COMUNIDAD Y BIODIVERSIDAD
ASOCIACIÓN CIVIL

PROPOSAL FORMAT/RE-GRANTING PROJECTS

PART I: PROJECT SUMMARY

1. Project name

Assuring the long-term success of the network of fish refuges in the Mexican MAR

2. Project location

State of Quintana Roo, Mexico

3. Beneficiary target group

The original Fishing Cooperatives that form part of the Kanan Kay Alliance:
SCPP Vigía Chico – Punta Allen – 76 members
SCPP Cozumel – Maria Elena/Cozumel – 50 members
SCPP José María Azcorra – Punta Herrero – 22 members
SCPP Banco Chinchorro – Banco Chinchorro – 33 members
SCPP Langosteros del Caribe – Banco Chinchorro – 28 members
SCPP Andrés Quintana Roo – Xcalak and Banco Chinchorro – 23 members
New Fishing Cooperatives that have recently joined the Alliance:
SCPP Chiquilá – 30 members
SCPE Pescadores del Porvenir – 28 members
SCPP Vanguardia del Mar – 68 members
SCPP Pescadores de la Isla de Holbox – 45 members

4. Summary of project

The long-term success of conservation initiatives requires the development of strategies for sustainable financing and ability to replicate and scale through the creation of models. Since 2012 a group of six fishing cooperatives in the Mexican MAR, representing over 200 fishers have successfully maintained 176 km^2 of marine reserves and met the requirements of internationally recognized eco-certifications for sustainable fishing. This project will assure the long-term success of these initiatives through the implementation of the above mentioned strategies whilst simultaneously contributing to regional and national conservation targets and objectives for fish refuges and sustainable fishing.

5. Applicant organization/contact information

Name of organization applying Comunidad y Biodiversidad A.C (COBI)

Summarize your organization`s mission (maximum 75 words)

To promote the conservation of marine biodiversity and the establishment of sustainable fisheries through effective participation.

6. Duration of project

24 months

7. Project continuity

a) *Is this proposal a continuity of a previous project granted by MAR Fund and/or Oak Foundation?* **Yes**

b) *What was the previous amount granted?* **$300,000 over three years**

c) Briefly indicate the specific achievements/results obtained to date with the previous support:

Objective 1 - Create the first functional network of fish refuges in Mexico.

- The first network of 13 fish refuges established in 2012 and 2013 are showing notable biological recovery. In the fish refuges of Sian Ka´an (established in 2012) snapper biomass has increased 147% and lobster density has increased 241% from the baseline data. In Banco Chinchorro, snapper and grouper biomass increased 195% since 2013.
- Three new fish refuges have been added to the network, in Akumal in 2014 (9.88 km^2) and two in Punta Allen in 2016 (30 km^2).

Objective 2 - Build the capacity of fishers and fishing cooperatives to actively participate in the monitoring of established fish refuges, and through, community engagement, promote self-enforcement and compliance.

- A total of 72 fishers from six fishing cooperatives have been trained to collect data in the fish refuges. Fishers have been trained in monitoring techniques for biodiversity, Fish Spawning Aggregations (FSA) and megafauna (rays, sharks and turtles).
- A total of 25 FSA sites have been characterized by the fishers using traditional ecological knowledge, and using bathymetric mapping and SCUBA. Four grouper and snapper aggregation sites are now protected.
- The fishers have taken part in the stock evaluation of the lobster fishery in collaboration with COBI and ECOSUR.

Objective 3 - Ensure a coordinated and effective surveillance and inspection program to minimize illegal fishing in the fish refuges network and contiguous areas.

- Four fishers from the Cozumel cooperative have been conducting community surveillance in the fish refuges in Sian Ka´an. The fishers use the boat “Kanan Kay I” which was acquired by COBI in 2013. In 2016 COBI passed the boat to the cooperative as previously agreed and the fishers are now operating the boat independently.
- The Kanan Kay Alliance, through environmental lawyer Raziel Villegas continues to provide training to the fishers in surveillance and enforcement. This has been conducted with six cooperatives. The Alliance is also cooperating with the Marines and PROFEPA to launch operations against illegal fishers.

