snail", and Taxonomic_name: "Turbininae spp." which is the subfamily since not all the snails identified could be narrowed down to genus Megastrea. And several species in Megastrea had been transitioned to other genera over time.

* Taxonomic names checked with World Register of Marine Species (WoRMS) taxa match tool on 2023-09-28. Species list added as a supplemental file which contains taxonomic identifiers for names used in the dataset along with the accepted synonym if a currently unaccepted synonym was used.

* After discussion with submitter, two duplicate rows were dropped from the data table corresponding to these rows in the originally submitted file:

El Rosario, number:1, Kelletia kelletii individual 1 = row 91 duplicated in row 254

El Rosario, number:1, Kelletia kelletii individual 2 = row 92 duplicated in row 255

[[table of contents](#) | [back to top](#)]

Data Files

File	
Abalone Recruitment Monitoring 2019 filename: 907383_v1_abalone_recruitment_modules.csv Primary data table for 907383 version 1. This file contains information for the abalone recruitment monitoring. In three site in Baja California, Mexico (El Rosario, Isla Natividad and La Bocana).	(Comma Separated Values (.csv), 188.95 KB) MD5:71d88976efdca4bd17565a6e0482f47b

[[table of contents](#) | [back to top](#)]

Supplemental Files

File	
Abalone species list filename: abalone_species_list.csv Species list table for identifications in this dataset. Column information: ScientificName_in_dataset, Taxonomic name used in the dataset AphiaID, The World Register of Marine Species (WoRMS) taxonomic identifier for the name in the dataset Taxon_status_20230928, Status of the name in the dataset as of 2023-09-28. Indicates if the name is the currently accepted name or an unaccepted synonym. ScientificName_accepted, The accepted name (differs from ScientificName column if unaccepted synonym used there) AphiaID_accepted_name, The World Register of Marine Species (WoRMS) taxonomic identifier for the accepted name (differs from AphiaID column if unaccepted synonym used in the dataset) LSID_accepted_name, The Life Sciences Identifier (LSID) for the accepted name	(Comma Separated Values (.csv), 1.34 KB) MD5:a2c939dd37e6f9d7718e334b3edcfd64

Related Publications

Provost, M.M., G. de Leo, B. Woodson, F. Micheli (n.d.). Finding the 'safe spaces' for abalone on the Pacific coast of Baja California, Mexico. In Prep.

Results

Rogers-Bennett, L., Allen, B. L., & Davis, G. E. (2004). Measuring abalone (*Haliotis* Spp.) recruitment in California to examine recruitment overfishing and recovery criteria. SHERIDAN PRESS. *Journal of Shellfish Research*, 23(4), 1201-1207. Retrieved from <https://escholarship.org/uc/item/3kc705w1>

Results

Parameters

Parameter	Description	Units
date	date when the survey was done. Date in ISO 8601 format.	unitless
Site	Site when the survey was done	unitless
Bouy	Bouy when the survey was done, more specific place	unitless
divers	divers that did the survey	unitless
BART_transect	If the survey was done by BART or by transect	unitless
number	number of BART or transect	unitless
depth	depth in ft	feet (ft)
camera	camera use for the survey (could be done "insitu" = none)	unitless
lat	latitude	decimal degrees
long	longitude	decimal degrees
Organism_Identification	Name of species observed in the survey	unitless
Taxonomic_name	Scientific name of the species observed in the survey	unitless
Species_note	Any special note about the species	unitless
individual_num	The number of individual species counted in the survey	unitless
size_mm	The size (in mm) of the individual species counted in the survey. Individual measurements or ranges.	millimeters (mm)
size_mm_note	Any special note about the size of the individual species	unitless

Instruments

Dataset-specific Instrument Name	GoPro camera
Generic Instrument Name	Camera
Generic Instrument Description	All types of photographic equipment including stills, video, film and digital systems.

Dataset-specific Instrument Name	
Generic Instrument Name	Self-Contained Underwater Breathing Apparatus
Generic Instrument Description	The self-contained underwater breathing apparatus or scuba diving system is the result of technological developments and innovations that began almost 300 years ago. Scuba diving is the most extensively used system for breathing underwater by recreational divers throughout the world and in various forms is also widely used to perform underwater work for military, scientific, and commercial purposes. Reference: http://oceanexplorer.noaa.gov/technology/diving/diving.html

[[table of contents](#) | [back to top](#)]

Project Information

Collaborative Research: Evaluating how abalone populations in the California Current are structured by the interplay of large-scale oceanographic forcing and nearshore variability (Abalone Safe Places)

Coverage: Pacific Coast of Baja California (26 N to 32 N)

NSF Award Abstract:

Oceanographic variability is increasingly recognized as a driver of change in marine ecosystems. Understanding the effects of this oceanographic variability and its extremes on organisms, populations, ecosystems and the critical services they deliver is of great scientific interest and pivotal for resource management and policy. The overarching goal of this project is to determine how small-scale heterogeneity in habitat quality and site-specific vulnerability to extreme oceanographic conditions might help identify safe spaces and protect coastal populations and fisheries from the detrimental effects of increasing frequency, intensity and durations of extreme oceanographic conditions. This project will combine detailed nearshore oceanographic studies with ecological experiments and coupled biophysical modeling to advance understanding of the drivers of local oceanographic variability and consequent effects on coastal marine animals. The research will determine how multiple, potentially stressful, environmental drivers co-vary in the field and how such variation affects the population dynamics of coastal species. Specifically, this project will provide key insights regarding how changes in ocean acidification, dissolved oxygen and temperature will affect green and pink abalone, an ecologically and economically important resource in the southern California Current. Team members will work with partner non-governmental organizations, resource agencies, and fishing cooperative federations to disseminate results and incorporate data and insights into fisheries management and adaptation initiatives in Baja California, Mexico and in California, USA. This project will also support the training and professional development of underrepresented groups at the high school, undergraduate, graduate and postdoctoral levels through direct involvement in research, intensive courses and international workshops.

Despite large-scale drivers and regional perturbations, local variability in ocean conditions may be a major driver of the overall performance and vulnerability of coastal marine species. Research performed as part of this project will test two specific hypotheses: (1) The relative influences of upwelling versus tides, as mediated by coastal geometry and structural complexity associated with rocky reefs and kelp forests act to create high local variability in physical conditions, at scales of 10s-1000s meters; and (2) Local variability in oceanographic conditions results in high local patchiness in the performance of sedentary marine organisms, providing for safe spaces in the face of escalating heat waves, hypoxia, and acidification, that have caused recent mass mortalities in multiple species across the California Current region. Integrated oceanographic-ecological field studies will be conducted along the coast of Baja California, Mexico, using green and pink abalone (*Haliotis fulgens*, *H. corrugata*) as model species. Complementary laboratory experiments will evaluate how different exposure regimes (frequency, intensity and duration of high temperature, and/or low dissolved oxygen and acidity events) may affect the demography and persistence of abalone populations under current and future environments. Coupled biophysical and population models will integrate results from the field and laboratory

experiments to understand how local variability in ocean conditions affects population dynamics over longer periods. The research will advance the understanding of factors affecting the resilience coastal species by (1) ascertaining how large-scale oceanographic phenomena manifest in ocean conditions (dissolved oxygen, acidity, temperature) at local scales that are most relevant to coastal marine ecosystems and (2) determining the effects of current, and expected future, ocean conditions and variability on important marine species.

[[table of contents](#) | [back to top](#)]

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1736830

[[table of contents](#) | [back to top](#)]