Conservation Success Scales with Effective Partnerships

Escalas de Éxito de Conservación con Alianzas Eficaces

Échelles de Réussite en Matière de Conservation avec des Partenariats Efficaces

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EXTENDED ABSTRACT

We are faced with many problems in marine and coastal resource management, and we have many ideas to alleviate them. Actions to promote conservation and sustainable use of natural resources are more about people than the resources themselves, where solutions require changes in human behavior that can be achieved through successful partnerships (Reddy et al. 2017). Individually, our ideas for solutions stem from our local environment, the media, personal experience, culture, education, and values (Straka et al. 2018). Scaling up, to alter human behaviors in places or cultures that differ from our origin, requires acknowledgement of the needs and values of those new partners. Conservation is more likely to be long-lasting and far-reaching when the partnerships establish common goals that can be successfully exported, as well as practices that are flexible to differences in local conditions and attitudes (Gavin et al. 2018).

Problems shared and appreciated by people from different parts of the local community can lead to strong local partnerships, but expanding to new communities can be difficult. For example, concern for the protection of a Nassau grouper aggregation off Little Cayman, BVI, brought conservation scientists and non-profit groups together with the Cayman Department of Environment and local dive resorts to conduct research and outreach that resulted in successful policies and recovery of the grouper for that island (Waterhouse et al. 2020). Thanks to extensive outreach, progressive protection policies are now nationwide. Protections have been accepted on nearby Cayman Brac, which is also showing signs of grouper recovery despite more intensive fishing pressure there, but acceptance of fishing restrictions has been slower and more variable on Grand Cayman, home to a larger community of traditional fishermen, a longer history of intensive fishing practices, and different attitudes towards ownership of natural resources. Finding common ground and shared values with all affected community members has been a key focus in the development of sustainable marine resource policy throughout the Cayman Islands.

Scaling up successful practices and policies in fisheries management requires acknowledgement that the next island, nation, or region of the world has different cultures and values, governance, economies, and status of their fisheries. This requires flexibility, good listening, and awareness. Activities or conservation planning that worked well in one location may not work well in others, but if the final goals and overall vision are shared, cultures respected, and solutions are co-developed, conservation partnerships can be strong and successful at international scales.

Sea turtle conservation provides many examples of this success. Sea turtle population recoveries have occurred worldwide, largely because of strong partnerships among government agencies, international non-profit organizations, fishing industries and local communities (Mazaris et al. 2017). A highlight of this success is strong communication and outreach, from school and event visits by Mr. Leatherback – a costumed ambassador who has gained notoriety with children across the globe – to the International Sea Turtle Symposium, an event that regularly hosts scientists, students, resource managers, activists and public volunteers from dozens of countries every year. Major threats to sea turtles that have been abated in many parts of the world include overharvest of eggs and juvenile and adult turtles for food and tortoiseshell, incidental capture in fishing gear, and loss of nesting habitat to beach development. Sea turtles are "charismatic megafauna" with value to many cultures and communities, today often as a tourist draw rather than a food resource (e.g., Hunt and Vargas 2018). Many sea turtle conservation programs start with volunteers on a local beach, monitoring and protecting the nesting females and their eggs and hatchlings. The basics of beach and nest protections are essentially universal and easily exported to communities in other nations if there is shared concern and willingness to modify behaviors that negatively affect the animals. A more complex partnership is needed to share data and monitoring protocols over the broad spatial extent of a sea turtle nesting population. In the greater Caribbean, many local sea turtle conservation programs are linked through a non-profit consortium, the Wider Caribbean Sea Turtle Conservation Network (WIDECAST; https://www.widecast.org/). Coordinators from each participating country serve as a resource for local sea turtle protection efforts while sharing monitoring data, conservation news, and research efforts with their WIDECAST partners.

Sea turtle bycatch in fishing gear is a common threat worldwide, and is frequently a greater conservation concern for populations than nesting beach threats (Wallace et al. 2010). Fishing gears can be highly lethal, such as gill nets and some bottom trawls, or can cause serious injury, such as hooks. In many countries, turtle bycatch is undesirable and generally avoided; in other cultures, a caught turtle is dinner for the crew or fisherman's family. Mitigation of sea turtle bycatch can involve spatial or temporal fishing closures, but often involves modification of gear (Swimmer et al. 2017). Two examples of efforts to mitigate sea turtle bycatch in fisheries through gear modification illustrate the value of acknowledging local needs to promote successful implementation of conservation actions in other nations and fishing cultures: Turtle Excluder Devices for bottom trawls, and circle hooks for longline fisheries.

Turtle bycatch in bottom trawls for shrimp became a critical issue in the United States in the 1980s, when an estimated 40,000 loggerhead, Kemp's ridley, and green turtles were caught annually (Henwood and Stuntz 1987; Turtle Expert Working Group 2000). At that time, Kemp's ridleys (*Lepidochelys kempi*) were close to extinction, green turtles in Florida were extremely low, and loggerheads were federally listed as threatened in the United States. After population projection models indicated that survival rates of turtles at sea were too low for population persistence (Crouse et al. 1987), federal laws focused on reducing the bycatch in shrimp trawl fisheries. Turtle Excluder Devices developed by the National Marine Fisheries Service (NMFS) allowed turtles to escape the trawls with minimal shrimp loss, but the first models were large, cumbersome, and vehemently opposed by the industry (Jenkins 2012). NMFS and NOAA Sea Grant partnered with fishermen to develop better TEDs that were designed for easy deployment and retrieval and could release turtles without significant loss of shrimp catch. That local partnership greatly benefitted sea turtle conservation and fisheries in the U.S., preventing large scale industry shutdowns and promoting acceptance of the regulations and gear by local fishermen (Jenkins 2010). Subsequent decreases in dead turtle strandings (Crowder et al. 1995) and increases in Kemp's ridley turtles (Turtle Expert Working Group 2000) have provided strong evidence that TEDs were a successful conservation tool, ready for implementation in bottom trawl fisheries worldwide.