Objective 4 - Support fishing cooperatives to become more efficient social enterprises, generating value added in fishing products and access to new markets of sustainable seafood.

- Four cooperatives in Yum Balam (Holbox y Chiquila) have taken part in the leadership and cooperative process to identify needs and areas of opportunity for the development of the cooperatives.
- The Cozumel cooperative has developed a successful lionfish fishery. Captures have increased to 400 kg/month whilst prices rose from $90peso/kg of lionfish at the start of the grant period to $200/kg at present, providing a great incentive for the cooperative to capture the invasive species.
- The six cooperatives in Sian Ka´an and Banco Chinchorro certified by the Marine Stewardship Council (MSC) continued to meet to sustainable fishery requirements but decided to withdraw from the certification in 2016 due to the high audit costs imposed by MSC. The fishers continue to operate sustainably and have promised to pay $1/kilo to support fishery monitoring. The stock assessment, completed by ECOSUR and COBI show that the stock is within sustainable limits.

Objective 5 - Conduct further analysis on the potential of payment for marine ecosystems services (PES) as a financial tool for ensuring the long-term operation of fish refuges.

- The viability study for the establishment of a PES scheme in Sian Ka´an taking in to account the opportunity costs to the fishers and willingness to pay was completed and externally reviewed, however the concept and practical implementation of a PES scheme are still difficult to put in to practice. COBI continues to look for opportunities to implement this approach in collaboration with CONANP and CONAPESCA.

Objective 6 - Continue COBI's effort in leveraging additional financial support for institutional and programmatic activities.

- During this grant reporting period we have been able to renew funding with existing donors (Summit Foundation, MarFund, TNC) and were successful in our first-time grant applications to the Alianza WWF-Fundación Carlos Slim (conservation of fish spawning aggregation sites, megafauna monitoring and lobster sustainability), the National Fisheries Agency (CONAPESCA – the first time the government has funded activities to support the creation and implementation of fish refuges) and the Oak Hill Fund (fish spawning aggregations). The Hernandez Family Foundation (via TNC) was able to provide support to the Kanan Kay Alliance including the salary of the coordinator.

PART II: PROJECT DESCRIPTION

8. Introduction

Worldwide, fisheries represent the main source of protein, income, and employment for most coastal communities. Thus, overexploitation of fish populations has not only ecological but also social and economic consequences. In Mexico, over 350,000 fishers and their families rely on marine resources, and sustainable practices to ensure fishing in the long term remain insufficient.

Economic theory has demonstrated that only through collective action (collaboration and self-organization) will users invest time and energy to avert tragedies of the commons. This project aims to achieve sustainability in Mexican fisheries and marine ecosystems through collective action, specifically working in collaboration with the Mexican government, fishers, researchers and civil society organizations (CSOs). The main elements of the project are: 1) Assure that the Mexican MAR fishing cooperatives continue to implement sustainable practices, and new cooperatives also join the initiative, 2) Assure that such sustainable practices (marine reserves and sustainable fishing) are successfully financed in the long-term, 3) The marine reserves established five years ago continue to be successful and form part of an effective regional network and, 4) The results of the process are used to improve public policy in Mexico.

Our previous grant from the Oak Foundation allowed us, in collaboration with the Kanan Kay Alliance to establish 16 fish refuges covering 185 km^2 in the Mexican MAR in collaboration with seven cooperatives in the center and southern part of the state. Biological recovery is notable in the fish refuges, with increases of 147% in snapper biomass and 241% in lobster abundance in the fish refuges of Sian Ka´an and 195% in grouper and snapper biomass in Banco Chinchorro between 2012 and 2015[1]. In collaboration with the fishers we have also characterized 25 potential spawning aggregation sites. Four of the characterized aggregations are now protected.

