

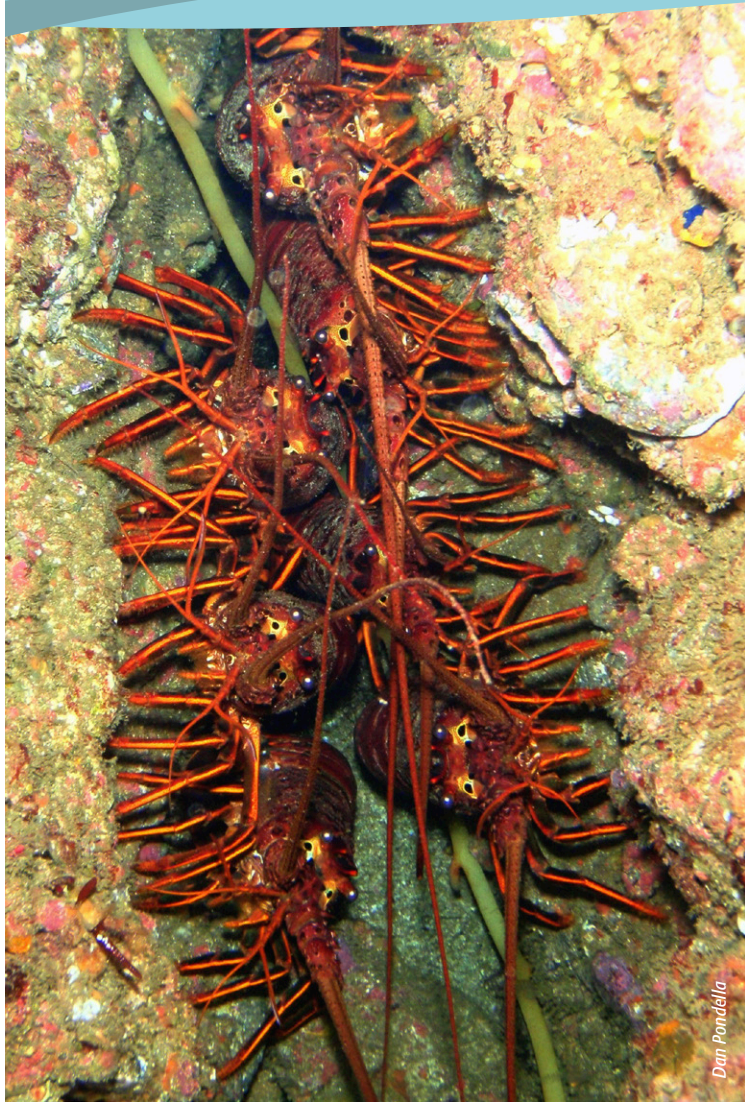
Baseline Highlights from California's South Coast Spiny Lobster Populations

Monitoring Spiny Creatures of the Night

About This Snapshot Report

This report highlights some key scientific findings from the California Spiny Lobster Project, one of ten baseline projects in California's South Coast region.¹ This project characterized California spiny lobster populations at selected locations around the time of marine protected area (MPA) implementation. Facts and figures are derived from the project's [peer-reviewed technical report](#),² which can be found, along with the related data, at [OceanSpaces.org](https://oceanspaces.org).

Snapshot Report Vol 5



Dan Pandella



Amelia Harrington

Collaborative Research

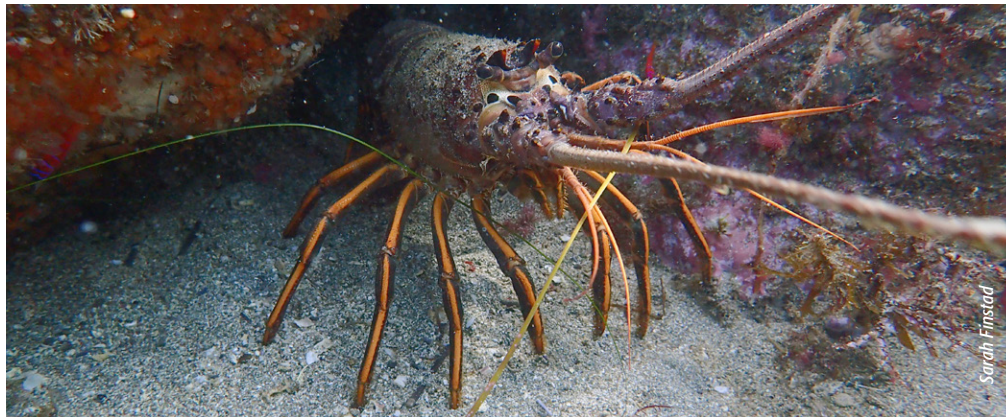
As a part of the South Coast Lobster Research Group (SCLRG), scientists, resource managers, fishermen, and volunteers worked together from 2011–2013 to provide baseline information on the status of spiny lobsters in the region. Five study areas were chosen to reflect the most productive fishing grounds with historical records of fishing effort. SCLRG collected field data from May–September in two ways: 1) tag-recapture studies for measurements of abundance, size, and movement (2011–2013), and 2) SCUBA-based surveys to explore habitat preferences and sheltering behavior (2012–2013). They also analyzed fishing effort before and after MPA implementation.

