

Weekly survey of fish sold by the roadside in Moorea, French Polynesia in 2014 and 2015 (Coral reef fishery project)

Website: <https://www.bco-dmo.org/dataset/709963>

Data Type: Other Field Results

Version: 1

Version Date: 2017-08-05

Project

» [Adaptive Capacity, Resilience, and Coral Reef State Shifts in Social-ecological Systems](#) (Coral reef fishery)

Program

» [Coastal SEES \(Science, Engineering and Education for Sustainability NSF-Wide Investment\)](#) (Coastal SEES)

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Abstract

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Table of Contents

- [Coverage](#)
- [Dataset Description](#)
 - [Methods & Sampling](#)
 - [Data Processing Description](#)
- [Data Files](#)
- [Parameters](#)
- [Deployments](#)
- [Project Information](#)
- [Program Information](#)
- [Funding](#)

Coverage

Spatial Extent: Lat:-17.481373 Lon:-149.842572

Temporal Extent: 2014-06-15 - 2015-11-22

Dataset Description

This dataset includes the results of a survey on fish sold by the roadside in Moorea, French Polynesia, administered in 2014-2015 at Papetoi, Haapiti, and Afareaitu.

Methods & Sampling

Each Sunday morning from June 2014 through November 2015, an observer surveyed fish being sold along the roadside on the island of Moorea. On each survey date, the observer drove along the ring road which circles the islands along the shoreline, stopping to interview anyone selling fish by the road. With the

permission of the seller, the observer photographed the fish for sale, which were typically presented on strings hanging from large racks. The observer also asked a series of questions to the seller about how the fish were caught.

Participation in this survey was voluntary, and so the catch reported here does not represent a complete sample of fish being sold by the roadside. A single observer performed all surveys, so a few Sundays in this period were not sampled because of logistical constraints

Fish in each photograph were identified to the highest taxonomic resolution possible, often to species but usually at least genus. The size of each fish was estimated by drawing a line from nose to tail and then comparing the length of that line to the length of a 0.5 m sizing bar that was included in each photograph. Image analyses were performed in the computer program "imageJ" (Rasband, NIH) and species identities and sizes have been merged together with the survey responses of the fish sellers in the data set provided.

Data Processing Description

Data have been inspected and outliers checked. The location_sold variable has been standardized to the level of an administrative commune (location_caught remains in the form that the seller reported it). Fish that could not be identified at least to family have been omitted from the data.

BCO-DMO Processing notes:

- added conventional header with dataset name, PI name, version date
- modified parameter names to conform with BCO-DMO naming conventions
- replaced blank cells with nd (no data)
- removed apostrophes and replaced spaces with underscores
- converted date format from mm/dd/yy to yyyy/mm/dd

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

Data Files

File
roadside_survey.csv (Comma Separated Values (.csv), 1.23 MB) MD5:23b00c9324036d51c1eb3e233c4e2f92
Primary data file for dataset ID 709963

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

Parameters

Parameter	Description	Units
survey_event	Serial number identifying the survey event (a rack of fish being photographed on a particular day)	unitless
date	Date of sampling event; YYYY/MM/DD	unitless

genus	Genus of fish observed; Some fish were identified only to family. In such cases the family name was entered in the genus column with the suffix _fam. So Carangidae_fam indicates the fish was in the family Carangidae but the genus could not be identified from the photo. Some fish could only be identified as one of two or more genera. In these cases the following codes were used: Acan_Cten = either Acanthurus or Ctenochaetus; Calo_Scar = either Calotomus or Scarus; Chlor_Scar = either Chlorurus or Scarus	unitless
species	Species of fish observed (or "unidentified if species unknown")	unitless
length	Length of fish (nose to tail) in cm. Blank cells indicate that length could not be obtained (typically because the fish was obscured)	centimeters
location_sold	The location of the seller (Community within the island of Morea)	unitless
location_caught	The location of the seller reports the fish were caught	unitless
habitat_caught	The primary habitat in which the seller reports the fish were caught	unitless
gear_1	Primary gear used in fishing	unitless
gear_2	Additional gear used (if any)	unitless
gear_3	Additional gear used (if any)	unitless
boat_type	Boat type	unitless
motor	Does the boat have a motor? (Y/N)	unitless
crew	Number of crew on the fishing trip	unitless
departure_time	Time fishing started; HH:MM	unitless
hours_fishing	Duration of fishing	hours
is_seller_the_fisher	Identifies whether the person being interviewed caught the fish (Y/N)	unitless

gender	Gender of seller	unitless
average_fishing_days_per_week	Days the seller reports fishing per week on average	days

