Marine Protected Area Long-term Monitoring Program

Sandy Beach and Surf Zone Ecosystems

across California's MPA Network

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

Sandy beaches and surf zones are dynamic ecosystems at the boundary of land and sea which support a diversity of animals. Harvested species of surf zone fish may benefit directly from MPAs. Beaches are also ecologically linked to nearshore kelp forests and shallow rocky reefs that provide drift algae or wrack that fuels beach food webs. The project team evaluated the effects of MPA protection on understudied beach and surf zone ecosystems. The project team conducted the first-ever statewide survey of surf zone fish using beach seines and video cameras.

Partner Institutions

UC Santa Barbara, Greater Farallones Association, Cal Poly Humboldt, Point Blue Conservation Science, Moss Landing Marine Laboratories, San Francisco State University, California Department of Fish and Wildlife

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

Program Highlights

3x6
fish were surveyed 3 times per year using 6 beach seines and surf BRUVs per survey

154
surf zone fish surveys conducted

26
MPA and reference sites surveyed for surf zone fish

252
beach bird and kelp surveys conducted

7
months of consistent bird and kelp surveys between August 2019 and February 2020

36
MPA and reference sites surveyed for birds, wrack and people

CALIFORNIA MARINE PROTECTED AREAS

Sea Grant California

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

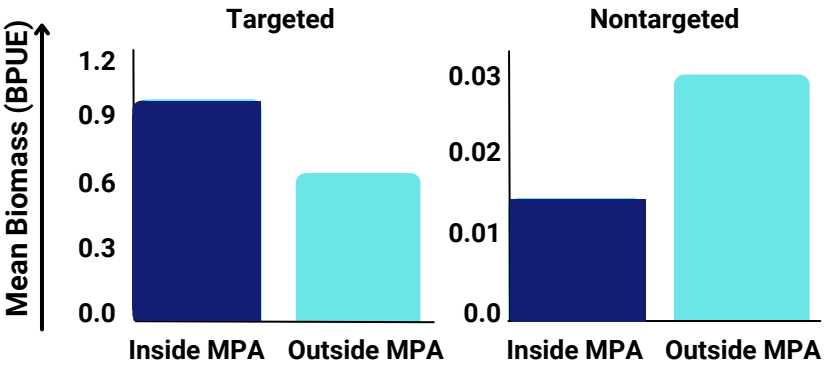
CALIFORNIA OCEAN PROTECTION COUNCIL

Key Findings from MPA Monitoring

Sandy Beach and Surf Zone Ecosystems

1 Surf Zone Fish

Overall biomass of targeted surf zone fish was **significantly higher** in MPAs in seine surveys. This pattern was not found for nontargeted fish. It is important to note that MPA responses of surf zone fish **differed between methods**, beach seines and baited remote underwater videos (BRUV), which survey different water depths. Using BRUVs, the abundance of fishes was **greater in MPAs**, while beach seine surveys did not show an MPA effect in abundance.



2 More Species in MPAs

Species richness, or the number of species in a given area, was **significantly greater** in MPAs than in reference sites when using baited remote underwater video survey methods. However, using seine survey methods, the same trend was not detected. This type of method comparison is **critical** as managers and scientists decide on appropriate monitoring tools.

3 Shorebirds like Wrack

Kelps and other algae that wash ashore are called **wrack**; wrack can provide vital food and habitat on beaches for the intertidal prey of shorebirds. Wrack was found to be **positively correlated** with abundance and species richness of shorebirds. Shorebirds were **more abundant** at MPA beaches overall, but those differences were not significant. Where baseline information was available (21 sites), **major declines** in abundance of shorebirds were evident at five MPA and four reference beaches.

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

- Sandy Beach and Surf Zone Ecosystems technical report
- California Sea Grant website to access all 7 MPA long-term technical reports
- CDFW's MPA Decadal Management Review webpage