



## Fostering fisheries management efficiency through collaboration networks: the case of the Kanan Kay Alliance in the Mexican Caribbean

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**ABSTRACT.**—After decades of implementation of territorial use rights in fisheries (TURFs) and other fisheries management measures around the world, it is clear that monitoring their progress and results in biological and socioeconomic terms is necessary, and that involving fishers in the design and implementation will improve their likelihood of success. However, what receives less attention is the importance of multistakeholder collaboration, communication, and shared vision that increase management implementation capacity and effectiveness, while achieving an efficient use of the limited resources available to fisheries managers. Five years ago, an initiative called “Kanan Kay Alliance” emerged in Mexico: a voluntary, multistakeholder collaborative network formed by 40+ organizations (fishing cooperatives, government, non-governmental organizations, researchers, and philanthropic foundations). The alliance established a shared vision and collaborative work plan focused on the establishment of fish refuges (no-take zones) within TURFs across the Mexican Caribbean. The Kanan Kay Alliance offers a unique opportunity for dialogue, promotes value-added collaborative actions, and reinforces key initiatives. This collaborative model grounds management measures in a participatory and inclusive way, fostering their effectiveness and efficiency, as well as potential for reaching scale. Here we document the establishment of the Kanan Kay Alliance and provide recommendations for the replication of similar initiatives.

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Effective fisheries management addresses three universal axes: ecology-biology, economics, and society (Hilborn and Walters 1992). Doing so for small-scale fisheries is particularly complex given that they are associated with a wide variety of stakeholders and user conflicts (Edwards and Steins 1999, Erdmann et al. 2004). To address this complexity, some nations have implemented a territorial use rights in fisheries (TURF) policy (Christy 1982, Halpern and Warner 2002, Prince 2010). By granting territorial access rights to fishers, the access to a resource, or group of resources, is controlled and thus fishing effort regulated and comanagement practiced.

It engages fishers directly in resource management and gives them a vested interest in long-term resource sustainability (Neher et al. 1989, Jentoft and McCay 1995, Jentoft et al. 1998, Shotton 2000, Castilla et al. 2007, Gelcich et al. 2007, McCay et al. 2013).

TURF systems can be reasonably well designed (Halpern 2003); however, there is room for improving their efficacy and implementation, and the ways in which they are imbedded with other management instruments (McClanahan et al. 2006, Moreno and Revenga 2014), e.g., no-take zones (NTZ), fisheries management plans. After decades of implementation of TURFs and other fisheries management measures around the world, it is clear that designing, implementing, and monitoring their progress and results in biological and socioeconomic terms requires fisher involvement to improve their likelihood of success (Viteri and Chavez 2007, Moreno and Revenga 2014). However, what receives less attention is the importance of multi-stakeholder collaboration, communication, and shared vision toward achieving such success.

In Mexico, many key commercial species show signs of overfishing, suggesting that the few traditional management measures implemented (i.e., minimum catch sizes, closures, or concessions-TURFs) have not been effective, and the stakeholders involved not necessarily coordinated. In some cases, new measures are needed, or existing management measures (particularly minimum catch sizes and closures) could be improved by the inclusion of the latest scientific information or adjusting them to current contexts; however, the lack of government monitoring and enforcement hinders success. Further, there are few platforms available for stakeholder collaboration aimed at improving fisheries management. Most existing bodies are legally recognized by the government (e.g., fisheries state councils, *Consejos Estatales de Pesca*; fisheries consulting committees, *Comités Consultivos de Pesca*; planning, communication and decision-making “system-product” committees, *Comités Sistema Productivo*) (Cámara de Diputados 2007). Management actions rely on the government’s willingness or capacity to enforce agreements, greatly affecting success. The Mexican government is making an effort to expand the use of these platforms, as fishers and other stakeholders demand their establishment, but they remain scarce and difficult to monitor and maintain.

Here, we present an alternative collaborative model called “Alianza Kanan Kay” (Kanan Kay Alliance), a platform officially launched in the State of Quintana Roo (Mexico) on the Yucatán Peninsula in 2011. The Kanan Kay Alliance (“guardian of the fish” in Mayan) is a voluntary multistakeholder collaborative network, fueled by non-governmental organizations (NGOs), but formed by more than 40 organizations (fishing cooperatives, government, NGOs, researchers, and philanthropic foundations). The initiative focuses on implementing fish refuges (NTZs) within TURFs across the Mexican Caribbean, participatory and inclusive on-the-ground management measures, and fostering effectiveness and efficiency. We report the establishment of the Kanan Kay Alliance, its challenges, opportunities, and potential, and we outline recommendations for replicating similar collaborative initiatives that could be applied to TURFs or other fisheries management schemes.

