

Alienated, Marginalized

The unintended consequences of conservation action has had several impacts on protected species and fishing communities of Pacific Mexico

Conservation initiatives are often urgently undertaken especially when they concern the protection of endangered species. Furthermore, these agendas are often focused on narrow or even singular objectives (that is, saving a single species from functional extinction), which, in turn, mount pressure on national governments to take immediate action. When such pressure forces quick actions with inadequate deliberation, resources for enforcement and monitoring, or appreciation for local context, conservation policies can harm both human wellbeing and the environment. Here we share a case study about how well-intentioned conservation efforts designed to protect vulnerable species have caused a series of cascading effects for coastal communities in Mexico and the marine environments on which they depend.

Small-scale fishing is critically important for the coastal communities of the Gulf of Ulloa in Baja California Sur, Mexico (Figure 1). Over 1,000 fishers make their livelihood off the 300 km stretch of productive coastline where the cold California Current converges with the tropical Costa Rica Current, assembling a unique composition of temperate and tropical species. Depending on the season and oceanographic conditions, small-scale fishers in the Gulf of Ulloa may use gillnets, hookah diving, traps, hook-and-line, and artisanal longline or trawl gear from their 6-9 m vessels, targeting a diversity of finfish, sharks, rays, bivalves, abalone, lobster, octopus and shrimp. While some products go straight to international markets, coastal communities strongly depend on

local fisheries production for both nutrition and revenue.

More than a livelihood and food source, fishing represents a strong culture and way of life for these coastal communities and provides the backbone for social organization. As in many other coastal communities across Mexico, this region supports dozens of small cooperatives (each comprising six to 12 persons) and four larger cooperatives (up to 140 persons). These four larger cooperatives have been granted long-term concessions where they have exclusive rights to lucrative benthic resources like lobster and

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abalone, and, in some cases, contribute considerably to management and stewardship of these resources. Communication among fishers in the region is further promoted by cooperative federations organized at higher scales, strong family ties across communities, and a local baseball league in which cooperatives compete against one another.

Conservation action?

This story commences when Mexico, the world's sixth largest shark producer, was cited by the international conservation community for inadequate management and conservation of shark and ray (elasmobranch) species. A year later, Mexico enacted a moratorium on the fishing of all elasmobranch species

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throughout the nation's exclusive economic zone (EEZ) for almost two months during the first summer and three months during subsequent summers. The small-scale sector in the Gulf of Ulloa relies heavily on the elasmobranch fishery during summer months, using artisanal longlines and driftnets offshore to target larger migratory sharks and bottom-set gillnets and longlines inshore

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to target smaller coastal sharks and rays. Although warning of the new law was reportedly disseminated in advance to fisher leaders and federations, the shark fishing closure took most fishers completely by surprise; the closure was announced and enacted right at the start of the elasmobranch season well after most fishers had already made their important seasonal investments in preparation for the fishery. According to one fisher, "the [shark fishery] closure was a failure and nobody could work. One bought nets, bought everything, and we were left without work. The fishermen did not receive notice of the closure; nothing arrived and suddenly there was a fishery closure".

After the elasmobranch closure was enacted, to sustain their livelihoods many fishers retooled their nets to bottom set for finfish, including halibut and grouper. Fortunately, the summer of 2012 was an unusually good year for halibut, but, to the fishers' frustration, while fishing for halibut they caught substantial amounts of valuable sharks and rays, which they had to discard at sea, dead and unused. Anecdotal evidence suggests that this incidental capture of elasmobranchs during the first summer of the closure was comparable to the targeted capture of elasmobranch species during previous summers

before the closure was enacted. In addition to having social and economic repercussions for the coastal communities of the Gulf of Ulloa, the closure did little to protect sharks and rays the first summer it was enacted.

Simultaneously during the elasmobranch closure, evidence suggests that fishers were accidentally catching loggerhead turtles in their bottom-set nets with record high frequency. The unusually good halibut catch coinciding with the elasmobranch closure attracted unprecedented numbers of fishers to the bottom-set fishery in 2012, concentrating fishers in space and time in a sea turtle hotspot in the southern Gulf of Ulloa. Subsequently, record high numbers of loggerheads stranded during July and August 2012 along the shoreline adjacent to primary halibut fishing area; 600 per cent more loggerheads stranded during these two months in 2012 than the average rate documented over the prior 10 years during systematic shoreline surveys.

