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Perspective | Can local management of fisheries through periodic closures help to kick-start marine conservation efforts?

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By Steve Rocliffe and Alasdair Harris

For many years, the Vezo - traditional fishers in southwest Madagascar - saw marine conservation as a threat, a way of preventing them from accessing their fishing grounds. This is perhaps unsurprising in these semi-nomadic communities, where seafood is the sole source of protein in 99% of meals and income is much less than US $2 per day. The prospect of waiting years for the uncertain benefit of fish spillover from a protected area represented too high a risk - and too severe an economic sacrifice - to be a workable solution.

A decade ago, we (Blue Ventures) set about trying to overcome this issue, working with these communities to understand their concerns and develop a low-risk approach to marine protection that would return meaningful economic benefits in timeframes that worked for them. And to help achieve this, we turned to an unlikely eight-legged ally.

Octopus is one of the region's most important stocks, fished by women and men alike, and sold to lucrative export markets. Seafood companies regularly transport catches from some of the Indian Ocean's most remote villages all the way to restaurants and supermarket shelves in southern Europe.

We started small, supporting just one village to close a small part of its octopus fishing area for a few months, to see whether this might boost catches. When the closed site was reopened to fishing, the community saw a dramatic increase in both octopus landings and fisher incomes.

In Madagascar, this approach has since gone viral, inspiring a grassroots revolution in fisheries management that has seen more than 250 closures to date, and other countries of the western Indian Ocean following suit. New research into the effectiveness of the closures has shown that they can improve catches and boost income. The study, an analysis of eight years of data from more than 30 sites, found that octopus landings increased by more than 700% in the month following the lifting of a closure, boosting the catch per fisher per day by almost 90% over the same period. On average, communities discovered that 1 dollar's worth of octopus left in the ocean had grown to $1.81 by the end of a closure (http://discover.blueventures.org/marine-management-pays).

However, whilst three quarters of the closures produced positive net earnings for villagers, poaching prevented some from working entirely, and eroded earnings in others. Overall success was likely underpinned by factors not present in all traditional fisheries, including provisions within Madagascar's legal code to allow local marine management, as well as backing from seafood exporters, who supported the closures (a considerable interruption to revenues, followed by a sudden surge in production) and facilitated access to export markets. The exponential growth rates of the targeted species *Octopus cyanea* are also key to the model's success, being so rapid that stocks can respond favorably to protection periods of just two months. And of course, improved fisher catches and incomes are of little interest to biodiversity conservationists if the overall sustainability of the fishery remains essentially unchanged.

Inspiring other marine management efforts

But this is where things get interesting, since bioeconomic analyses of landings data only tell part of the story. It's not so much the success of the closures that's particularly noteworthy, but the ambitious marine management initiatives that this success appears to have inspired. From mud crabs in mangrove forests to lobsters on rocky reefs, this approach has since been adopted by other traditional and artisanal fisheries in different habitats and regions across the country, from the exposed Indian Ocean coast to the sheltered lagoons and estuaries of the Mozambique Channel.

The efficacy of this model applied to other stocks and ecosystems remains to be tested, and our limited monitoring and evaluation capacity cannot keep pace with the ongoing expansion of local management efforts. But encouragingly, this process is evolving iteratively and organically through local-level dialogue, exchange, and experimentation, with communities acting and adapting based on the results and responses that they themselves experience in fisheries landings.

Across the country, fishing communities have grouped together to establish more than 60 Locally Managed Marine Areas (LMMAs) that ban destructive fishing practices, many of them incorporating community-enforced marine reserves permanently off-limits to fishing, measures rejected as inconceivable and unworkable just a few years previously. And all of these LMMAs are led by community members, a testament to the tremendous growth in local leadership in marine conservation being seen as a result of these early experiences in fisheries management.

MIHARI, Madagascar's growing LMMA network, now covers over 11% of the island's seabed, and is championed at the highest levels of government. In November 2014, exactly a decade after the pilot closure, the President of Madagascar committed to tripling the country's marine protected area coverage, with a special emphasis on community-centered approaches. This is perhaps the boldest single conservation commitment made by any government at the recent World Parks Congress.

These experiences add to a growing body of evidence from elsewhere in the Indo-Pacific that community experiences of effective periodic fishery closures are not only instrumental in boosting catches, but can also facilitate engagement in broader marine conservation and management efforts.

Building support for no-take areas

We don't yet have all the evidence, but from our discussions with local leaders, it appears that community support for these broader efforts is not based on commercial interest, as is largely the case with the temporary closures. Rather, by enabling local leadership to arise, increasing knowledge of human impacts on reefs and enhancing trust, social capital, and inter-village communication, the activities associated with periodic closure management may simply build better conditions for cooperation, lowering the metaphorical activation energy for broader conservation and management, just as a catalyst would in a chemical reaction.

Many of the 1.3 billion people who live around our tropical coasts depend on fisheries and aquaculture for their livelihoods and on seafood as a primary source of protein. With over-exploitation and global environmental change posing ever-increasing threats to our oceans, sustainable management is crucial to protecting both the biodiversity of the marine environment and the food security of hundreds of millions of people. Madagascar's periodic octopus closures and the community-managed marine protected areas that followed them are not a panacea for this pernicious combination of ills. But 10 years of learning and development led by some of the world's poorest tropical coastal communities suggests they are a step towards a more hopeful future for these 'not so' small-scale fisheries.

For more information:

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