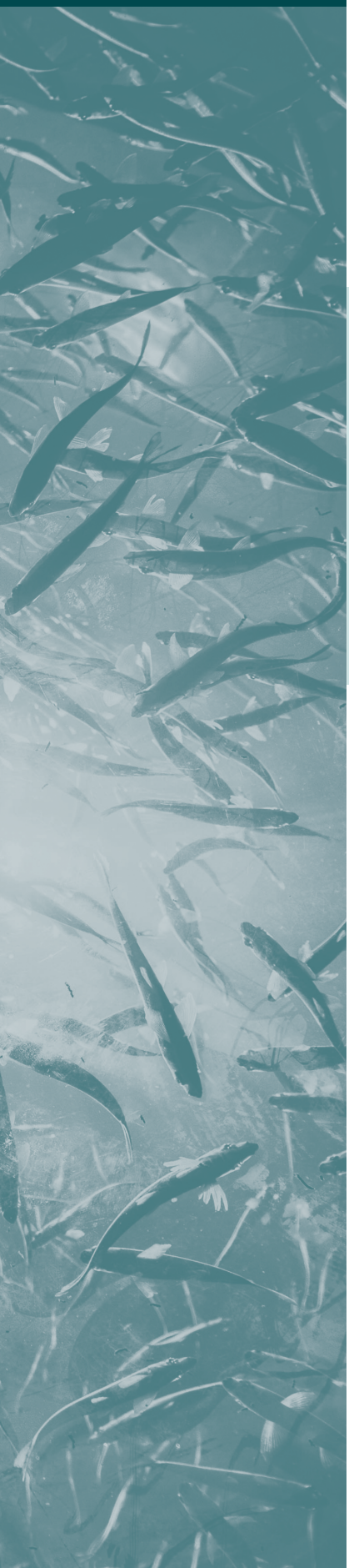
Future Fisheries Management Issue Brief



What to Do When Small-Scale Fishing Is Not So Small

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SUMMARY Small-scale fisheries are a vital yet often underappreciated and under-resourced portion of the global fishing economy. With the implementation of the World Trade Organization's Agreement on Fisheries Subsidies in mind, this issue brief explores small-scale fisheries management techniques to improve prospects for governance of global fisheries. The lessons from Somali fisheries co-management are used to illustrate the potential for bottom-up solutions to address unsustainable global fish catch with a focus on participatory approaches, innovative data collection methods, and fishing waste reduction. Increasing local capacity in each of these areas combined with removing subsidies to limit large-scale fishing can save at-risk fish stocks and protect small-scale fishing communities and the coastal ecosystems on which they depend.

The term *overfishing* conjures images of huge commercial vessels chasing fish across oceans with impossibly large nets filled with entire schools of fish. Overfishing occurs when fish are being caught faster than they can reproduce, hindering their ability to maintain healthy and sustainably fishable population sizes. Many large-scale commercial fishing vessels that fit this image are subsidized by their home countries, a policy choice that promotes overfishing and other environmentally detrimental practices.[1] However, while destructive large-scale overfishing is certainly part of the global story, another kind of overfishing—on a smaller scale, largely unsubsidized by government, and far less attention-grabbing—occurs in coastal towns and communities around the globe, where the image of one fisher in a small boat is more apt.

Small-scale fishing[2] accounts for 40 percent of global fish catch,[3] and much of that catch occurs in least developed countries where effective resource management is lacking, technical capacity is low, and fisheries data are limited. This lack of resource governance leads to a tragedy of the commons in which the health of the exploited ecosystem and fish stocks are mysteries and the likelihood of overfishing by small-scale fishers is high. With 492 million people relying on potentially overfished ecosystems for vital food and economic security,[4] global fishing communities are counting on the longevity of ocean

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resources while also contributing to their collapse through unmanaged fishing. Thus, small-scale fishers are both perpetrators and victims of overfishing.

The challenges of small-scale fishing are compounded by indirect and direct competition with large-scale vessels.[5] Small-scale fleets are largely limited to their own waters by their vessel capabilities, but subsidized large-scale fleets—facing dwindling stocks in their home countries' waters—have the ability and the financing to travel to foreign waters to fish for the same stocks in the same fishing grounds as small-scale fishers. If monitoring, control, and enforcement capacity are lacking, direct and sometimes violent conflicts between small-scale fishers and their large-scale, subsidized competitors can occur.[6] As a result, small-scale fishers may come to distrust governments they perceive as doing little to protect their livelihoods.

Limited data make the problem worse. Even if large-scale vessels are reporting the size of their catch, there are no robust domestic data collection systems in place that would allow small-scale fisheries managers to accurately assess the health of their local ecosystems and determine what levels of small- or large-scale fishing are sustainable. This lack of information, combined with the added pressure on fish stocks from large-scale subsidized fishing, can potentially push a fishery to the point of collapse.

