Locations of fish surveys in the Monterey and Carmel nearshore from 1999-2015 (Larval Dispersal in Kelp Rockfish project)

Website: https://www.bco-dmo.org/dataset/712843
Data Type: Other Field Results
Version: 1
Version Date: 2017-08-16

Project
» Integrative evaluation of larval dispersal and delivery in kelp rockfish using inter-generational genetic tagging, demography and oceanography (Larval Dispersal in Kelp Rockfish)

Program
» Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO)

Contributors	Affiliation	Role
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Abstract
This dataset contains locations for fish surveys conducted for the project on Larval Dispersal in Kelp Rockfish.

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Coverage

Spatial Extent: **N**:36.641622 **E**:-121.893 **S**:36.508207 **W**:-121.981813
Temporal Extent: 2013 - 2016

Methods & Sampling

Sampling consists of visual surveys of the number and size of all non-cryptic fishes by SCUBA divers. Surveys are conducted at sites distributed throughout the study region (Carmel Bay and southern Monterey Bay). Each sample site is divided into four "zones" (by depth - 20m, 15m, 10m, 5m - or from offshore to inshore at sites with little depth variation) to assure that samples are distributed across the face of a reef from inshore to offshore. Where possible, fish are counted on 12 transects per site (defined as a fixed stretch of coastline, occupying approximately 500m). Each "transect" includes a 2m x 2m x 30m "bottom" transect and a "mid-water" transect.

Data Processing Description

BCO-DMO Processing Notes:
- added conventional header with dataset name, PI name, version date
- modified parameter names to conform with BCO-DMO naming conventions
- blank values replaced with no data value 'nd'

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Data Files

File
locations.csv (Comma Separated Values (.csv), 20.15 KB) MD5:cf8201459118e03f67ccfb0076992240 Primary data file for dataset ID 712843

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Related Publications

Baetscher, D. S., Anderson, E. C., Gilbert-Horvath, E. A., Malone, D. P., Saarman, E. T., Carr, M. H., & Garza, J. C. (2019). Dispersal of a nearshore marine fish connects marine reserves and adjacent fished areas along an open coast. Molecular Ecology, 28(7), 1611–1623. doi:10.1111/mec.15044
Results

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Related Datasets

IsSupplementedBy

Carr, M., Tinker, T. (2021) **Site code key for kelp forest community data collected along the coast of Monterey and Carmel, CA from 1999-2015 (Kelp Forest Resilience project).** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2017-08-16 doi:10.26008/1912/bco-dmo.661175.1 [view at BCO-DMO]

IsSupplementTo

Carr, M., Garza, J. C., Edwards, C. (2018) **Rockfish microhaplotype sequence accessions from samples near Carmel and Monterey Bays, CA, 2013-2016 (Larval Dispersal in Kelp Rockfish project).** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2018-02-27 http://lod.bco-dmo.org/id/dataset/684944 [view at BCO-DMO]

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Parameters

Parameter	Description	Units
Waypoint_ID	waypoint identifier	unitless
lon_DD	longitude; east is positive	decimal degrees
lat_DD	latitude; north is positive	decimal degrees
Notes	comments	unitless

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Instruments

Dataset-specific Instrument Name	
Generic Instrument Name	GPS receiver
Generic Instrument Description	Acquires satellite signals and tracks your location. This term has been deprecated. Use instead: https://www.bco-dmo.org/instrument/560

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Deployments

Carr_1999

Website	https://www.bco-dmo.org/deployment/661099
Platform	Long Marine Lab UCSC
Start Date	1999-09-22
End Date	2015-07-24
Description	Sites of Kelp Forest Resilience project. Nearshore waters of southern Monterey Bay and Carmel Bay, California. 36 N, 121 W.

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Project Information

Integrative evaluation of larval dispersal and delivery in kelp rockfish using inter-generational genetic tagging, demography and oceanography (Larval Dispersal in Kelp Rockfish)

Website: http://research.pbsci.ucsc.edu/eeb/rclab/kelp-rockfish-pbt-project/

Coverage: Monterey Bay and vicinity

Description from NSF award abstract:
The spatial structure and dynamics of coastal marine fish populations are strongly influenced by the transport

and recruitment of larvae. However, the scale and patterns of larval dispersal are among the most difficult demographic parameters to quantify in marine systems, due to the inability to tag and track the movement of larvae. In particular, the extent of local retention of larvae versus regional dispersal to other locations and populations is currently a hotly debated topic in the field of marine ecology and has profound implications for the design and effectiveness of Marine Protected Areas (MPAs). The research will identify patterns of larval dispersal and use those patterns to test predictions of dispersal generated by state-of-the-art circulation models.

