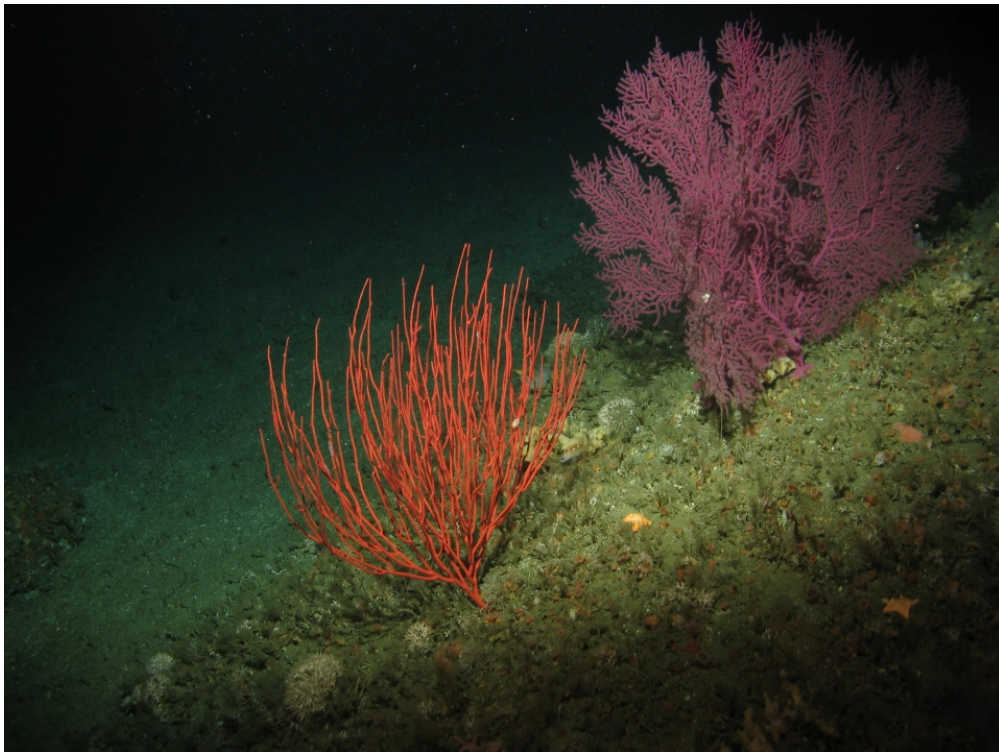


NEWS > ENVIRONMENT

A refuge within a refuge: Corals, sponges flourish in marine protected areas



Scientists have found that marine protected areas – regions off of California’s coast with fishing restrictions – contain more structure-forming invertebrates than non-protected areas. (Photo provided by Marine Applied Research and Exploration)

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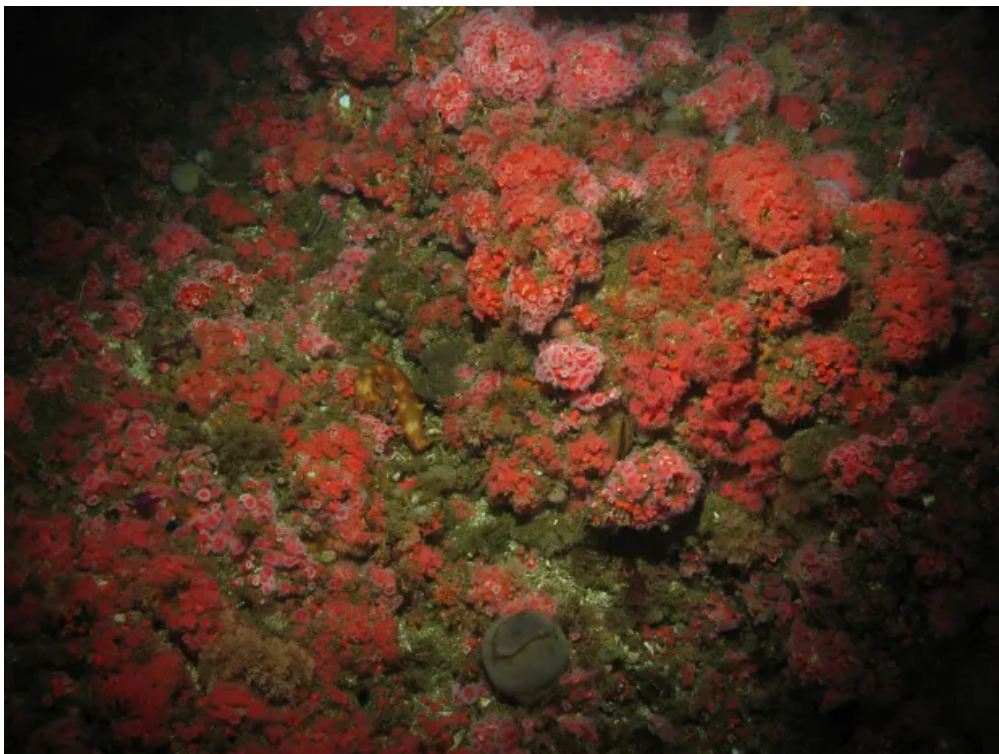
PUBLISHED: May 7, 2022 at 10:41 a.m. | UPDATED: May 7, 2022 at 10:43 a.m.