## THE CIVIL SOCIETY ORGANIZES ITSELF: AN ALLIANCE EMERGES

Prior to 2010, there were no fisheries councils or other platforms for dialogue or collaboration in Quintana Roo, Mexico, that permitted open dialogue among stakeholders and government officials managing fisheries. Indeed, the NGOs appeared to be the key actors in the introduction of new tools and approaches in fisheries management in Mexico (Espinosa-Romero et al. 2014). In 2010, after several discussions on how to improve marine conservation and introduce new approaches to fisheries management in the Mexican Caribbean, key regional representatives of fishing cooperatives, NGOs, academia, foundations, and government decided to create a collaborative platform to maximize the limited resources and capacities available and define a common agenda for doing so. This led to the formation of the Kanan Kay Alliance, with the intent of establishing a network of fish refuges that would allow the recovery of artisanal fisheries, while promoting the resiliency of coastal communities and protecting the coral reef ecosystems.

The emphasis on fish refuges came because a NGO present in Quintana Roo had extensive experience in their implementation in collaboration with fishers in other parts of Mexico.

We envisaged the alliance as a voluntary multistakeholder collaborative network with the common objective of establishing an effective network of fish refuges, and the goal of protecting 20% of the territorial waters of the State of Quintana Roo, thus spanning the entire coast of the Mexican Caribbean, covering seagrass areas, mangroves, and the world's second largest barrier reef, the Mesoamerican Reef.

Initially, we decided that establishing fish refuges presented an opportunity to work on a wider, more relevant scope of activities to enhance conservation and sustainable fisheries management, providing the best legal instrument to do so. However, the spectrum of issues went far beyond their implementation. Indeed, there is a need to empower fishers, and strengthen fishing cooperatives, and coordinate control and surveillance. Thus, the focus is on five strategic lines of action: (1) design and establishment of fish refuges; (2) legal framework and community surveillance of fish refuges; (3) socioeconomic development; (4) capacity building; (5) communication.

We designed the structure and operating principles of the alliance during the first assembly (April 2011), drafted an initial and shared work plan for each strategic line, and developed a coordinating committee, with an executive coordinator, a technical coordinator, and a coordinator and supporting liaisons for each of the strategic lines (Fig. 1). This structural model emerged from a participatory process conducted during initial meetings. With minor adjustments, the structure has withstood the passage of time and proven fit for purpose.

### DESIGNING AND OPERATING THE ALLIANCE: BUILDING A PLATFORM FOR EFFECTIVE CHANGE

The strength of the alliance is based on transparency and inclusiveness (Table 1). Participation is voluntary, and there is no formal or permanent membership. The coordinating committee appoints new members, and all members can suggest newcomers. Thus, the structure is fluid and open to change. Each member institution maintains its autonomy and identity, as well as the sovereignty of its mission, projects, and sources of financing.

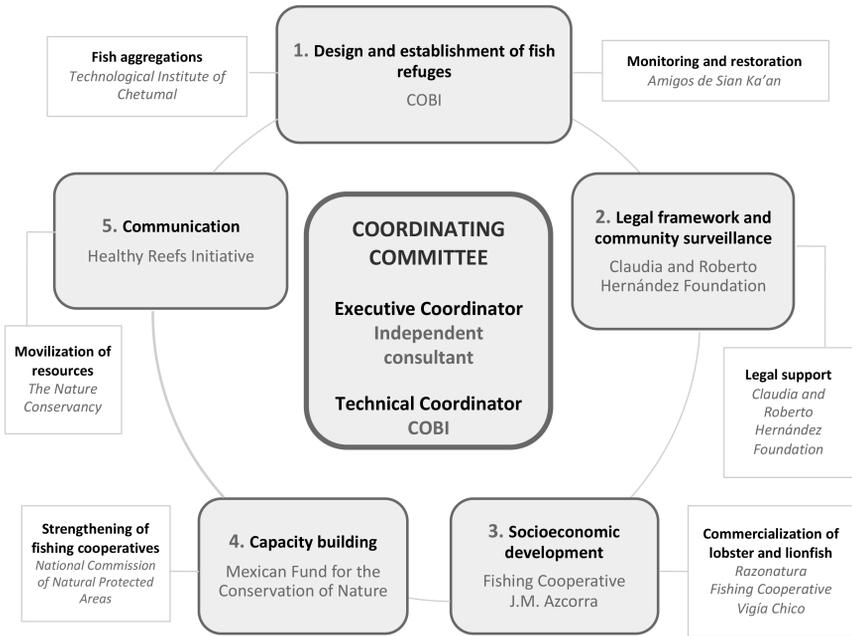


Figure 1. Structure of the Coordinating Committee of the Kanan Kay Alliance by November 2015.