TURNING SUBSIDIES INTO OPPORTUNITIES

Solutions to the conundrum of overfishing and lack of management capacity are complex. Recent work in countries where small-scale fisheries are crucial for security of livelihoods indicates that the answers lie in a combined approach where competition and conflict from foreign subsidized fishing is limited from the top down and local fishing is made more economically and environmentally sustainable with participatory management from the bottom up.

As a top-down approach, the World Trade Organization's (WTO) Agreement on Fisheries Subsidies[7] is an important first step toward not only limiting the profitability for large-scale vessels conducting illegal, unregulated, and unreported fishing and fishing for depleted stocks, but refocusing attention, efforts, and funds toward small-scale fishing instead.[8] By signing onto the agreement, countries are showing they are committed to supporting the livelihoods of coastal communities over the big corporations engaged in distant-water fishing. Besides the symbolic value of this act, the WTO agreement also establishes the WTO Fisheries Funding Mechanism to divert funding to developing sustainable fisheries in countries where competition with subsidized vessels has harmed fishing communities. In order for these funds to have a positive impact on small-scale fishing communities, they should be allocated to solutions best known to support local sustainability and profitability. These include participatory approaches to management, innovative methods of data collection, and creative ways to decrease fishing waste and increase efficiency.

In many small-scale fishing communities, both management mechanisms and data collection are lacking. For the WTO agreement to be effectively implemented, there must be adequate catch data at all

scales of fishing to determine whether a target fish stock is overfished and therefore subject to the agreement. Additionally, there must be management measures in place that give priority to small-scale fishing to ensure the future sustainability of the fish stocks along with the future economic health of the communities relying on them.

To move fisheries toward a more sustainable future, all fisheries must be managed, but the management strategy that will work for large-scale, distant-water fishing fleets will not work for coastal fishing communities. In recent years, the conversation around managing small-scale fishing has moved away from highly quantitative data-dependent approaches that are used in more industrialized fisheries and toward a more inclusive, participatory, localized management model[9] that relies on a combination of both fisheries science and community knowledge.

Great progress can still be made when a small amount of data is combined with local knowledge to inform fisheries management. In fact, these management plans can be more effective than those imposed by government fisheries experts alone because they are underpinned by local ownership in the process and in the plan's implementation.[10] Full participation from all stakeholders requires the will to make efforts toward change in the form of meetings, surveys, and focus groups. These efforts would all require funding and could potentially be supported by the WTO Fisheries Funding Mechanism. Improving the governance of small-scale fishing combined with placing limits on large-scale subsidies will result in effective fisheries management that prioritizes local fishing access and reduces competition with distant-water fishing fleets.

THE SOMALI EXAMPLE

One place where participatory fisheries management is proving effective at addressing small-scale fisheries challenges is Somalia. The seas there are sometimes described as pristine because the region's domestic fishing is almost entirely small-scale. In reality, Somali fisheries are in danger after decades of unmanaged small-scale fishing, combined with pressure from unregulated large-scale foreign vessels. According to Somali fishers, catches are declining, fish and lobsters are getting smaller and harder to find, and a significant portion of catch goes to waste because of a lack of cold storage infrastructure.[11]

For example, in Bander Beyla, Puntland, on the east coast of Somalia, the community, government, and nonprofit organizations are developing management strategies for the spiny lobster fishery.[12] There, fishers complain that it is increasingly difficult to catch large lobsters and that their days at sea are longer than they used to be in order to fill their traps, both anecdotal indications that the lobster population might be overfished. Fishers have called for lobster regulations in their community and for the region, with the understanding that limiting catch now will improve the future viability of this lucrative fishery. The Bander Beyla Fisheries Co-Management Association (CMA), a formalized partnership between the fishers of the Bander Beyla district and the Puntland government, developed their own plan for managing lobsters that includes a closed season and restrictions on landing egg-bearing females and juvenile lobsters. The government took interest in this grassroots approach to management and has proposed these

regulations be expanded throughout Puntland state. Though the process of engaging other Puntland fishing communities in vetting the regulations and formalizing them in policy is in motion, the Bander Beyla community feels motivated to begin before the official policies are in place. The CMA leadership posted informational signs at landing sites and hosted community meetings to explain the regulations and why they are important to follow. This level of participation and enthusiasm for protecting their resources demonstrates the power and effectiveness of bottom-up management of small-scale fishing, all with only minimal data input.