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

Deployments

Lauer_2014

Website	https://www.bco-dmo.org/deployment/676116
Platform	Moorea
Start Date	2014-01-01
End Date	2015-12-31

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

Project Information

Adaptive Capacity, Resilience, and Coral Reef State Shifts in Social-ecological Systems (Coral reef fishery)

Website: <http://lauer.sdsu.edu/sees/index.html>

Coverage: Moorea, French Polynesia; 17S, 150W

Description from NSF award abstract:

This project will assess resilience in a coral reef social-ecological system. Over the last several decades, reefs around the Pacific island of Mo'orea, French Polynesia, have consistently reassembled to coral dominance after being impacted by major perturbations. Resilience to disturbance is a key component of coastal sustainability, as it maintains the reefs in a state capable of providing critical ecosystem services. The resilience of reefs in Mo'orea is particularly striking, given that coral reefs in many regions have experienced abrupt and potentially irreversible shifts from a coral dominated state, with complex structure and a rich fish community, to a macroalgae dominated state with fewer fish. This project will contribute to more sustainable management of coral reefs by identifying pathways that confer resilience, highlighting emerging vulnerabilities, and suggesting policy initiatives in areas such as integrated coastal zone management and sustainable development planning. An integrative social and natural science approach will be employed that addresses place-based questions about resilience, sustainability and adaptive capacity of coastal systems. A framework will be developed for addressing more complex questions about the Moorea social-ecological system, and this will provide a model for the integration of ecology and social science in other coastal systems. Research results will be disseminated broadly through stakeholder workshops, and graduate students will be engaged in all aspects of the work.

While the dynamics of state shifts are fundamental to understanding the resilience and long-term sustainability of coral reef social-ecological systems, the interplay between anthropogenic and ecological feedbacks is poorly understood in these systems. Systems with high population densities, widespread coastal development and intense resource exploitation typically show declines in the critical adaptive capacities that underpin resilience to local environmental variability. However, Moorea has maintained its resilience despite rapid development. This project will explore how the complex feedbacks in the Mo'orea coral reef social-ecological system maintain its capacity to withstand large-scale ecological disturbances. The study will involve interdisciplinary collaboration between social and natural scientists. Anthropological fieldwork focusing on the human dimensions of coral reef use, traditional governance, and indigenous ecological knowledge, will document how local communities perceive, respond to, and manage changes in ecosystem state. Ecological models will describe the dynamics of

coral, algal and fish communities, including the feedbacks that make these communities susceptible to abrupt shifts in ecosystem state. These components will be integrated in a systems modeling framework that includes feedbacks both within and between the human and natural communities, quantitatively modeling how humans change their behavior as a function of ecosystem state and how the ecosystem is affected in turn by human activities. A key objective is to bridge the gap between data collected by social scientists and the dynamic ecosystem models developed by ecologists, as this is crucial to understanding the resilience and long-term sustainability of coastal social-ecological systems worldwide.

This project is supported under NSF's Coastal SEES (Science, Engineering and Education for Sustainability) program.

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

Program Information

Coastal SEES (Science, Engineering and Education for Sustainability NSF-Wide Investment) (Coastal SEES)

Website: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504816

Coverage: US

Coastal SEES is focused on the sustainability of coastal systems. For the most recent solicitation, NSF defines coastal systems as the swath of land closely connected to the sea, including barrier islands, wetlands, mudflats, beaches, estuaries, cities, towns, recreational areas, and maritime facilities; the continental seas and shelves; and the overlying atmosphere.

Humans benefit from their use of coastal environments for enjoyment, dwelling, food, industry, and commerce, and benefit from the myriad of ecosystem services that coastal environments provide. However, human activities often result in physical, chemical, and ecological alterations that influence and interact with natural state and variability, over a range of spatial and temporal scales. A major challenge is to understand the dynamics of this coupled human-natural system in order to inform societal decisions about the uses of coastal systems, including for economic, aesthetic, recreational, research, and conservation purposes.

Scientific understanding is foundational and must include an understanding of reciprocal feedbacks between humans and the natural environment; how people and organizations interpret, assess, and act upon scientific and other evidence; and how they weigh these interpretations against other interests to influence governance and decision-making. Thus, coastal sustainability relies on broad and intimately interconnected areas of scholarship about natural and human processes. Coastal SEES projects will be expected to lead to generalizable theoretical advances in natural sciences and engineering while, at the same time, integrating key aspects of human processes required to address issues of coastal sustainability.

Detailed information about the SEES program is available from NSF (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504707).

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

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1325652
NSF Division of Ocean Sciences (NSF OCE)	OCE-1325554

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