**Countries Can Reduce Costs of Marine Protected Areas Through Regional Agreements**

Changing how fishing days are sold to foreign fleets would save governments money, study shows

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When countries cooperate to manage the ocean, they can promote a more equitable distribution of the costs of setting up marine protected areas (MPAs).

New research by Juan Carlos Villaseñor-Derbez and Christopher Costello from the University of California at Santa Barbara and John Lynham from the University of Hawaii at Manoa, published in Nature Sustainability, provides an example of how this cost distribution might work.

Although closing or otherwise limiting fishing in regions of the ocean, such as through the establishment of marine protected areas (MPA), can result in region-wide benefits to all stakeholders dependent on fish stocks, the costs of doing so often are paid by only a small group, such as individual governments and their fishing communities. This new research finds that market incentives and other rules that make the playing field more equitable can allow these affected stakeholders to recoup some, or potentially all, of their costs.

Using a combination of vessel-tracking information and revenue data from fishing, the researchers assessed the impact of the Phoenix Islands Protected Areas (PIPA), a 397,447 square kilometer area in Kiribati and one of the largest MPAs in the world. They found that, because of the unique nature of the successful regional fisheries management system in the area, Kiribati is able to reduce the potential economic losses to fisheries from establishing PIPA by as much as 90 percent. The researchers also estimated that this same arrangement could reduce the economic effects of establishment of a proposed MPA in nearby Palau.

**Long-Term Allocations**

Despite a global movement to increase the area of the global ocean under protection, experts have a limited understanding of how establishing an MPA affects the economies of the implementing country.

To examine the economic implications of creating MPAs, the study looked at Kiribati’s decision to establish PIPA within the context of the Parties to the Nauru Agreement (PNA). This group of nine countries in the Pacific Ocean banded together in 2007 to collectively regulate foreign fishing fleets targeting skipjack and yellowfin tuna within their waters. Under the PNA’s Vessel Day Scheme (launched in 2012), countries allocate and sell ~45,000 vessel-days—the right for a single vessel to fish for one day within a given country's waters. In 2016, a vessel day was selling for approximately $9,000 USD. Revenues from this vessel-day scheme (VDS) represent more than half of all governmental revenues for some of the PNA member countries.

An important mechanism within the VDS allows for trading of vessel-days between PNA countries. Traditionally, trading has occurred to address annual variability in where the fish are. The study found that this unique structure can reduce some of the overall costs of MPAs while also distributing those costs more equitably amongst PNA countries.

In 2016, Kiribati received its normal allocation of 11,000 vessel-days but only sold 7,479 days to fishing vessels in its waters, in part due to the reduction in available fishing area from PIPA. However, while VDS fishing effort within Kiribati decreased by approximately 35%, its revenues from selling fishing licenses only decreased by 20%. This suggests that Kiribati was able to recoup some of the costs of the MPA by trading vessel-days to neighboring countries, which now potentially benefit from its existence. Overall, the PNA still sold the full allocation of 45,000 vessel-days and actually increased total revenues from the VDS by about $28 million USD.

**Allocation rules**

The researchers also found that the allocation rules for PNA’s VDS could further reduce the burden on each member country of future MPA designations. Currently, allocations are based on two factors. Fishing effort, within a country, accounts for 60 percent of the allocation and is based on each country’s average over the past 7 years, while biomass—how many actual fish are estimated to be in a country’s exclusive economic zone (EEZ)— accounts for the other 40 percent and is based on the past 10 years’ average. The parties, however, have the ability to change how they weigh each of these two factors.

Under the current allocation structure, large MPAs will reduce a country’s allocation of vessel-days over time, as fewer boats purchase fishing rights in its EEZ. However, basing the allocation primarily, or even solely, on biomass would significantly reduce the costs of the conservation action, in some cases by as much as 99 percent.

**Next steps**

With a growing number of countries looking to establish large MPAs to achieve conservation goals, the results of this study provide insight into how to more equitably distribute the costs of conservation amongst all parties receiving the benefits.

“MPAs provide lots of benefits, including to fisheries, through the spillover of fish and the protection of spawning grounds: our analysis shows how well-designed markets can reward governments that provide these benefits and ensure that large MPAs are a win-win for all parties involved,” Lynham says.

*Jim Palardy directs research projects for The Pew Charitable Trusts’ conservation science initiative.*

**Right Rail:**

Marine Conservation in Fishing Effort Markets <link to come>

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