Deep below the Monterey Bay's watery surface lies a rainbow of sponges and corals. Now, researchers have discovered that these still and silent creatures benefit from a state law originally designed to protect fish.

Sponges and corals form intricate branches and crevices, providing a living habitat for fish, and making them a vital part of the underwater ecosystem. Because of their elaborate formations, these spineless sea creatures are called structure-forming invertebrates.

Scientists recently finished conducting a long-term monitoring project and found that marine protected areas – regions off of California's coast with fishing restrictions – contain more structure-forming invertebrates than non-protected areas.



A still image from remotely operated vehicle footage analyzed in the study. (Photo provided by Marine Applied Research and Exploration)

“When protected areas were made, they probably were made with fishing in mind,” said Amanda Kahn, an ecologist at the Moss Landing Marine Laboratories and San Jose State University who led the invertebrate portion of the report. “We didn’t know if protecting the fish species would have an effect on the invertebrates.”



In 1999, California passed the Marine Life Protection Act. The law protects ocean species and habitats through a network of marine protected areas with restrictions on human activities.

“It’s akin to thinking about a national park or a state park,” Kahn explained. “In this case, it’s a protected space that’s underwater.” Today, 124 marine protected areas run along California’s coastline.



Amanda Kahn, an ecologist at the Moss Landing Marine Laboratories and San Jose State University, looks at a preserved invertebrate from the Moss Landing Marine Labs’ museum of research specimens. (McKenzie Prillaman — Special to the Herald)

Scientists regularly study these regions – which cover various depths – to learn how to best preserve marine ecosystems. In the report Kahn and her colleagues wrote, the researchers studied a zone called the mid-depths, which is 100- to 300-foot deep.

The mid-depths are somewhat overlooked in marine research because the zone is difficult to examine, according to Kahn. It’s a bit too deep for divers but too shallow for remotely operated vehicles to take pictures and videos.

For this recent report, Kahn and her team examined the ROV videos that do exist from the mid-depths, which were captured between 2005 and 2019. They meticulously analyzed the sea life visible in nearly 70 marine protected areas and a comparable number of reference sites, geographically similar but unprotected regions of the ocean.

They found that, in general, marine protected areas were more densely populated with sponges and corals than the reference sites.

A caveat exists, though. “What we don’t see yet is whether their numbers were increasing since those protected areas were put into place,” Kahn said.



She thinks California's marine protected areas likely contained relatively larger amounts of structure-forming invertebrates when first set up. Sponges and corals can live for decades – one preserved coral displayed in the Moss Landing Marine Labs is estimated to be 400 years old. Therefore, Kahn doubts whether her study's timeframe was long enough to examine the population growth of structure-forming invertebrates.

However, the research team determined that while the sponges and corals may not be increasing in number, they're also not decreasing. This finding suggests that these species have been benefitting from living in protected regions of the ocean.



Still image from remotely operated vehicle footage analyzed in the study. (Photo credit: Marine Applied Research and Exploration)

“By protecting more fish, or by choosing areas where there are higher densities of fish,” Kahn said, “you are also protecting the corals and the sponges that grow there, which, because they're so long-lived, is a good, useful thing.”

Previous research shows that sponges and corals tend to attract more fish, likely because sponges and corals form homes for fish. Conversely, scientists aren't sure if these living habitats gain anything from the fish in return. Future research may explore the relationship between structure-forming invertebrates and fish and look at sponge and coral growth in California's marine protected areas.



Despite the uncertainties, Khan says her team's findings indicate that future ocean protection efforts could aim to protect areas with lots of structure-forming invertebrates. Because these living habitats tend to be associated with greater fish diversity and numbers, protecting areas abundant with sponges and corals would likely protect a large amount of fish.

The mid-depth long-term monitoring project was led by Rick Starr and co-collaborators Jenn Caselle, James Lindholm, Brian Tissot and Andy Laueremann. It was funded by the Ocean Protection Council.

For an audio version of this story that aired on KSQD community radio, visit <https://ksqd.org/corals-and-sponges-a-refuge-within-a-refuge/>.

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