Integrated Ocean Observing Systems
across California’s MPA Network

Program Highlights

The California MPA Dashboard App

- creates a curated and current snapshot of ocean physics, biogeochemistry, biology, and ecology, and models future scenarios.
- incorporates environmental and biological data derived from satellites and advanced remote sensing tools like moorings, buoys, radar, and sensors.
- features up-to-date datasets to help resource managers make informed decisions based on a confluence of the latest research and historical data.

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

This project uses satellite data and other ocean observing systems to develop data products for analyzing relationships between large-scale oceanographic phenomena and conditions at MPA sites statewide. Researchers on this project are working with the other researchers conducting long-term MPA monitoring projects to integrate physical data (e.g., temperature, pH) with habitat data into data products referenced above. The research team created a new California MPA Dashboard, which streamlines complex data to help researchers, managers, and decision makers assess MPAs from regional to statewide scales.

Partner Institutions

Monterey Bay Aquarium Research Institute, Scripps Institution of Oceanography, UC San Diego, UC Santa Cruz, Axiom Data Science, National Oceanic and Atmospheric Administration-Southwest Fisheries Partner Institutions

Access all of California's MPA data: California MPA Monitoring Portal.
To understand the role that MPAs may play in supporting ecosystem resilience in the face of climate change, the project team assessed the projected change in MPAs and bioregions in oceanographic variables (e.g. sea surface temperature, dissolved oxygen). Results showed that California MPAs protected higher percentages of potential ‘climate refugia’ from 1980-2099 compared to overall state waters, but refugia were often not spatially persistent.

The EcoCast and California-Harmful Algae Risk Mapping (C-HARM) risk maps show that the frequency, persistence and spatial extent of harmful algal blooms (HABs) have increased over recent years and that these areas coincide with ecologically important migrating species.

On a monthly basis, the project team calculated connectivity of virtual larvae between MPAs in Monterey Bay. Most MPAs in the region were well-connected during the study period, especially when moving from southern to northern MPAs. Modeled adult fish spillover from MPAs to other non-MPA nearshore regions was also high.

For more information about MPA long-term monitoring and the Decadal Management Review, please visit:
- Integrated Ocean Observing Systems technical report
- California Sea Grant website to access all 7 MPA long-term technical reports
- CDFW’s MPA Decadal Management Review webpage