Four cooperatives from the north of the state have been incorporated into the Alliance and are currently undertaking capacity building programs with the goal of creating the social capital to invest in sustainable fishing. COBI is currently developing replicable models (for fish, capacity building and sustainable fisheries) that will allow us to develop our national programs using the same methodology.

9. Justification

a) Identification of the main threats, needs and/or issues in the area

The Mexican portion of the Mesoamerican Reef is home to over 2,000 fishers and fishing forms a key economic and social activity[2]. The demand for fish from the dominant tourism sector can promote the implementation of unsustainable fishing practices and a race to fish, particularly in communities with low social capital and organization. The low biological productivity of the MAR means that key sites such as fish aggregation sites[3], coral reefs and commercial species such as lobster can be slow to recover following disturbances, both environmental (e.g. climate change) and human (e.g. overfishing). Market forces are also changing and the demand for sustainable, local produce is growing within the tourism sector, creating a need for new commercialization opportunities that can benefit the fishers. Successfully financing both the sustainable fishing and conservation initiatives (e.g. the fish refuges) of the cooperatives will allow long-term conservation success in the region.

b) Project relevance for addressing these threats, needs and/or issues

This project will look to use the successful examples of sustainable fishing practices developed by COBI's partner fishing cooperatives in Quintana Roo and replicate them in other areas of the Mexican

[1] Fulton et al. 2015
[2] Comunidad y Biodiversidad A.C 2014
[3] Aguilar-Perera 2013

MAR. Whilst not a threat, the expected creation of a 56,000 km^2 MPA covering the entire Mexican MAR (to be announced at the COP13 in Cancun) will open up new opportunities in the region for marine conservation. The creation of fish refuges will be able to continue unabated and the creation of design principals based on biophysical factors, climate change and connectivity will create the opportunity to incorporate the results in to the MPA zoning, whilst simultaneously promoting scientific collaboration across the four countries of the MAR region.

10. Site characterization

a) *Total area of MPA*

- Sian Ka´an Biosphere Reserve – 528,148 hectares
- Banco Chinchorro Biosphere Reserve – 144,351 ha
- Xcalak National Park – 17,950 ha
- Cozumel National Park and Protected Area – 11,988 ha and 37,829 ha
- Yum Balam Protected Area – 154,100 ha

b) *Brief history of conservation efforts regarding the topic of **this** proposal at this location (5 years)*

COBI, in collaboration with the Kanan Kay Alliance, has been working with the six fishing cooperatives that operate in the Sian Ka´an and Banco Chinchorro Biosphere Reserves since 2008. In 2012 and 2013 these cooperatives established 13 fish refuges (no-take zones) covering 144 km^2 of their fishing grounds with the goal of species conservation and promoting sustainable fisheries. COBI has trained 72 fishers from the cooperatives in coral reef monitoring techniques to collect the data to evaluate the fish refuges. As mentioned previously, considerable increases in abundance and biomass of key fishery species have been noted. Success has derived from the participatory process. The fishers have been involved throughout; in the design, implementation, monitoring and operation of the fish refuges, creating a sense of ownership. For example, the Cozumel Cooperative in Sian Ka´an now completes the annual monitoring of the sites, and also operates a community surveillance programme with a boat and trained fishers that COBI acquired and trained. The success of the original 13 fish refuges in 2012 and 2013 has also encouraged other fishers to implement similar projects, with COBI and other Kanan Kay Alliance members, leading to the creation of a 9 km^2 fish refuge in Akumal in 2014, and two refuges in Punta Allen (total 30 km^2) in 2016.

