Marine Protected Area Long-term Monitoring Program

Monitoring & Evaluation of Kelp Forest Ecosystems

in California's Marine Protected Area Network

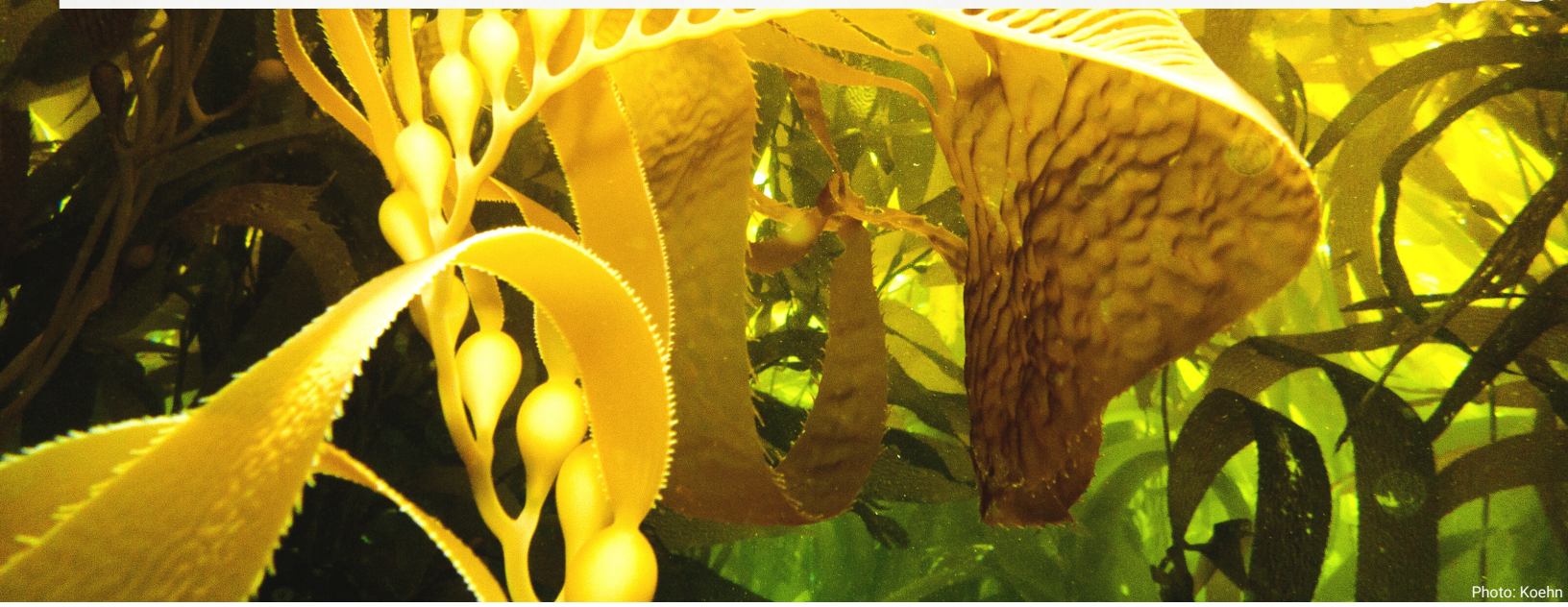


Photo: Koehn

MPA Monitoring

California's Marine Protected Area (MPA) Network is approaching its first-ever 10-year review. California will lean heavily on its MPA monitoring program to show progress towards meeting the goals of the Marine Life Protection Act, the founding legislation of the MPA Network. Researchers and community scientists have been tracking California's marine ecosystems since MPA implementation, in some cases as far back as 2007. Learn more about this MPA monitoring program below and read the full technical report on California Sea Grant's website.

Program Overview

Kelp forests and shallow rocky reefs represent some of California's most iconic nearshore marine ecosystems. They support ecologically, economically, and culturally important native species and provide valuable ecosystem services including tourism and nearshore recreational and commercial fisheries. This project compared historical biological and environmental data with new surveys to determine if any trends could be seen in kelp forests and shallow rocky reefs in individual MPAs and across MPA regions.

Partner Institutions

UC Santa Cruz, Cal Poly Humboldt, UC Los Angeles, UC Santa Barbara, Reef Check Foundation, Occidental College

Access all of California's MPA data: California MPA Monitoring Portal.

Photo: Koehn

Program Highlights

6
partner organizations or institutions involved

37
years of aerial kelp canopy data

308
Reef Check volunteer divers in 2019

> 123,000
square meters of reef surface surveyed for fish

172
sites inside and outside of MPAs monitored statewide

CALIFORNIA MARINE PROTECTED AREAS

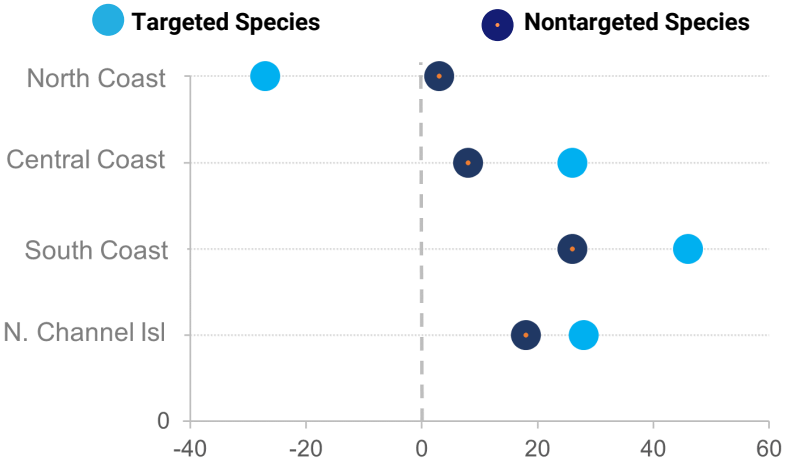
Sea Grant California

Key Findings from MPA Monitoring

Kelp Forest Ecosystems

1 More Monitoring, More Results

The **strongest** MPA effects were seen in the Northern Channel Islands and South Coast MPAs, where **significant monitoring** has occurred. Monitoring is limited in North Coast MPAs because they are difficult to access for SCUBA surveys, and therefore, no clear MPA effects were found in this region.



*Positive points= growth in MPA is higher than in reference site
Negative points= growth in reference site is higher than in MPA

Photo: Naomi Blinick

2 Regional Variability

No statewide trends emerged due to regional variability. MPA effects vary across species, biogeographic regions, MPAs, and time periods. Analyses across **regional scales** proved **more insightful** than combined statewide analyses.

3 Protections for Targeted Species

Heavily fished species, particularly those in Southern California, showed greater responses to protection. These include several species that have been previously documented to respond positively to MPA protections such as California sheephead, kelp bass, and California spiny lobster.

California sheephead

Kelp bass

California spiny lobster

4 More Resilient Kelp

Kelp in MPAs were **more resilient** to marine heatwaves. While kelp canopy monitoring from Landsat remote satellite sensing did not detect a strong effect of MPA protection on average kelp canopy area, MPAs showed **higher kelp abundance** during and after the 2014-2016 marine heatwave than non-MPA sites.

For more information about MPA long-term monitoring and the Decadal Management Review, please visit:

- Monitoring & Evaluation of Kelp Forest Ecosystems in the MLPA MPA Network technical report
- California Sea Grant website to access all 7 MPA long-term technical reports
- CDFW's MPA Decadal Management Review webpage