The dramatic increase in sea turtle bycatch rates and strandings, officially documented by the Mexican government and independent researchers, culminated in a United States' citation of Mexico for its lack of bycatch management and the threat of trade sanctions, and raised alarm in the international conservation community. In response, Mexico developed a bycatch reduction programme in the Gulf of Ulloa, beginning with the establishment of a sea turtle refuge (Figure 1), fishing gear restrictions, and a fisheries observer programme. Thereafter, Mexico enacted a Gulf-wide closure of all finfish species for a four-month period during the summer of 2016.

Unintended consequences

While most sea turtle bycatch in the Gulf of Ulloa has historically been confined to a small geographic region in the south related to specific gear types, the blanket closure unnecessarily affected fishers throughout the entire Gulf, and,

combined with the shark closure effectively shut down over 1,000 fishers during their critical summer fishing season. Though the closure was accompanied with a compensation plan, the rent-out unfortunately failed to benefit the fishers who needed it the most.

Over the course of these events, social and political conflict intensified at the local level as the situation became increasingly polarized. Feelings of mistrust among fishers, conservation organizations, researchers, and authorities culminated in the suspension of a participatory bycatch research and mitigation programme.

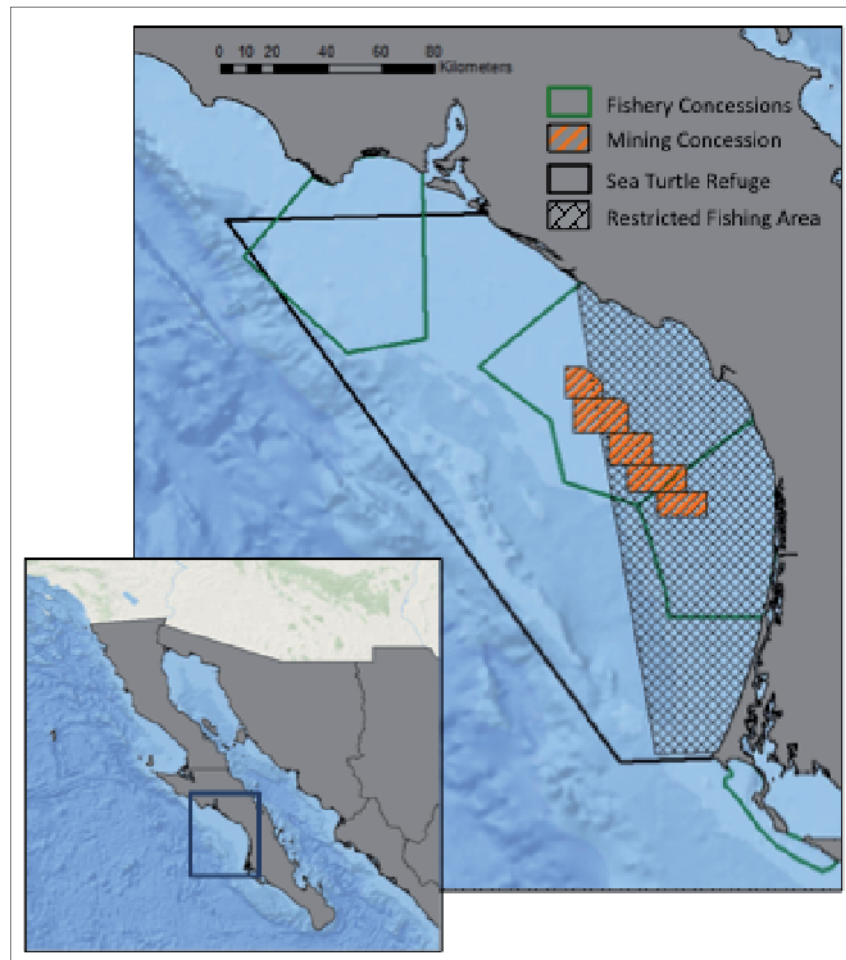
Meanwhile, the continuing presence of industrial trawl vessels, from other states of Mexico, fishing offshore in the Gulf of Ulloa, potentially contributing to resource decline and sea turtle bycatch, exacerbated feelings of mistrust and resentment among small-scale fishers in the region. And furthermore, a proposed underwater phosphate mine placed in the middle of the turtle refuge and two of the benthic fishing concessions, represents another compounding threat to local fishers' livelihoods and the local marine environment (Figure 1).