The lobster fishery continues to be sustainable, as revealed by COBI and ECOSUR during the 2016 stock assessment, but the cooperatives decided to withdraw from the Marine Stewardship Council certification in 2016 due to the high audit costs and lack of market premium. The fishers are keen to maintain a sustainable fishery and have committed to pay $1 (peso) per kg of lobster sold to ongoing fishery monitoring. We continue to work with them to identify market strategies and also to bring other fishing cooperatives in the state (e.g. in Yum Balam) up to the same level of sustainability.

c) *Applicant organization history in working at this site*

COBI has 17 years' experience working with fishing cooperatives in different parts of Mexico, contributing to strengthening leaders and fishing organizations in the Mesoamerican Reef (since 2007), the Pacific Coast of the Baja California Peninsula and the Gulf of California. We have designed and implemented fully-protected marine reserves and sustainable fisheries projects in these regions, generating the largest pool of practical experience in this field by a CSO in Mexico. COBI has worked in the Mexican MAR region since 2007, and was key in establishing the Kanan Kay Alliance (formally launched in 2012). We have built considerable regional expertise and excellent relationships with fishers, academia, civil society organizations and governments. We are working with CONAPESCA on the procedures for the establishment and evaluation of fish refuges, as well as on providing technical advice on new fish refuges to fulfil their national goals of three fish refuges per year as part of their adaptation to climate change. COBI has a strong team of dedicated and highly trained

professionals, eager to work with the fishing sector and key stakeholders to generate the results promised to fishing communities and supporters. All our work is based in participatory science, combining traditional knowledge and science.

11. Objectives

General objective

Restore coral reef health and the main commercial fish species biomass in the Mexican MAR through the active participation of fishers, the protection of key habitats, the implementation of sustainable fishing practices, and the creation of replicable models that can influence both national and region fishing policy.

Specific objectives

1. Promote the implementation of sustainable fishing practices of the cooperatives in the Mexican MAR.
2. Support fishing cooperatives to be successful in financing initiatives of conservation and sustainable practices.
3. Protect fishing grounds, coral reefs, and Fish Spawning Aggregations (FSA) sites in the MAR from Tulum in the center to the Belize border in the south, through a network of fish refuges.
4. Scale up COBI's demonstrative models in public fishing policy in the Mexican MAR and at national scale.

12. Project description

Objective 1. Expected results:

1. The Sian Ka´an and Banco Chinchorro lobster fishery continues to be sustainable through its participation in a Fishery Improvement Project (FIP)[4].
2. Sustainable practices are replicated in another fishery site in the Mexican MAR (Yum Balam).
3. Three new cooperatives in the Mexican MAR are identified to implement the next generation of fish refuges.

Objective 2. Expected results:

1. Mexican MAR lobster fishing cooperatives are aware of new options of sustainable markets.
2. The cost of implementing and maintaining fish refuges and sustainable fishing is known and shared among fishers.
3. At least one cooperative implements a strategy for the financial sustainability of their sustainable fisheries and fish refuges initiatives.

Objective 3. Expected results:

1. The 13 fish refuges established in 2012/13 are renewed for five more years.
2. Climate change monitoring (temperature and salinity) is incorporated in to the fish refuge monitoring program.
3. 50% (approx. 25 sites) of the grouper/snapper FSA sites in the Mexican MAR (from Tulum in the center to the Belize border in the south) are characterized and validated by fishers and COBI.

[4] FIP. (Conservation Alliance for Seafood Solutions). It is based on international standards for sustainable fisheries, principally Marine Stewardship Council (MSC), to ensure contributions to healthy stocks and ecosystems, as well as participatory and transparent fisheries management.

Objective 4. Expected results:

1. The lobster fishery model developed in Sian Ka´an and Banco Chinchorro inspires other fishers in the MAR and decision makers to meet sustainability standards.
2. Design principles for fish refuges in the MAR are created through a collaborative process involving the four MAR countries.

