

# Density by depth range of purple sea urchins along the California coast, 37.9 to 39.3 N: Andrew Molean State Park to Manchester State Park from 2005-2014 (CHIPS project)

Website: <https://www.bco-dmo.org/dataset/541036>

Version: 2014-11-24

## Project

» [Ecological & genetic recovery from a massive invertebrate die-off along the central coast of California \(CHIPS\)](#)

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## Dataset Description

This data set includes abundances of *Strongylocentrotus purpuratus* (purple sea urchin) and their burrows on transects along the California coast from 37.9 N to 39.3 N.

**Access Restriction:** Access to these data are restricted until publication of the associated manuscript, which is currently in review at PLOS ONE. [2015-02-05]

### Related Datasets:

[Henricia counts](#)

[Purple urchin density](#)

[Seastar and chiton counts - quadrats and swaths](#)

[CHIPS02 - seastar chiton urchin counts in quadrats](#)

## Methods & Sampling

Subtidal transects for *S. purpuratus*

SCUBA diver surveys have been conducted, between July and October of each year since 2005, as part of regular monitoring efforts by California Department of Fish and Wildlife. Pairs of divers counted urchins in 30 x 2 m transects in rocky reef habitats in three approximate depth classes at each site (2-10 m, 10-15 m and 15-20 m). Transects were placed at pre-selected random GPS coordinates within each depth stratum, and new random coordinate locations were generated for each survey year. At each site, divers initiated 18 transects in the shallow depth stratum and 9 transects in each of the two deeper strata. Ocean conditions impacted the number of transects completed at each site in any given survey year.

## Data Processing Description

### BCO-DMO Processing Notes:

- added conventional header with dataset name, PI name, version date, reference information
- renamed parameters to BCO-DMO standard
- added longitude column

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## Related Datasets

### IsRelatedTo

Dawson, M. N., Gaylord, B., Grosberg, R. K. (2022) **Comparison of recruitment dynamics in five intertidal marine invertebrates following mass mortality along the northeastern Pacific coastline in 2005 (CHIPS project)**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2015-08-06 doi:10.26008/1912/bco-dmo.562467.1 [[view at BCO-DMO](#)]

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## Parameters

Parameter	Description	Units
time_period	either before or after the 2011 algal bloom (HAB); range of years given	unitless
site	name of site surveyed	unitless
lat	latitude; north is positive	decimal degrees
lon	longitude; east is positive	decimal degrees
depth_range	depth range of subtidal transects	meters
depth_min	minimum depth of range	meters
depth_max	maximum depth of range	meters
count	Number of Strongylocentrotus purpuratus counted within depth transect	urchins
density	Density of Strongylocentrotus purpuratus within depth transect	number/m <sup>2</sup>

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## Deployments

### CalifCoast\_Gaylord\_CHIPS

<b>Website</b>	<a href="https://www.bco-dmo.org/deployment/528985">https://www.bco-dmo.org/deployment/528985</a>
<b>Platform</b>	shoreside Calif_shore
<b>Start Date</b>	2005-01-01
<b>End Date</b>	2014-05-15
<b>Description</b>	Various intertidal invertebrate studies.

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## Project Information

### Ecological & genetic recovery from a massive invertebrate die-off along the central coast of California (CHIPS)

**Coverage:** Northeastern Pacific (northern California) 38-39 N

This project is a Collaborative Research project funded by an NSF RAPID grant.

*Description from NSF award abstract:*

The potentially important role that larval dispersal may play in determining gene flow, distributions, and

population structure of marine invertebrates remains unclear despite many hundreds of descriptive comparisons of pelagic duration and population genetic structure. This lack of clarity suggests many factors may influence population genetic structure and their interactions may be complex. Difficulties studying these factors include (under normal circumstances) distinguishing local from exogenous recruitment and therefore the true distribution of dispersal distances. For example, experiments that normally could be undertaken to explore this issue are very small scale relative to the distances that many marine taxa may disperse.

In August 2011, a large-scale natural removal experiment was initiated along a 100 km stretch of the central California coast. The PIs propose to use this rare opportunity to clarify the effects of dispersal and species interactions on marine population genetic variation and community structure. They propose to study three species that suffered very high rates of mortality: an ecosystem engineer (*Strongylocentrotus purpuratus*, ~100% mortality), a keystone species (*Pisaster ochraceus*, ~10-70% mortality), and one of its competitors (*Leptasterias sp.*, ~100% mortality). Their objectives during this first year following the natural large-scale die-off are to:

- (1) quantify the abundance and distribution of the target species at sites across the impacted range and reference sites to the south and north,
- (2) develop and use genetic markers to identify the sources and dispersal distances of new recruits of *P. ochraceus*, *Leptasterias sp.*, and *S. purpuratus* that recolonize the impacted range, and
- (3) describe changes in abundance of these three species and their prey and competitors at sites throughout the impacted range.

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## Funding

Funding Source	Award
California Department of Fish and Wildlife (CDFW)	<a href="#">no_award_num</a>

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