While it is possible to develop management plans with basic information about the fishery, addressing overfishing requires tracking these management plans and ensuring they are fulfilling their goals of maintaining healthy fish stocks and benefiting the communities where they are implemented. To that end, some data collection is required. Recent innovations are making small-scale fishing data easier to collect in places with few technical experts and low connectivity.[13] By capitalizing on the local knowledge base and combining it with innovations of new technology, it is possible to implement catch data collection even in the most remote areas, to use that data to support what the community perceives about its fisheries, and then to leverage that data-supported knowledge into policy.

For Bander Beyla, data about the lobster fisheries have bolstered their claims of potential overfishing, supporting their call for better and more widespread fisheries management. Secure Fisheries, a program of One Earth Future Foundation, assisted in this effort by developing systems using KoboToolbox survey tools to create an online data entry form that can be opened on any smartphone, as well as a database housed in KoboToolbox-linked spreadsheets that automatically recalculate summary statistics about the catch when the data is updated. These tools are free to use and easy to manage, and the survey form can be expanded to other locations by simply sharing the link and training a data collector in basic skills.

Using these tools to gather information on the number of lobsters caught in Bander Beyla during the fishing season disaggregated by sex, egg-bearing status, lengths, and weights confirmed the anecdotal evidence from the community that lobsters are often undersized: on average, 28 percent of caught lobsters are smaller than the estimated size at maturity, meaning that more than one quarter of lobsters are caught before they have a chance to reproduce. Though the fishery is not on the precipice of collapse yet, continued catch of small lobsters could push the stock to its limits quickly. Acting now will prevent a population collapse that would devastate the local economy and the natural ecosystem. These data collection activities are ongoing while the community is voluntarily limiting their catches, in line with their management plan. The CMA will be able to track adherence to the regulations and their effectiveness and to assess the economic impact of the plan, with the goal of adjusting the rules if necessary to balance lobster stock health with fishers' wellbeing and profit.

While the system in Bander Beyla has been designed to use basic, easily accessible technology, other more advanced mobile applications,[14] small-scale vessel tracking devices,[15] and emerging artificial intelligence and video technology[16] may serve as potential keys to unlocking the true contribution of small-scale fishing to global overfishing and developing appropriate management measures to reverse the overfishing

trend. Technological solutions to fisheries challenges and their deployment in small-scale fisheries are efforts ripe for investment and would be highly beneficial areas of implementation for the WTO Fisheries Funding Mechanism.

Simply monitoring catch volume, however, would be ignoring another contributor to overfishing: waste. When remote low-income communities do not have access to cold storage or ice on board boats to keep fish fresh from sea to plate, they must catch extra fish with the knowledge that some will spoil before it can be sold. In Bander Beyla, fishers targeting finfish reported on average that 22 percent of caught individual fish were spoiled upon landing when ice was not used. Scaled up to the global level, small-scale fishing activities that lack access to cold storage results in catastrophic wastage that unnecessarily depletes fish populations. And the issue is compounded by high amounts of discards by large-scale subsidized vessels that are known to use indiscriminate fishing gear like trawls.[17]

By investing in community cold storage, fishing immediately becomes more efficient. After the installation of a flake ice machine in Bander Beyla,[18] spoilage has decreased to less than 1 percent, and nearly all boats are using ice on board when they go to sea. The ice has the added benefit of reducing the time fishers must spend on the water. Since the installation of an ice-maker, active fishing time decreased by two hours per trip on average, making the days at sea less grueling. The community has also doubled their revenue by packing fish in ice on trucks going to markets in inland cities that were previously out of reach due to fish spoiling before it arrived. Clearly, value chain improvements have enormous benefits to both fish stocks and community wellbeing and is a worthy consideration for funding initiatives.

CONCLUSION

Small-scale fishers may be both victims and perpetrators of overfishing, but they also possess the knowledge and will to change the course of their declining fisheries. By removing subsidies for large-scale fishing, competition with small-scale fishers is reduced, and some trust in government may be restored when community needs are prioritized over profits. Local fishers should be empowered to have a say in their own future through local collaborative management, training in skills to collect and understand data, and investing in more efficient value chains. Increasing local capacity and limiting large-scale fishing can save at-risk fish stocks and protect that vital 40 percent of global fish catch attributed to small-scale fishing.

ABOUT THE AUTHOR

Paige Roberts is a fisheries ecologist with a passion for environmental conservation and resilient, inclusive fisheries management. Her work combines research on fish diversity and abundance, marine spatial planning principles, and participatory management to support sustainable small-scale fisheries, especially in data-poor environments. Her most recent work includes developing a decision support tool for Somali fisheries stakeholders, designing systems for fish catch data collection across Somali landing sites, and

fisheries management planning that incorporates science, community needs, and government priorities. Roberts holds a MSc in GIS management from Salisbury University and a BSc from the University of Miami in marine science and biology.

ABOUT THE SERIES

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