In this way, the Kanan Kay Alliance adds value to the conservation efforts in Quintana Roo through:

1. Facilitation of spaces for joint action. Each year the alliance holds two general assemblies with all its members to revise and adjust the work plan, share accomplishments, knowledge, and challenges, deepen the dialog, identify potential synergies, propose solutions, and take collective decisions to advance marine conservation and fisheries management efforts.
2. Follow-up on agreements and commitments. The alliance, through the coordinating committee, ensures that agreements and commitments made during the assemblies and meetings are respected and completed. This allows advances in the common work plan and, therefore, in the general objectives of the alliance.
3. Management and optimization of resources. The alliance is a common platform through which knowledge and financial resources are maximized through synergies and collaborations among partners.
4. Provision of a regional vision of conservation and sustainable fisheries actions. Through its collaborative platform, the alliance contributes to contextualizing the conservation efforts that its partners undertake. This offers a regional vision that identifies gaps to be filled and opportunities to strengthen marine conservation and fisheries management efforts.

**THE ASSEMBLIES.**—The assemblies take place twice a year. They represent the most prominent arenas for collective decision making within the alliance. We develop the assemblies with the support of an external professional facilitation team and the coordinating committee to create democratic and highly participatory sessions, with decisions based on approximation to consensus with open voting. The participative model, the approach and the projects on which the alliance focuses evolve over time and are reviewed during the assemblies.

Because the inertia for continuing top-down and self-centered decision making remains high, we use facilitation techniques that move members from their comfort zone or status quo. Moreover, we use soft skills training directed to all the members during the assemblies (e.g., leadership, negotiation and conflict resolution, human development, and communication) to foster collaboration.

Fishers have a prominent place in the assemblies, with fishing cooperatives and the federation representing around a third of the audience. Each fishing cooperative may bring up to four representatives, whereas other organizations can have two representatives, as an effort to foster balanced debate. Including representatives from both fisheries and state and federal environmental government agencies is also important. Fishers and other members of the alliance are eligible for support to cover basic expenses to attend the assemblies.

The attendance in the assemblies has grown from 60 participants early on, to 90 participants by 2015. Currently, the alliance includes: 8 fishing cooperatives (32% of the state's fishing cooperatives) and their federation (representing all the fishing cooperatives of the state), 14 NGOs, 5 academic institutions, 8 philanthropic foundations, and 10 governmental entities (at state and national level); in total, 46 organizations.

**THE ALLIANCE COORDINATING COMMITTEE.**—The coordinating committee is the second most important entity involved in decision making. It is led by an executive coordinator and a technical coordinator, who is the only salaried person on the committee. The members of the committee are all volunteers who are elected during the assemblies. Terms are for two years, after which new elections are held. Members can resign at will, opening a space for another member to join the committee. The technical coordinator is responsible for following up on—and to some extent implementing—the agreements achieved during the assemblies, planning the assembly and the coordinating committee's meetings (every one or two months) and the assemblies' arrangements, organizing training courses for the fishers, among other activities. Each of the five strategic lines of action is led by a coordinator and supported by liaisons (Fig. 1).

**EMPOWERING AND SUPPORTING THE FISHERS TO LEAD THE PROCESS.**—The alliance strongly represents the interests of artisanal fishers because they are key to the implementation, viability, and sustainability of the fish refuges. During the assemblies, fishers participate in facilitated private dialogue sessions to freely discuss the issues they consider relevant for them and for their representatives in the alliance. The outcomes from these discussions are presented to all the alliance members and addressed during the assembly. This approach, without precedent in Mexico, has established more direct communication among stakeholders, rapidly building trust and collaboration in a short time frame. Additionally, the free training courses and

Table 1. Key conditioning factors for success in the design and operation of a collaborative network such as the Kanan Kay Alliance.