Spiny Creatures of the Night

California spiny lobsters ("spiny lobsters") are key members of marine ecosystems in the South Coast, serving critical ecological roles and supporting important commercial and recreational fisheries. These large, nocturnal invertebrates shelter in rocky crevices during the day and come out at night to hunt in kelp forests, rocky intertidal zones, seagrass beds, estuaries, and soft-bottom subtidal ecosystems. Spiny lobsters eat sea urchins and other benthic invertebrates, and are in turn eaten by large fishes and marine mammals.



The South Coast Lobster Research Group surveyed inside and outside these MPAs.



A Broad Range of Habitat Preferences

Spiny lobsters' habitat preferences were highly variable between the study areas, and researchers did not find a single habitat characteristic or combination of characteristics that could be used to successfully predict the presence of lobsters. However, they did observe a sharp decline in abundance below 12m (40ft), despite the presence of similar habitat across depths and greatest fishing pressure in shallower waters.

Researchers detected only a small amount of movement across MPA boundaries at all study areas except Point Vicente SMCA, where no movement was observed. This result was expected since lobsters have small home ranges.

Spiny lobster aggregation behavior may serve to protect them from predators. Locations with greater densities of large predatory fish were associated with larger aggregations of sheltering lobsters. Researchers observed spiny lobsters sheltering in crevices alone and in groups; the proportion of lobsters sheltering alone varies among study areas. Researchers expect that spiny lobster aggregation size and frequency could change as predatory fish species respond to MPAs.



Changes in Commercial Fishing

When South Coast MPAs were implemented, some lobster fishing grounds were closed to commercial fishing. While some fishermen relocated to adjacent fishing grounds, others were displaced. The degree of change before and after implementation varied by study area, with the greatest impacts at Point Vicente and Laguna Beach study areas. Despite the displacement of some fishermen, when researchers analyzed landings and effort data for the years immediately preceding and following MPA implementation (2010/2011 and 2012/2013, respectively), they found an increase in both landings and effort, with no substantial change in regional catch-per-unit-effort.

Trends by Region and Season

Based on the tag-recapture studies, spiny lobsters were smaller but more abundant in the southern part of the region, and larger but less abundant in the northern part of the region. Males were often more abundant in study traps than females in the late spring and early summer, while females were equally abundant in study traps from mid-summer to early fall, after spawning.

Issues of Size

Growth rates were variable throughout the region, averaging 3.22mm/yr. Spiny lobsters at Laguna Beach exhibited a higher growth rate than at other sites, and males grew faster than females at Laguna Beach and Swami's study areas. The Laguna Beach study area also had an unusually high number of larger lobsters, where legal-sized lobsters made up approximately 50% of the catch.

Across all study sites, SCLRG researchers observed reproductively mature spiny lobsters at a much smaller size than other previous studies. This surprising finding is likely due in part to the design of the study traps, which facilitated the retention of smaller lobsters more effectively than standard commercial traps used in most other studies. It is also possible that this reflects a change in lobster reproductive behavior.

Researchers noted that it is too soon to detect impacts on lobster size and abundance resulting from MPA implementation because spiny lobsters have relatively slow growth rates and they do not reproduce until they are 3–7 years old.

About South Coast MPA Baseline Monitoring

California Ocean Science Trust, California Department of Fish and Wildlife (CDFW), California Ocean Protection Council (OPC), and California Sea Grant coordinated and collaborated in implementation of baseline monitoring, which was funded by OPC. Results from this work will inform CDFW management recommendations to the California Fish and Game Commission from the first five years of MPA implementation in the region, anticipated in 2017. MPA monitoring results can also inform the management of fisheries, water quality, and climate change.

Footnotes

1. To learn more about the spiny lobster baseline monitoring project, visit <http://oceanspaces.org/sc-spiny-lobster>
2. Kevin A. Hovel, Douglas J. Neilson, Ed Parnell. 2015. Baseline characterization of California spiny lobster (*Panulirus interruptus*) in South Coast marine protected areas. California Sea Grant. San Diego, CA 73pp. goo.gl/DKySz1