13. Project description Project Development Table

Objective	Output / Expected Result	Activity	Trimester								Performance indicator	Sources and means of verification	Impact Indicator	Assumptions & risks	% of Completion
			1	2	3	4	5	6	7	8					
O1 Promote the implementation of sustainable fishing practices of the cooperatives in the Mexican MAR.	The Sian Ka´an and Banco Chinchorro lobster fishery continues to be sustainable through its participation in a Fishery Improvement Project (FIP)[5].	1. Update, validate and implement the FIP through multi-sectoral collaboration (cooperatives, federation, local and federal government and OSCs).	X	X	X	X	X	X			(3) Meetings with the fishers, technical working group (COBI, ECOSUR, INAPESCA, CONANP) and fish buyers from Sian Ka´an.	Updated FIP document uploaded to https://fisheryimprovementprojects.org/ Minutes and presentations (ppt) from meetings with fishers, technical working group and buyers to develop FIP, List of participants and photos.	By 2018, two fisheries (lobster and newly selected fishery) will participate in Fishery Improvement Projects (sustainable fishing practices). By 2025 the 25 fishing cooperatives that form the Federation of Cooperatives of Quintana Roo (2,000 fishers) have committed to and are implementing sustainable fishing practices that are reflected in fishery stock and ecosystem health.	Assumptions rely on continued ecosystem health/minimal impacts of climate change on the fisheries. Contact has been made with the Federation to measure interest, however individual cooperatives may not show sufficient interest in implementing new practices if the goals are unclear.	0%
	Sustainable practices are replicated in another fishery site in the Mexican MAR (Yum Balam)	1. To collect data of lobster, grouper and octopus' fisheries to run a multicriteria analysis using Delphos[6] program 2. Run the multicriteria analysis using Delphos to select another fishery based on standards for sustainable fishing in the Mexican MAR to start in a FIP.			X	X	X	X			(2) Visits are held in Yum Balam with the fishing cooperatives to collect data. (1) Meeting to run the Delphos analysis with the fishers to select the most appropriate fishery in Yum Balam.	A final report including a description of the analysis, selection process for the fishery, and the involvement of the fishing cooperatives. Minute, photos from meeting and list of participants			0%
	Three new cooperatives in the Mexican MAR are identified to implement the next generation of fish refuges.	1. To identify with the federation three cooperatives to implement the new generation of fish refuges. 2. To disseminate the ecological and economic benefits of the fish refuge.			X	X	X	X			(1) Meeting with the federation to identify the three new cooperatives (2) Fishers exchanges (8 fishers from Maria Elena community, where they have fish refuges and at least two fishers of the three new cooperatives identified).	Minute, photos from meeting, fisher exchange and list of participants.			0%

[5] FIP. (Conservation Alliance for Seafood Solutions). It is based on international standards for sustainable fisheries, mainly Marine Stewardship Council (MSC), to ensure contributions to healthy stocks and ecosystems, as well as participatory and transparent fisheries management.

[6] http://cobi.org.mx/ciencia-participativa/software/ Delphos is an open-source, multi-criteria analytical tool that was developed by COBI and ECOTRUST.

O2 Support fishing cooperatives to be successful in financing initiatives of conservation and sustainable practices.	Mexican MAR lobster fishing cooperatives are aware of new options of sustainable markets.	1. To establish connections and relationships between fishers and buyers 2. To include the fishers in the NUUP[7] platform of sustainable producers and buyers.	X	X	X	X					(1) Workshop held in Mexico City with fishers (>20) and buyers (>3). (3) Meetings with NUUP.	Minutes from workshop and meeting. List of participants and photos. (6) Fact sheets of the cooperatives with information of the lobster fishery for buyers. List of fishers and buyers included in NUUP database.	By 2025, six fishing cooperatives (24%) of the 25 of the federation are self-financing their sustainable fishing and fish refuges.	Fishers could potentially be demotivated if added-value commercialization is not achieved for their sustainable products.	0%
	The cost of implementing and maintaining fish refuges and sustainable fishing is known and shared among fishers.	1. Develop a tool (Excel sheet) to quantify the costs of implementing and maintaining fish refuges and sustainable fishing in the MAR.				X	X	X	X		(1) Meeting with COBI´s fish refuges team and accountant. (6) Interviews with six fishing cooperatives to review the costs of implementing fish refuges and sustainable fishing in the MAR. (3) Interviews with members of the Kanan Kay Alliance to review the costs of implementing fish refuges and sustainable fishing in the MAR.	Tool in Excel spreadsheet format.			0%