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- Concrete initial objective: create a network of fish refuges
  - Clear function and purpose
  - Open and flexible model, continuous inclusion of new participants
  - Transparent communication
  - Open, friendly, direct, and constructive communication
  - Continuous follow-up on agreements made during assemblies
  - Professional facilitation for the assembly
  - Gradual refining of the goals
  - Shared leadership; path and rhythm dictated by the fishers
  - Ownership of the initiative by the fishers
  - Committed fishers and strong leaders
  - Capable institutions willing to help the fishing communities
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the use of non-technical language in the meetings enhance that trust and the belief that all groups are working toward a common goal.

CHANGING THE PARADIGM OF DECISION-MAKING AMONG STAKEHOLDERS.—A key to success in collective decision making has been to promote an open and facilitated dialog while providing the alliance members with the information needed to give an informed opinion during the assemblies and other meetings. The transparency and bilateral communication among the alliance coordinating committee members and the partners has been vital. We enhance this beyond the meetings with community outreach, including: bimonthly newsletters that describe the advances on the work plan and successful conservation, and fisheries management stories in the region; a Facebook page to share the achievements of our partners and new opportunities for collaboration; and on our website and with regular email and phone communication.

#### DESIGNING AND ESTABLISHING FISH REFUGES (NO-TAKE ZONES)

The alliance focuses on establishing fish refuges with the intent of recovering productivity in the most important regional fisheries (lobster, and finfish, principally grouper and snapper), while contributing to the conservation of the Mesoamerican Reef off Quintana Roo. Lobster, the main target species, experienced dramatic declines in total catch in the late 1980s. While population remained relatively stable at the central and southern portions of Quintana Roo during the 1990s, total production has not recovered to levels recorded in the 1970s and the 1980s (Sosa-Cordero and Ramírez, ECOSUR, unpubl data). Lobster represents a significant portion of the fishers' income despite lower production (by weight) than the finfish fishery (Sosa-Cordero 2003, 2011 Sosa-Cordero et al. 2008). Statewide, the finfish fishery has been in decline for many years. In fact, the grouper fishery declined 56% over 12 yrs (from 1065 t in 1991 to 600 t in 2013) (INAPESCA 2014).

In Quintana Roo, >40% of the territorial sea is included in a network of 12 federal marine protected areas (MPAs), covering 834,649 ha. These areas are designated by and fall under the management of the National Commission for Natural Protected Areas (CONANP). MPAs are created by the government (federal, state, or municipal) normally as part of top-down initiatives, although local stakeholders provide input

during the design and implementation. Each MPA has a zoning scheme, which may include no-fishing areas. At the launch of the Kanan Kay Alliance, the closed areas covered 8.9% of the total MPA area.

The objective of the alliance is to increase the percentage of coastal waters protected from fishing and complement the existing CONANP MPA core zones with the creation of fish refuges, which are governed by the National Fisheries Agency (CONAPESCA). Fish refuges are independent of the MPA network and can be located inside or outside of existing CONANP MPAs.

Since 1950, fishing cooperatives in Mexico have had the right to acquire concessions (TURFs) to harvest fisheries resources (Cruz-Ayala and Igartúa-Calderón 2006). Concessions are granted for a maximum of 20 yrs by CONAPESCA and are renewable by providing evidence of responsible management and continued productivity (McCay et al. 2013). When concessions overlap with MPAs, fishers must abide by the rules imposed by CONANP and those dictated by CONAPESCA. In Quintana Roo, 11 lobster concessions currently cover 33% of the state's territorial waters, and most are partially or entirely located within the current network of MPAs (Fig. 2). As MPAs and TURFs overlap, the fish refuges can be located within both a MPA and a TURF (Table 2).

Coupling fish refuges with TURFs and minimum catch sizes, can have substantial benefits on biomass, biodiversity and fisheries (Roberts et al. 2001, Ward and Hegerl 2003, Boudouresque et al. 2005). Some of the advantages of establishing fish refuges in Mexico are: the paperwork is relatively simple compared to paperwork required to establish an MPA; they are endorsed by the fishing communities as the fishing organizations are the ones making the request (and evaluating their biological and socio-economic impact); they are temporary and renewable (every five years); and fishers are already familiar with the fisheries legal framework and the fishing authorities.

