Fishing bans protect fish and don't harm fishing communities

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Fishing bans don't have to hurt fishing communities, according to a new

study led by Stanford researchers. The group tracked vessels during a short-lived trawling moratorium in the Adriatic Sea and found that fishers maintained their catch levels by fishing elsewhere. The findings suggest that such bans can protect overfished regions without hurting people's livelihoods and could influence efforts to protect other sensitive regions.

"Our findings demonstrate how even in areas where there's intense and complex use, it is possible for different parties to achieve success," said study co-author and Stanford marine biologist Fiorenza Micheli. The findings informed a European Union decision to extend the protection.

The study, published in *Frontiers in Ecology and Environment*, tracked fishing vessels through a common onboard technology, Automatic Identification System, that regularly transmits data as a way of preventing collisions. By tracking the boats, researchers found fishing vessels that complied with a one-year fishing ban maintained their catch levels by moving to other areas.

In addition to supporting more permanent protection in the Adriatic, the results hold promise for other highly exploited areas around the world where enforcement is challenging.

The Adriatic Sea hosts a large fraction of all recorded Mediterranean marine species. Because of its richness, the sea has long been exploited and suffers from habitat damage.

In particular, the intensely exploited Jabuka-Pomo area in the central Adriatic serves as an important breeding ground for a number of commercially valuable species like European hake and Norway lobster. To protect these resources, Italy and Croatia enacted a one-year ban in the area against trawling the sea floor with large nets. The ban, enacted in 2015, came after decades of scientific investigation. At the time, the

fishing industry voiced concerns about potential lost income from not being able to access their traditional fishing grounds.

Based on the group's findings that the ban did not hurt yields, the General Fisheries Commission for the Mediterranean Sea and the European Union extended the closure for an additional three years. Pending evaluation of the ban's benefits, it may be extended further.

"The decision to extend protection was a significant step forward, but the challenge remains where conservation and socioeconomic goals conflict," said lead author Robin Elahi, a postdoctoral fellow. The study found that some of the displaced fishing affected other sensitive habitats – a downside that Elahi and Micheli plan to examine more closely in upcoming research.

The group said its approach could be used to observe fishing behavior around other marine protected areas and to track whether the bans force fishers into other sensitive ecosystems. It could even serve as a deterrent to violating fishing restrictions.

"If we want to continue to catch fish, we have to create places where there is no fishing," said Micheli. "We're protecting the sea's ability to heal itself and ensuring our own economic health in the process – both in the short and long term."

Provided by Stanford University

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