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Fisheries

Metastudy finds large-scale marine protected areas boost tuna populations

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By Responsible Seafood Advocate

Large-scale marine protected areas boost tuna populations and catch rates, benefiting both ecosystems and fisheries, study finds

A new study **published in *Science* (https://www.science.org/doi/10.1126/science.adn1146)** shows that large-scale marine protected areas (LSMPAs) can effectively boost fish populations, particularly for highly migratory species like bigeye tuna.

The research, which analyzes publicly available data, found that catch rates for tuna have increased near recently established marine reserves, such as the Revillagigedo Archipelago off the coast of Mexico. The findings suggest that LSMPAs are large enough to provide meaningful protection for these vulnerable species, offering a promising tool for marine conservation efforts.

“In 2004, there was only one Large-Scale MPA in the world, the Galápagos Marine Reserve in Ecuador,” said John Lynham, lead author and a professor in the Department of Economics at UH Mānoa’s College of Social Sciences. “Today, there are more than 20, including Papahānaumokuākea in the Northwest

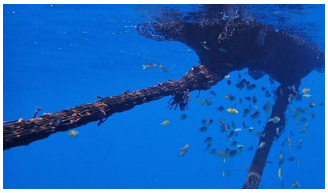
A new study shows that large-scale marine protected areas (LSMPAs) can effectively boost fish populations, particularly for highly migratory species like bigeye tuna. Photo by Hung Tran (https://www.pexels.com/photo/school-of-fish-in-water-3699434/).

Hawaiian Islands. Most of these protected areas are in waters where tuna fisheries operate. This means that we can now test, for the first time, the impact of these marine protected areas, especially on tuna species like ‘ahi and skipjack, which support a global industry worth over $40 billion.”

The study comes at a pivotal moment, as global efforts aim to protect 30% of the oceans by 2030, alongside the UN’s Biodiversity Beyond National Jurisdiction Agreement to conserve high seas biodiversity. The researchers analyzed data from nine LSMPAs across the Pacific and Indian Oceans, finding that these large marine reserves can aid tuna recovery and benefit global fisheries.

“We found that the spillover benefits, measured as the change in catch rates, are strongest just outside the boundaries of these MPAs and get stronger over time,” said Juan Carlos Villaseñor-Derbez, co-author and a professor at the University of Miami. “The effects were strongest for the MPAs that were heavily fished prior to protection and are now well-enforced.”

Can repurposing fish aggregating devices make MPAs more effective?



A new study suggests that fish aggregating devices could be repurposed to enhance marine protected areas (MPAs).

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The research revealed significant spillover benefits from LSMPAs, with catch rates increasing by 12 percent to 18 percent on average in waters near protected areas. Positive spillover effects were observed across all tuna species, ranging from 2 percent to 11 percent, with bigeye tuna showing the strongest benefits.

The study also found that nations actively engaged in conservation efforts are reaping the lion’s share of economic benefits. For instance, nearly 100 percent of the spillover benefits from the Revillagigedo protected area in Mexico flow directly to Mexican fishing vessels.

“While protected areas in Hawai‘i were not the main focus of this paper, our research also reveals that the Papahānaumokuākea Marine National Monument, the world’s largest no-fishing zone, has caused a 10 percent increase in bigeye tuna (‘ahi) catch rates near the monument, in line with a recent finding of a 13 percent increase by researchers from the University of Washington and the Western Pacific Regional Fisheries Management Council,” said Lynham.

“A unique aspect of this research is that we built a global database on tuna catch using only publicly available data,” said Villaseñor-Derbez. “Anyone in the world can download the same dataset we used and replicate our analysis. That hasn’t been possible with previous studies on large-scale MPA impacts.”

Read the full study (https://www.science.org/doi/10.1126/science.adn1146).

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