



ALLIANCE™

(<https://www.globalseafood.org>).



 Fisheries

Fisheries in Focus: Where does fishing effort go when an MPA is established?

7 October 2024

By Max Mossler

Sustainable Fisheries UW examines a recent paper that claims fishing effort is not simply displaced by protected areas



A school of bigeye trevally. Sustainable Fisheries UW examines a recent paper in PNAS that claims fishing effort is not displaced by marine protected areas. Shutterstock image.

One of the main criticisms of marine protected areas (MPAs) is that they move fishing effort rather than eliminate it. No longer allowed to fish in a particular area, fishermen simply fish harder outside the MPA, leading to little overall benefit to population abundance or catch.

A classic example is the Phoenix Islands Protected Area, a UNESCO World Heritage Site in the Southern Pacific Ocean. When it was established in 2015, it was the largest MPA in the world, mostly impacting tuna fisheries. However, **research showed** (<https://sustainablefisheries-uw.org/tuna-mpa-pipa/>), that tuna fishermen simply fished elsewhere and tuna catch stayed the same (it is worth noting that tuna populations were healthy before the MPA was established). Kiribati recently decided to reopen the MPA to tuna fishing after misguidedly losing out on a decade of fishing revenue.

However, **McDonald et al. 2024** (<https://www.pnas.org/doi/10.1073/pnas.2400592121>), a paper published July 2024 in PNAS claims that, when conditions are right, MPAs can reduce fishing effort. The results are worth unpacking.

Solving an MPA modeling problem

Until now, MPA models have generally assumed that, once an MPA is established, fishing effort either moves outside the MPA or disappears altogether. The truth is somewhere in between, and McDonald et al. 2024 set out to model it.

A comprehensive solution for the wild seafood supply chain.

- Crew rights
- Food safety
- Environmental responsibility

Best Seafood Practices

LEARN MORE >

(<https://bspcertification.org/>).

Using data from **Global Fishing Watch** and a machine learning algorithm, McDonald et al. 2024 built a predictive model designed to estimate how fishing behavior changes after an MPA is established.

Their main finding is that yes, some fishing effort disappears when an MPA is established, but how much depends entirely on where the MPAs are placed and no other variables, including size of the MPA, really matter:

Regardless of the network's objectives, how it was designed, the percentage of the ocean covered, or the forecast horizon, the key driver is the overlap of the proposed network with current fishing effort.



Fisheries in Focus: Marine protected areas don't help tuna population, new paper shows

Using stock assessment and fishing data, researchers find that the Phoenix Islands Protected Area did not meaningfully increase the tuna population.



Global Seafood Alliance

Two sides of the 30x30 coin

The finding that establishing MPAs in areas with high amounts of fishing will see more reduction in fishing effort than MPAs in areas with little fishing to begin with feels like a common-sense outcome, but the conservation implications are complicated.

On one hand, MPA advocates can point to MPA effectiveness at reducing fishing effort in high-fishing areas as evidence that MPAs work to reduce catch and potentially increase overall abundance. However, most of the world's large MPAs (or proposed large MPAs, i.e. the high seas) are in areas with little fishing effort, meaning the designation would do little to reduce fishing effort. Establishing MPAs in areas where fishing pressure is unsustainably high (or in other words, is experiencing overfishing) would certainly be effective, though.

Areas with sustainable fisheries like Alaska present a conundrum for 30×30 advocates who wish to see 30 percent of the ocean protected by the year 2030.

Establishing no-take areas in Alaska would reduce fishing effort, but what for aim? Alaska and the United States would take an economic hit while producing less food. Establishing MPAs in unfished areas of Alaska would move MPA coverage closer to the 30 percent goal, but would have no impact on the abundance of fish. The 30×30 campaign could easily be a 50×30 “success” by closing the roughly 50 percent of the global ocean that sees little to no fishing effort.

Using MPAs in fishery management is complicated. For fisheries where fishing is already sustainable, MPAs seem to be unnecessary for reducing fishing effort. However, when a fishery is experiencing overfishing, MPAs can be an effective tool to reduce fishing effort.

Reducing fishing effort is just one goal of MPA establishment, but it is generally the most salient in advocacy.

The future of MPA research looks brighter

McDonald et al. 2024 took an advanced approach to modeling fishing behavior in response to MPA establishment. MPA research no longer has to assume one of two extremes that fishing effort either moves or disappears. This will lead to better MPA research and hopefully more thoughtful MPA advocacy.

Author



MAX MOSSLER

Max Mossler is the managing editor of sustainablefisheries-uw.org and is an employee of the School of Aquatic and Fisheries Sciences at the University of Washington. His writing and analysis are independent of the Global Seafood Alliance and are published on the Advocate with his permission.

Copyright © 2024 Global Seafood Alliance

All rights reserved.