[7] http://nuup.co/ NUUP is a platform that links sustainable produces to responsible buyers through an online database. This is the first time that fishers will be included. Our collaboration with NUUP aims to overcome the market problems identified during the previous grant period, particularly in the November 2016 workshop on seafood markets.

	At least one cooperative implements a strategy for the financial sustainability of their sustainable fisheries and fish refuges initiatives.	1. Develop a work plan for financing the implementation of fish refuges and sustainable fishing. 2. To develop an agreement for the implementation of the work plan.					X	X	X	X	(7) meetings, (1) for each cooperative, then (1) for the 6 cooperatives in Chetumal, Quintana Roo. (1) meeting to sign an Agreement detailing work plan.	Cooperatives data base. Work plan Signed Agreement Photos and minute from the meetings. List of participants. Account balance of monitoring fund.			0%
O3 Protect fishing grounds, coral reefs, and Fish Spawning Aggregations Sites (SPAGs) in the MAR (from Tulum in the center to the Belize border in the south) through a network of fish refuges.	The 13 fish refuges established in 2012/13 are renewed for five more years.	1. Renew the 13 fish refuges (14,400 hectares for five more years.			X	X	X		X	X	(50) Fishers complete the annual biological evaluations of the fish refuges. (2) Renewal proposals that include the 13 fish refuges submitted to CONAPESCA.	(2) Annual biological monitoring report. (2) Submitted proposal for renewing the 13 fish refuges Publication of renovation in the Mexican Federal Register.	By 2018, biological changes in the fish refuges will be: • Lobster abundance. 2016: 527 ind ha^{-1}. 2018 target: 580 ind ha^{-1}. • Fish biomass (commercial species). 2016: 159.5 g m^{-2}. 2018 target: 175 g m^{-2}. • Coral Cover. 2016: 14.4% hard coral cover. 2018 target: coral cover remains at the same level as 2016. By 2018, sixty fishers from six cooperatives participate in the search for fish aggregation sites. By 2025, the network of fish refuges in the Mexican MAR has increased in area from the current 14,400 ha to 20,000 ha, that protect SPAGs.	The cooperatives have already communicated their desire to continue with the fish refuges however a convincing case for renewing the fish refuges must be presented, using monitoring data collected by the fishers themselves.	0%
	Climate change monitoring (temperature and salinity) is incorporated in to the fish refuge monitoring program	1. Train 10 fishers to install and maintain oceanographic sensors. 2. Install and maintain oceanographic sensors in four fish refuges. 3. Share with all sectors the data obtained with the sensors.			X	X	X	X			(10) Fishers trained to install and provide maintenance to the oceanographic sensors. (5) Sensors installed to measure temperature and salinity in four fish refuges (one in Banco Chinchorro, one in Punta Allen, one in Punta Herrero and two in Maria Elena). (4) workshops, one in each community (Punta Herrero, Banco Chinchorro, Punta Allen, and Maria Elena), to share data. (1) Presentation of the results to Kanan Kay Alliance.	Minutes from workshops. List of participants and photos. Oceanographic sensors installed. Data from sensors included in technical report and shared.			
	50% (approx. 25 sites) of the grouper/snapper SPAGs in the Mexican MAR are characterized and validated by fishers and COBI.	1. To characterize SPAGs in the center and south of the Mexican MAR (from Tulum in the center to the Belize border in the south).	X	X	X		X	X			(10) site visits covering a total of 25 sites. (19) fishers participating in the characterization of 15 new SPAGs. (10) SPAGs monitored once a year by 41 fishers.	Characterization report and priority index for conservation for each SPAGs. Bathymetric maps. Video and Photo.			0%