The PI team brings together ecologists, geneticists, statisticians, and oceanographers with expertise in population demography and field sampling, mark/recapture data from genetic tags, and empirical and model-based evaluation of oceanographic processes to answer the following questions:
1. Do observed patterns of dispersal and connectivity of larval kelp rockfish correspond to patterns predicted by high spatial resolution regional ocean circulation models? Model predictions will be tested empirically using larval settlement samples. Parentage analysis will be used to verify the occurrence of larvae derived from genetically tagged source populations.
2. Is there evidence for local retention of larval kelp rockfish within the study area? To test the hypothesis that local retention of juvenile kelp rockfish from source populations is greater than expected by existing larval transport models, the PIs will compare the proportion of recruits that are genetically identified to have been produced from within three focal sites with the proportion of larval production that was tagged in those sites.
3. Is the relative recruitment of recently settled kelp rockfish to focal sites in the study region proportionate to the relative larval production of those focal sites? The PIs will compare the proportion of tagged recruits with the proportion of larval production generated from tagged adults at varying spatial scales. They will use goodness of fit models to compare expected and observed connectivity matrices under varying hypotheses of larval dispersal. Alternatively, if the relative contribution of focal sites to larval replenishment of themselves, one another, and more distant populations is disproportionate to their relative production, can this discrepancy be explained by oceanographic processes that could facilitate particular trajectories of larval dispersal?

To determine if differences in self recruitment and connectivity can be attributed to local oceanographic features, the PIs will examine spatial and temporal correlations between these features and the spatial distribution and timing of recruitment.

Related websites:
http://piscoweb.org
http://research.pbsci.ucsc.edu/eeb/rclab/kelp-rockfish-pbt-project/ (broken link)
http://rockfish.ucsc.edu/
http://oceanmodeling.ucsc.edu

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Program Information

Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO)

Website: http://www.piscoweb.org/

Coverage: West coast of North America from Mexico to Alaska

The Partnership for Interdisciplinary Studies of Coastal Oceans is a long-term ecosystem research and monitoring program established with the goals of:

- understanding dynamics of the coastal ocean ecosystem along the U.S. west coast
- sharing that knowledge so ocean managers and policy makers can make science based decisions regarding coastal and marine stewardship
- producing a new generation of scientists trained in interdisciplinary collaborative approaches

Over the last 10 years, PISCO has successfully built a unique research program that combines complementary disciplines to answer critical environmental questions and inform management and policy. Activities are conducted at the latitudinal scale of the California Current Large Marine Ecosystem along the west coast of North America, but anchored around the dynamics of coastal, hardbottom habitats and the oceanography of

the nearshore ocean – among the most productive and diverse components of this ecosystem. The program integrates studies of changes in the ocean environment through ecological monitoring and experiments. Scientists examine the causes and consequences of ecosystem changes over spatial scales that are the most relevant to marine species and management, but largely unstudied elsewhere.

Findings are linked to solutions through a growing portfolio of tools for policy and management decisions. The time from scientific discovery to policy change is greatly reduced by coordinated, efficient links between scientists and key decision makers.

Core elements of PISCO are:

- Interdisciplinary ecosystem science
- Data archiving and sharing
- Outreach to public and decision-making user groups
- Interdisciplinary training
- Coordination of distributed research team

Established in 1999 with funding from The David and Lucile Packard Foundation, PISCO is led by scientists from core campuses Oregon State University (OSU); Stanford University's Hopkins Marine Station; University of California, Santa Cruz (UCSC); and University of California, Santa Barbara (UCSB). Collaborators from other institutions also contribute to leadership and development of PISCO programs. As of 2005, core PISCO activities are funded by collaborative grants from The David and Lucile Packard Foundation and the Gordon and Betty Moore Foundation. Core support, along with additional funding from diverse public and private sources, make this unique partnership possible.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1260693

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