In this case study, implementing fish refuges inside existing MPAs presented a challenge as the initial proposal was not well received by the authorities responsible for MPA management, who saw the fish refuges as infringing on the existing MPA zoning. This was not the case as the proposed fish refuges would provide an additional

Table 2. Fish refuges in Quintana Roo and their relation to TURFs and MPAs. BLA = Banco Chinchorro, Langosteros del Caribe, and Andrés Quintana Roo Fishing Cooperatives; Sian Ka'an = Sian Ka'an Biosphere Reserve; Banco Chin = Banco Chinchorro Biosphere Reserve; Cozumel = Cozumel Fishing Cooperative; José María = José María Azcorra Fishing Cooperative; Tulum = Tulum Fishing Cooperative.

Fish refuge and neighboring location in land	Area (km <sup>2</sup> )	TURF (concession)		
		ownership	MPA	Creation date
La Poza, María Elena	0.05	Cozumel	Sian Ka'an	30/11/2012
Gallineros, María Elena	0.09	Cozumel	Sian Ka'an	30/11/2012
Cabezo, María Elena	0.09	Cozumel	Sian Ka'an	30/11/2012
Punta Loria, María Elena	0.07	Cozumel	Sian Ka'an	30/11/2012
San Román Norte, María Elena	0.03	Cozumel	Sian Ka'an	30/11/2012
San Román Sur, María Elena	0.02	Cozumel	Sian Ka'an	30/11/2012
Punta Niluc, María Elena	1.57	Cozumel	Sian Ka'an	30/11/2012
Mimis, María Elena	9.98	Cozumel	Sian Ka'an	30/11/2012
El Faro 1, Punta Herrero	4.28	José María	Sian Ka'an	12/09/2013
El Faro 2, Punta Herrero	0.39	José María	Sian Ka'an	12/09/2013
Canché Balam, Punta Herrero	5.54	José María	Sian Ka'an	12/09/2013
Anegado de Chal, Punta Herrero	1.05	José María	Sian Ka'an	12/09/2013
40 Cañones, Banco Chinchorro	122.57	BLA	Banco Chin	12/09/2013
Akumal	9.88	Tulum	NA	13/04/2015