		2. To monitor previously explored SPAGs.												
O4 Scale up COBI's demonstrative models in public fishing policy in the Mexican MAR and at national scale.	The lobster fishery model developed in Sian Ka´an and Banco Chinchorro inspires other fishers in the MAR and decision makers to meet sustainability standards.	1. Promote the implementation of standards for sustainable fishing in other fisheries with fishers and decision makers, using the lobster fishery as case study.		X	X	X	X	X			(1) Workshop (two days) held in the north of Quintana Roo with four fishing cooperatives (>30 fishers) and decision makers (CONAPESCA, INAPESCA, CONANP).	Minute from workshop. List of participants and photos.	By 2025, the results from the participatory models in the MAR are replicated and/or incorporated in to regional and national fish policies in Mexico led by CONAPESCA, INAPESCA and CONANP.	Not applicable.	0%
	Design principles for fish refuges in the MAR are created through a collaborative process involving the four MAR countries.	2. Develop design principles (biophysical, socioeconomic and governance) for fish refuges network that include fisheries, biodiversity and climate change objectives for Mexican coral reefs	X	X	X	X					(2) Workshops conducted with key stakeholders from the MAR region (Mexico, Belize, Guatemala, Honduras) with approx. 30 participants in each workshop. The first workshop will be held in Cancun, the second will be confirmed during the first workshop.	Publication of design principals for marine reserves in the MAR. Workshop minutes, photos and list of participation with researchers, government officials and key stakeholders in the MAR.			0%

14. Monitoring and evaluation

To ensure the success of the project we will:

- *Concrete our strong relationships with the cooperatives.*
  COBI has now been working in the Mexican MAR for nearly 10 years and we have developed excellent working relationships with the six lobster fishing cooperatives from Sian Ka´an and Banco Chinchorro. We expected that this relationship, built on trust and understanding, will allow us to continue working successfully with these cooperatives whilst also bringing new cooperatives in to the group, such as those from the north of the state whom we have been working on organizational capacity building and leadership over the past year.
- *Promote inter-sectoral collaborations.*
  COBI, in collaboration with the Kanan Kay Alliance, collaborates with many organizations from different sectors to achieve the goals of the Alliance. The creation and operation of the fish refuges during the last five years would not have been possible without this collaborative effort. Similarly, we have established a close and fruitful working relationship with INAPESCA and CONAPESCA, both for the fish refuges and the sustainability standards for the lobster fishery. The importance of bringing government, fishers and civil society together to work towards common goals cannot be overstressed and will be heavily relied upon during this project.
- *Train and educate fishers on the importance of marine conservation and sustainable fisheries.*
  Training and education for fishers will continue to be a key component of this project´s success. Fishers will have the opportunity to learn from their peers during exchanges, workshops and learning experiences. Creating this knowledge, and linking it to the financial sustainability components of this project will allow fishers to understand the costs and benefits related to the implementation of sustainable fisheries and make better decisions for their cooperative and the environment.

The project´s success will be measured through:

- Biological factors in the fish refuges, including changes in:
  - Lobster abundance. 2016: 527 ind ha^{-1}. 2018 target: 580 ind ha^{-1}.
  - Fish biomass (commercial species). 2016: 159.5 g m^{-2}. 2018 target: 175 g m^{-2}.
  - Coral Cover. 2016: 14.4% hard coral cover. 2018 target: coral cover remains at the same level as 2016.
- Social:
  - Number of fishers participating in the search for fish aggregation sites. 2016: 41 fishers from 4 cooperatives. 2018 target: 60 fishers from 6 cooperatives.
- Governance:
  - The renovation of the fish refuges.2012/13: 13 fish refuges/14,400 ha stablished. 2018 Target: 13 fish refuges/ minimum 14,400ha. legally renewed for five more years in collaboration with the fishers and CONAPESCA.
  - The number of fisheries participating in Fishery Improvement Projects and sustainable fishing initiatives. 2016: 1 (lobster). 2018 target: 2 fisheries (lobster and newly selected fishery).