Exporting TED technology seemed to be a simple solution that could and should be used everywhere. TEDs were built and donated or sold to fisheries in Europe, Asia, South America, and Africa. But differences in fishing practices, harvest management, and local needs inhibited the widespread adoption of TEDs in many countries (e.g., Rao 2011, Duarte et al. 2019). For example, in the U.S., trawl fisheries for shrimp typically focused all harvest effort on the shrimp alone, throwing unwanted fish and invertebrates overboard. In many other countries, all of the trawl catch is kept for sale, including many of the larger fishes, sharks and rays that are lost through an Excluder Device. The grates, buoys and additional netting for TEDs can be expensive – several hundred U.S. dollars – making the standard design impractical for small scale, low income fisheries. Thus, "scaling up" the use of TEDs as a sea turtle conservation tool has been slow in many parts of the world, in spite of trade restrictions that require TED use for seafood exports to the U.S.. The effort to export TED technology was hindered by a failure to acknowledge differences in fishing practices, culture and values, too much focus on a single "proven" approach to reduce trawl bycatch mortality, and an assumption by many that saving turtles would remain a high priority for fishermen faced with potential loss of valuable catch.

Now, let's examine a different approach to solving a sea turtle bycatch problem. Surface and midwater longline fisheries for tuna, mahi, and other pelagic species catch sea turtles, often in high numbers (Lewison et al. 2014). If a hooked turtle can reach the surface to breathe, it may be captured alive but will suffer significant injury if the hook has been swallowed or cannot be easily extracted. A sea turtle is a formidable animal for a fisherman to try to release alive; thus, the animal may be cut loose or even killed for hook removal. Nevertheless, the global movement to prevent sea turtle extinction has caused many governments to require bycatch reduction and monitoring, and finding ways to reduce the widespread capture of turtles on longline gear has been a focus of conservation efforts worldwide.

Circle hooks – where the hook point is offset from the shank and curved inwards – reduce probability of an animal swallowing the baited hook, more often catching a turtle in the mouth where it is easier to remove (Andraka et al. 2013; Parga et al. 2015; Gilman and Huang 2017). Circle hooks are usually more expensive than traditional "J-shaped" hooks, but can increase the value of some catch because fish are also more likely to be caught in the jaw and remain alive on the line until it is retrieved. Studies of U.S. longline fisheries showed substantial reduction in catch and injuries of sea turtles when circle hooks were used (Watson and Kerstetter 2006; Wilson and Diaz 2012). As with TEDs and bottom trawl fisheries, this led to international efforts to increase the use of circle hooks in longline fisheries.

To implement bycatch mitigation to fisheries in South and Central America, an international consortium of non-profit and governmental organizations formed the Regional Sea Turtle Bycatch Program (Andraka et al. 2013). As part of this effort, representatives from the Inter-American Tropical Tuna Commission and the U.S. National Marine Fisheries Service embarked on a public relations campaign that targeted small scale fisheries, a large source of coastal sea turtle bycatch that is also difficult to monitor (Hall et al. 2012). Countries that needed to improve sea turtle bycatch mitigation to avoid trade restrictions had regulations to use modified gear in place, but with little enforcement or incentives. The consortium members brought hooks and hook removers to small villages and worked with community and fishing cooperative leaders to run informational meetings and demonstrations. They worked with the fishermen on small boats to determine the best ways to configure and set the gear to minimize turtle catch and maximize target species catch. The gear was modified to work with individual fishing boats, using side by side comparisons to show the effects of the gear on catch and bycatch. Safe hook removal was also demonstrated, and the removers and hooks were donated. Today, many fishing communities continue to use circle hooks and regularly release turtles that have been caught on their lines (Castellanos-Galindo and Padilla 2019).

These bycatch mitigation examples illustrate the importance of understanding and respecting local conditions and values for successful expansion of conservation practices (Hall et al. 2017). Sea turtle conservation success depends heavily on involvement of fishermen to develop gear solutions that work for them, supportive local communities to enable self-enforcement and contribute to data collection, and educators to promote the value of the animals to the broader community. These partnerships, particularly when supported by sustained financial resources, can connect to each other through organizations like WIDECAST to scale-up the conservation and monitoring efforts across nations.

Many important partnerships exist in Caribbean fisheries management, at a variety of spatial scales. As we are faced with an increasing need for multi-national cooperation to ensure sustainable fisheries and conservation of the region's habitats and natural resources, additional efforts are needed to promote effective collaborations with region-wide impact. But the value of strong local partnerships should not be underestimated, as they serve as the nodes for broader conservation networks (Berkes 2007). For example, monitoring the effects of climate change on the distribution of fished species and the timing of migrations and spawning events could be enhanced through the networking of existing local groups. These may include local community and citizen-based monitoring programs that collect and compile data from fishermen and community members, then provide those volunteers with information resources that they value (Theobald et al. 2015; Fulton et al. 2018). Organizations like GCFI can serve as a networking hub to connect people, programs and data, as illustrated by the Global Partnership on Marine Litter and MPAConnect programs.

Good ideas take root with strong local partnerships. Scaling up those good ideas and actions to regional or global levels requires flexibility to create a shared vision that includes:

i) Clear, transferable goals,
ii) Mutual understanding of values and motivation, respectful outreach and collaboration with stakeholders,
iii) Clear communication among the partners,
iv) Inclusive planning and implementation, and
v) Commitment to long-term sustainability of the partnership.

As we work together for a sustainable future, our respect for local needs and values should be coupled with an open mind about what "works", and the best way to achieve that shared vision.

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