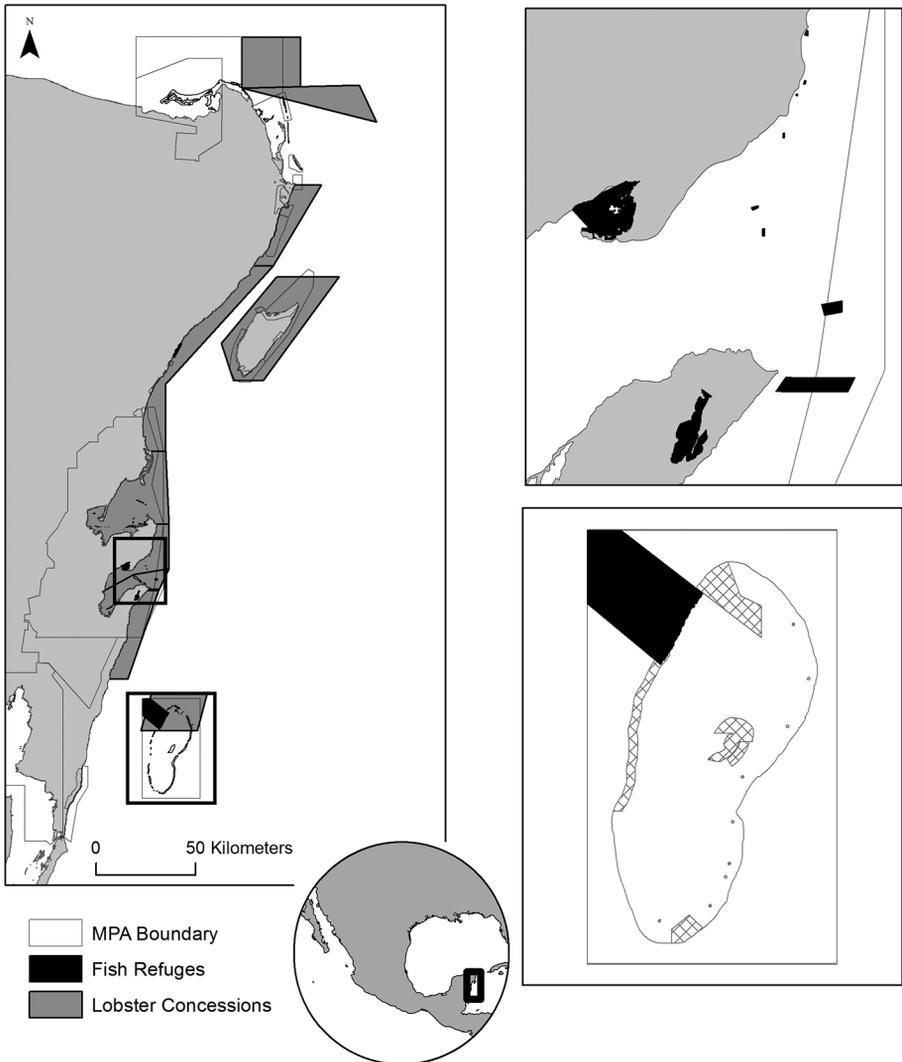


Figure 2. Fish refuge network fostered by the Kanan Kay Alliance off Quintana Roo (Mexican Caribbean) by November 2015.

level of protection from fishing, whereas the existing MPA zoning permitted some extraction. The technical arguments presented by the Alliance and the fishing cooperatives were successful and the first network of eight fish refuges (1033 ha) was established in the Sian Ka'an Biosphere Reserve, a World Heritage Site, in November 2012 (DOF 2012). In 2013, the National Fisheries Agency established four more fish refuges (13,381 ha) off Quintana Roo in Banco Chinchorro Biosphere Reserve and Sian Ka'an (DOF 2013) (Fig. 2). In 2015, the Akumal Fish Refuge (924 ha) (DOF 2015) was created, the first one outside of the MPA network. All 14 fish refuges are located within fishing concessions.

Conservation and resource management tools must be grounded in a strong theoretical base. This is a prerequisite for site selection of fish refuges. The working model

of the alliance focuses heavily on creating socially robust conditions in the fishing communities that favor the implementation of conservation measures. Fisher involvement based on traditional ecological knowledge and complementing it with the available scientific information is critical (Fulton et al. 2013, Vélez et al. 2014). This approach raised concerns among some researchers and government agencies who felt that the areas selected by fishers were located in biologically suboptimal areas that would not benefit from protection; however, biological data collected in the sites suggest that the fish refuges are providing conservation benefits (Fulton et al. 2015).

Fisher involvement continued when a NGO, Comunidad y Biodiversidad A.C. (COBI), developed a citizen science program and trained 27 fishers from three communities to evaluate the changes in biodiversity in the fish refuges (Fulton et al. 2013, 2015). Each cooperative selected a team of 6–12 fishers to participate, learn to scuba dive, and to identify fish and coral species. Baseline data on fishing and biodiversity were collected for each fish refuge immediately before closure and the surveys are repeated annually. External evaluations of the fishers' abilities are completed periodically to ensure the consistency, accuracy, and precision of the data generated (Fulton et al. in press). The most recent data, averaged across the 13 fish refuges, show increases of 130% in the biomass of snappers and groupers and increases of >250% in spiny lobster abundance (Fulton et al. 2015). These results, obtained entirely on fisher participation (see Table 3), help maintain the momentum and encourage other cooperatives to establish their own fish refuges. Data from individual fish refuges also influence future marine reserve design.

Socioeconomic baseline data presented to the federal government before the fish refuge closures included current cooperative incomes, opportunity costs of the fish refuges, and different scenarios for fisheries recuperation. Similar socioeconomic monitoring has not been funded, although the survey will be repeated before the five-year mark when the fish refuges will be renewed, and different avenues (e.g., partnerships with research institutions) are being explored to address the issue.

Finally, no MPA, fish refuge, or TURF is successful without an effective inspection and surveillance program. Following the collaborative model of the Kanan Kay Alliance, community surveillance programs are being established, with training courses covering the legal position of the fishers and best practices in fishing and administrative procedures.

Table 3. Key conditioning factors for successful establishment of the fishing refuges fostered by the Kanan Kay Alliance.

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- Open communication about the design and objectives of the fish refuges
  - Participatory processes for refuge design
  - Provide technical and legal support to fishers
  - Capacity building with members of the alliance on diverse topics (e.g., scuba diving, reef species identification, monitoring methodologies, coral restoration, community surveillance, soft skills trainings—leadership, negotiation and conflict resolution, communication)
  - Share results of the fish refuges jointly monitored by fishers and NGOs with alliance members
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## PROGRESSION AND COLLECTIVE ACTION RESULTS

Because it can be difficult to distinguish the results of individual organizations and the alliance, the most obvious result by which members can measure the success of the alliance is through the establishment of the fish refuges. To date (2011–2015), 14 fish refuges have been established covering 16,000 hectares, an area 5% the size of that initially proposed for 2015 (20%). The creation of the first fish refuge outside of a MPA in the Mexican Caribbean and within the concession of a fishing cooperative (DOF 2015) is of particular note as this was achieved with a cooperative that had only recently joined the alliance.