15. Project Sustainability

This project aims to assure the long-term sustainability of the sustainable lobster fishing practices and fish refuges that the fishers have implemented during the previous grant period. We will help fishers and responsible buyers communicate to promote the commercialization of sustainable products and develop tools to calculate the costs associated with the fish refuges through the long-term goal of establishing novel mechanisms for sustainably financing of fish refuges assuring in the long-term success of the network of fish refuges with reduced assistance from philanthropic funds. As mentioned previously, the fishers have already committed to contributing $1 per kg of lobster sales to help cover ongoing fishery monitoring costs.

We expect that the identification of MAR-region design principals (biophysical, socioeconomic and governance) for marine reserves that COBI are developing along with TNC, Smithsonian, CEM and Healthy Reefs, will open new finance opportunities that will allow us to build on the successful examples of marine reserves that we have already developed and roll them out across the MAR region.

16. National and/or Regional relation/linkage

- CONAPESCA has a strategic plan that includes the creation of three fish refuges per year as strategy to counter the impacts of climate change. The current fish refuges are already contributing to this goal, but new information on spawning aggregations will add to this. Additionally, the recently published Lobster and Grouper management plans for the Yucatan Peninsula also highlight the importance of assuring sustainable catches and achieving a sustainable fishery by 2022.
- The creation of the new MPA "Mexican Caribbean Biosphere Reserve" to be announced at the COP13 meeting in Cancun, in December 2016 will create new opportunities to collaborate with CONANP as all the fisheries that we work with will now operate entirely within the MPA system. The Management Plan for the Mexico Caribbean Biosphere Reserve will need to be developed in collaboration with stakeholders.
- As mentioned above, the effort to create design principals for marine reserves is already a MAR region initiative, and COBI is simultaneously working with TNC to create principals in other areas of Mexico.
- Finally, the project contributes to the Aichi Biodiversity targets, particularly, Target 4 (*By 2020, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits*),Target 6 (*By 2020 all fish and invertebrate stocks are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits),* and Target 10 (*By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized*).

17. Cooperation

As mentioned previously, COBI has been heavily involved in the Kanan Kay Alliance since its´ beginning. The Alliance is a multisectoral collaboration consisting of over 45 organizations, including fishing cooperatives, federal and local government agencies, research centres and OSCs. The biannual Alliance meetings bring together all the stakeholders working towards the Alliance´s goals of protecting 20% of the territorial sea. We will continue our close cooperation with CONANP, including training fishermen to conduct surveys which contribute data for MPA management, and the promotion of sustainable fishing within the MPAs. This is particularly pertinent at present as CONANP is expected to create a new 5,700,000-hectare biosphere reserve covering the entirety of the Mexican Caribbean in late 2016. This also ties in with the collaborative work of COBI, TNC, Healthy Reefs, CEM and the Smithsonian, which aims to create international design principals (biophysical, socioeconomic and governance) for marine reserves in the four countries of the Mesoamerican Reef. This process began in 2016 and will conclude during the grant period. We will also continue our collaborations with key researchers, whose expertise in the Caribbean allow us to make science-based decisions for conservation and fisheries. Key partners include: Dr. Eloy Sosa (ECOSUR, Lobster, Fisheries) and Dr. William Heyman (LGL. Spawning aggregations). Within the government,

we will continue to work closely with both INAPESCA and CONAPESCA both at State and National level.

Our closest partners, however, as always, are the fishing cooperatives and their members. We will continue to work directly with them to improve fishing practices, promote the exchange of information between fishers, and help them take their message from the fishing camps to the different levels of government, to have their voice heard and to create real change in the communities.

18. Bibliography:

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