In this case, multiple processes and actors have combined to create a situation with undesirable and unjust outcomes. There is a strong incongruence across scales with respect to value orientation and power. While the international conservation community plays an important role as an advocate for biodiversity conservation and vulnerable species, this advocacy may fail to integrate local knowledge, culture, and context. Meanwhile nations are tasked with potentially conflicting duties of conservation of public trust resources, development of the fisheries sector, and protection of livelihoods.

Given the complex duties of protecting trade agreements, fostering economic growth, and adhering to evolving international conservation standards, ensuring local livelihoods and wellbeing may not be prioritized

by governments. Thus, at the intersection of competing and powerful interests, who is speaking for the needs of marginalized communities? Who is bearing the majority of costs of decisions made at higher levels? In this case, fishers from the Gulf of Ulloa are having to pay the costs of conservation while also bearing witness to potentially destructive and unsustainable practices by other, more powerful sectors including industrial fishing and mining. Furthermore, both the elasmobranch and finfish closures were autocratic processes that failed to adequately involve fishers through consultation or meaningful participation. Unsurprisingly, feelings of political alienation and social marginalization are a consistent theme in the region, further undermining objectives of conservation and sustainable fisheries management.

FIGURE 1



Small-scale fishing is critically important for the coastal communities of the Gulf of Ulloa in Baja California Sur, Mexico

Lessons learned

There are important lessons to be learned from this story, applicable to conservation efforts within small-scale fisheries around the world. First, we argue for greater coherence among international conservation efforts, national policy making, and the realities faced by local communities. This requires a refocus of attention on how we integrate multiple value orientations and objectives across scales to achieve just outcomes for biodiversity and human wellbeing. This also requires addressing power relations occurring across scales (from international to local), and recognition of how the costs and benefits of biodiversity conservation are distributed among stakeholders. There is also a critical need to recognize the historical and cultural context of proposed conservation solutions. Are there histories of inconsistency, mistrust, or marginalization? If so, how might they impact the efficacy of a proposed conservation action, and what might the ancillary consequences be?

Second, conservation actions are likely to be more effective if they address interactions occurring beyond a single species, and integrate broader concerns beyond just that of biodiversity conservation. A focus on protecting single species may lead to cascading effects for other species or entire ecosystem especially if the policies are not thought through or do not consider potential feedbacks resulting from social, cultural, or economic realities. This was evidently the case with Mexico's effort to protect shark species, as the shark closure inadvertently caused increases in bycatch of both elasmobranchs and sea turtles. Most importantly, biodiversity conservation efforts must also integrate human wellbeing considerations to minimize human cost and maximize the potential for long-term sustainability outcomes.

Finally, we suggest that resource management and conservation should avoid negative impacts to local resource-dependent communities and engender more robust and

longer-term solutions by including local stakeholders throughout the development of conservation strategies. In particular, authorities should seek out stakeholders' narratives concerning conservation threats and solutions. In this case, fishers' perception of the problem strongly dictated perceived legitimacy and efficacy of the enacted policies. As such, fishers' unique perspectives and long-standing ecological knowledge should be incorporated into the design of conservation and management policies. Furthermore, increasing stakeholder consultation and participation has the potential to achieve socially just outcomes for local communities in addition to biodiversity conservation. In fact, we argue, you can't have one without the other. 

For more

[sciencedirect.com/science/article/pii/S0959378015000461](https://www.sciencedirect.com/science/article/pii/S0959378015000461)

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