Increasing involvement of the fishers in the alliance is further proof of progression. The six original cooperatives have been joined by two more, from the center and north of the state, where fishing pressure remains highest. This highlights the perceived benefits and value of working with the alliance; we not only invite new partners to join, but local stakeholders wish to be part of the process.

In general, the alliance provides considerable qualitative rather than quantitative data. For example, by establishing assemblies and other meetings, we created dialogue spaces for other topics to be aired that otherwise would not have been brought to light. Discussions regarding enforcement—not only for the fish refuges, but also for TURFs and MPAs—have become more fruitful and participatory with fishers and government agencies exploring shared responsibilities. Communication with civil society organizations has also improved, resulting in members bringing their experience and resources to the table to help implement community surveillance programs.

Because fisher enforcement surfaces frequently as a discussion topic during alliance meetings, we conducted a series of training courses in 2015 to enhance fishers' knowledge in legal matters, including specific training on community surveillance. Additionally, one of the alliance member organizations hired a lawyer to follow-up on official complaints made by the fishers about the responsible government agencies and to help identify and resolve issues related to illegal fishing or marketing of illegal produce.

The participation of civil society, and the training opportunities that are offered, in conjunction with universities and research centers, has allowed: (1) the fishers to identify these organizations as allies; (2) organizations to share their expertise; (3) the coordinating committee to identify the specific training needs among different cooperatives; (4) public institutions to identify exemplary cooperatives that can be used as models for others; and (5) all members to identify activities and methodologies that could be consolidated across organizations to maximize resource (human, economic, information) use. Based on input from the assemblies and working groups organized by strategic lines, we developed a biological monitoring protocol for the fish refuges, combining the knowledge of several civil society organizations and academics that carry out biological monitoring programs in Quintana Roo. We established basic indicators to allow data compatibility and to include the fishers in the monitoring process at the community level. We shared the monitoring protocol with the National Fisheries Research Agency (INAPESCA) to be revised and validated for its inclusion in the national fish refuge monitoring program, providing additional validity to the data collected by the fishers.

Assemblies also have been a crucial meeting point for philanthropic foundations. Foundations have had the opportunity to: (1) identify the type of projects that have financing (through a systemized territorial mapping of projects); (2) receive firsthand information of the importance of the work and the priorities of the people on the ground/water; and (3) learn in greater detail of the challenges faced by marine conservation in Quintana Roo, and identify solutions directly with partners.

While involving the various government agencies in the alliance activities initially proved difficult, we have consolidated the relationship with the federal government, thereby advancing the collective agenda and providing institutional support for many of the processes in which we work.

To analyze and systemize the advances of the alliance, including the identification of its strengths, weaknesses, and the needs of its members, external bodies have conducted annual surveys before each assembly. In 2013, we evaluated perceptions of the alliance (Moure 2013), interviewing 70 members. Interviews indicated that “the present situation of the alliance is positive,” and that “the alliance is positioning itself little by little, as a great example of collaboration both nationally and internationally” (CCC and COBI 2015). The perception of the alliance’s members is vital to guide the work in the following years.

#### REMAINING CHALLENGES

**OPERATIONAL STRUCTURE.**—Building an alliance as a voluntary collaboration platform with no legal authority and only one salaried position has been one of the greatest challenges, because while members have common objectives, there is limited time available to complete activities. Having a full-time paid technical coordinator has been crucial to ensure agreements are respected and ongoing processes are successfully completed. However, as the portfolio of activities and responsibilities grows, it has become evident that the technical coordinator’s capacity to cover emerging needs is limited. While hiring additional staff is critical, funding constraints exist.

While the diversity of alliance members is a distinct advantage to the organization because it contributes to the representative and inclusive spirit, most of the heavy lifting (follow-up and fundraising) falls to a small number of NGOs. This issue needs to be resolved because it is neither sustainable nor efficient for achieving the alliance’s goals. An external objective evaluation of the alliance’s current model and a study of alternative operational models are currently underway.

**COMMUNICATION.**—One of Kanan Kay Alliance’s challenges is to find additional means to communicate with members. We have built a solid communication strategy that includes word of mouth, newsletters, Facebook, and a strong website presence. The question is: How do we strengthen relationships with fishing cooperatives and have more presence in fishing communities? This is an area in which we continue to seek advice and support because the importance of sharing and positioning the value of the alliance for the fishers has been clear from the beginning.

**FUNDING.**—All of the alliance’s members contribute to its mission with their time, effort, and coinvestment in some of the activities fostered by the alliance. However, the development of mechanisms to make these contributions more regular and equitable is an issue to be discussed during the up-coming assemblies.

The alliance currently depends entirely on a single NGO to fund the technical coordinator position and expenses associated with the assemblies and trainings. This financial support allows the alliance to fill a critical role in advancing marine conservation and fisheries management in Quintana Roo, a position that has gained traction with NGOs and participants alike, and will serve the alliance well in developing and diversifying additional avenues of support.

#### AREAS OF OPPORTUNITY

**NO-TAKE ZONES COMPLEMENTING MARINE PROTECTED AREAS.**—Implementation of fish refuges remains a challenge in terms of recognition of their value as a complement to MPAs in Mexico, particularly when they are declared within MPAs. However, their potential is unquestionable because they are much easier to implement than MPAs and they are requested by the fishers as part of a bottom-up initiative. The expansion of existing fish refuges and the expected declaration of new areas in Quintana Roo provide opportunities to strengthen the existing network.

**CONSOLIDATING THE “FISH REFUGE IMPLEMENTATION MODEL” OF QUINTANA ROO.**—The alliance will continue developing a comprehensive program to consolidate the “fish refuge implementation model” of Quintana Roo that the different partners of the alliance have contributed to build, mainly by strengthening the surveillance capacity of fishing communities, as enforcement remains the most acute challenge when it comes to successful management of the fish refuges.

**UNIQUE, FRUITFUL, AND EXCLUSIVE EXCHANGE SPACES FOR FISHERS.**—For the past two years, the alliance embraced exclusive exchange spaces for fishers within the assemblies. Fishers’ views and needs nurture the alliance members’ perceptions and reform the goals, activities, and commitments agreed, making them more realistic. These spaces have allowed the fishers to evaluate the role and importance of the alliance for their communities, and reinforce their self-identified role as “bridge builders” between other fishers and members of the alliance (CCC and COBI 2015).

**BRINGING NEW PLAYERS TO THE TABLE.**—Inviting new players to the alliance (including representatives from the tourism industry, small-scale buyers, chefs), has resulted from input from several members (CCC and COBI 2015). While the alliance started inviting partners from these sectors, their level of targeted regular participants has not yet been achieved. Now that the alliance has grown its membership, gained fishers’ trust, and recognition nationally and internationally, new members from these sectors are showing interest in participating, which will bring opportunities for the fishers to explore new commercialization options, and alternative livelihoods valuable to consolidate the alliance’s mission.

#### CONCLUSIONS

Key aspects of the success of the Kanan Kay Alliance include:

- Give prominence to fishers by acknowledging their power, strengths, and weaknesses, and adapt to the way they operate.
- Have a flexible structure and membership.

- Constantly evaluate the alliance's performance, seek advice and feedback from its members through the assemblies and systematic evaluation processes; adapt accordingly.
- Emphasize the importance of training and capacity building for all members.
- Provide the technical support and backstop to fishers for implementing fish refuges, while encouraging them to take the lead.
- Build a collective, validated, and consistent work plan focused on implementing fish refuges, but acknowledging the importance of supporting complementary initiatives (i.e., fisheries certification, ecotourism, commercialization, etc.).

Evident now is that the alliance is in a phase at which it needs to quantify and evaluate what its collective action initiative has achieved at both state and national levels, and consider potential and more efficient structural and management models. The alliance is about to take these steps with the support of all of its members.

The increase of biomass of different species within the fish refuges of Quintana Roo supports their use as effective fisheries management instruments (Fulton et al. 2015), especially when implemented with TURFs and other traditional management measures. The implementation of these fish refuges would not have been possible without the collaboration and synergies fostered by the alliance.

The Kanan Kay Alliance structure, functions, and operating principles can serve as a participatory model for other initiatives that look to optimize the implementation of fisheries management tools in cooperation with and participation from the government and the fishers themselves.

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