

## RESILIENCE BASED MANAGEMENT CASE STUDY

# Co-management of a small scale Caribbean fishery

📍 Tela Bay, Honduras

## Working towards sustainable livelihoods and healthy reefs through collaborative area based management

### The Issue

Small scale fisheries provide the livelihoods and nutrition for an estimated 492 million people worldwide, accounting for at least 40 percent of global capture fisheries.<sup>1</sup> Despite their significance, they are often underassessed, over-exploited and managed by weak institutions with limited financial support.<sup>2</sup> Much of the catch on the Mesoamerican Reef (MAR) is from small scale fisheries. As a result of overfishing, pollution and development the MAR is in overall poor condition.<sup>3</sup> The biomass of commercial fish is critically low, with herbivorous fish biomass and live coral cover also threatened,<sup>3</sup> endangering the livelihoods of countless coastal communities.

Although protected areas and fishing regulations are essential for sustaining fisheries, their effectiveness in protecting reef health is often undermined by inadequate enforcement.<sup>3</sup> Fisheries in the MAR have historically been managed through a top-down, government centred approach.<sup>4</sup> The effectiveness of government managed approaches to coastal management is often limited due to a lack of consideration for the diverse fishing techniques, cultures, and socio-economic conditions of the affected communities. Hence compliance with top-down Government regulations is often low, particularly as fishing regulations can have short term impacts on the food security and income of coastal communities. A sustainable fishery nonetheless is in the best interests of coastal communities. Co-management arrangements that involve everyone in the decision-making process are more likely to be an effective form of management in small scale fisheries.<sup>5</sup>

As in many areas of the MAR, fishing is a primary source of income and food security for the diverse communities in Tela Bay, Honduras.<sup>6</sup> The local pressure in addition to foreign fishers had led to the overexploitation of the Tela Bay

### How the Programme Addresses Resilience Based Management?



Figure 1: The Tela Bay fishery co-management contributes to the community, ecosystem and governance components of resilience based management.

The fishing regulations introduced as a result of co-management in Tela Bay support sustainable livelihoods by reducing the pressure on the reefs while still allowing harvesting. The implementation of equitable and effective area-based management will reduce local fishing impacts, building the resilience of the local reefs and wider area. The Tela Bay community have successfully partnered with NGO's and local policy makers to deliver monitoring, management, targeted compliance, and education to ensure the sustainability of their local resources. The collaborative process of developing the Tela Bay Fisheries Plan has laid the groundwork for an adaptive management framework. The generation of fishing regulations within Tela Bay, will be a continual process that adapts to the social, economic and ecological reality of the area. By pursuing the potential for aquaponics and other projects, the Tela Bay community is strengthening the resilience of their livelihoods as well as the Tela Bay ecosystem.



fishery, which had declined to the point of affecting the livelihoods of the fishers, with only 41% making a profit every time they went out.<sup>4</sup> In 2016 the fishing communities of Tela Bay approached authorities with their concerns about the scarcity of the critical resource on which their livelihoods depended. They wanted to increase the protection to ensure the sustainability of their fishery. The reef in Tela Bay has some of the healthiest corals in the MAR, providing an important source of coral and fish larvae to the rest of the region. Ensuring sustainable fishing practices in this area is critical for the food security of the local communities as well as for the resilience of surrounding areas.

### **Actions Taken**

#### **Marine Area:**

In 2016 the Tela Bay fishers approached local policymakers with their concerns about the decline of their fishery. This began a process of investigations to comprehend the current ecological, social and economic status of Tela Bay, through a combination of community workshops, interviews, landing based fishery monitoring and reef status monitoring. It was important to determine the extent of fishing activity, who needed to be included in decisions, what fishing methods were being used, which species were being caught and the health of the fisheries and reefs.

Two MPAs previously existed in Tela Bay, Blanca Janeth Kawas National Park (est. 1994) and the Punta Izopo National Park (est. 2000), and in 2017 the Tela Bay Marine Wildlife Refuge

was established. In 2017 the Inter-institutional Committee on the Environment and Protected Areas of the Municipality of Tela was formed (IEC), which brought together government organisations, local and international NGO's and academia, to help co-ordinate conservation efforts. Also in 2017, the fishers of the Tela region self-organised into the Tela Fishers' Union, helping to unite the diverse communities that rely on the Tela Bay fishery with the objective to improve the quality of life of all fishing communities.

Based on the initial investigations a draft fisheries plan was put forward to the communities along with a presentation of the data that had been collected. Through a multi-step consultation process where everyone was given a voice, the community, NGO's and Government created a draft Fisheries Management Plan that applied to the marine area of the three MPA's.

The Plan focused on three main components: fishing gear restrictions, minimum catch sizes and implementation of Recovery Zones. For all new regulations, suggestions were put forward based on the scientific best-case scenario for protection, then consultation sought to determine the views of all stakeholders.

Each community provided input on all the specific fishing regulations they would like to see implemented, including but not limited to gear regulations (net size, net length etc.), minimum catch sizes and recovery zone locations. This process took several meetings with each

community until a consensus was reached and consolidated into another draft. The consolidated draft went through another round of consultation where all stakeholders were part of a single unified meeting, so that the final Plan had the support of the Tela Bay fishers, regulatory institutions, and other stakeholders.

To monitor the effectiveness of the regulations in the Tela Bay marine area, two community scientists are employed to record daily landings data from the fishers. The socio-economic reality of the fishing communities is also monitored through interviews and questionnaires, as the goal of the fisheries plan is to support

sustainable livelihoods as well as ecosystem protection. As expected, not all regulations initially suggested were approved by all stakeholders. Rejected suggestions were included in a 'Next Steps' section of the Plan to potentially be incorporated as more information becomes available, and stakeholders' views alter. The IEC must evaluate the Plan every 2 – 5 years and readjust it if there are any significant changes in the information available on fishing resources, or the socio-economic reality of the communities dependent on the fishery.

In addition to new fishery regulations, income diversification projects have been implemented

### The Fisheries Management Plan implemented the following:

- Industrial fishing and the use of longlines, harpoons, explosives and compressors prohibited in all zones.
- Take of herbivorous fish, sharks, rays, cetaceans, turtles, urchins, sea cucumbers or any species on the CITES list prohibited in all zones.
- Minimum catch size limits for *Lutjanus synagris* (23cm) and *Caranx crysos* (26cm) across all zones, the two most commonly caught species.
- Five Recovery Zones were created within Tela Bay, where the use of nets, trammel nets and seine nets is prohibited, with the rest of the Bay designated as a Sustainable Fishing Zone (Figure 2, Table 1). The use of nets, trammel nets and seine nets at the mouth of rivers and lagoons was also prohibited.
- In Sustainable Fishing Zones there are controls on net mesh size (min. 3 inches), net length (max. 500m per boat) and the time nets can be left in the water (max. 5 hours). The chinchorro, a traditional fishing net, must also comply with the minimum net size and only be used in the traditional manor as a purse seine net up to 100m offshore.

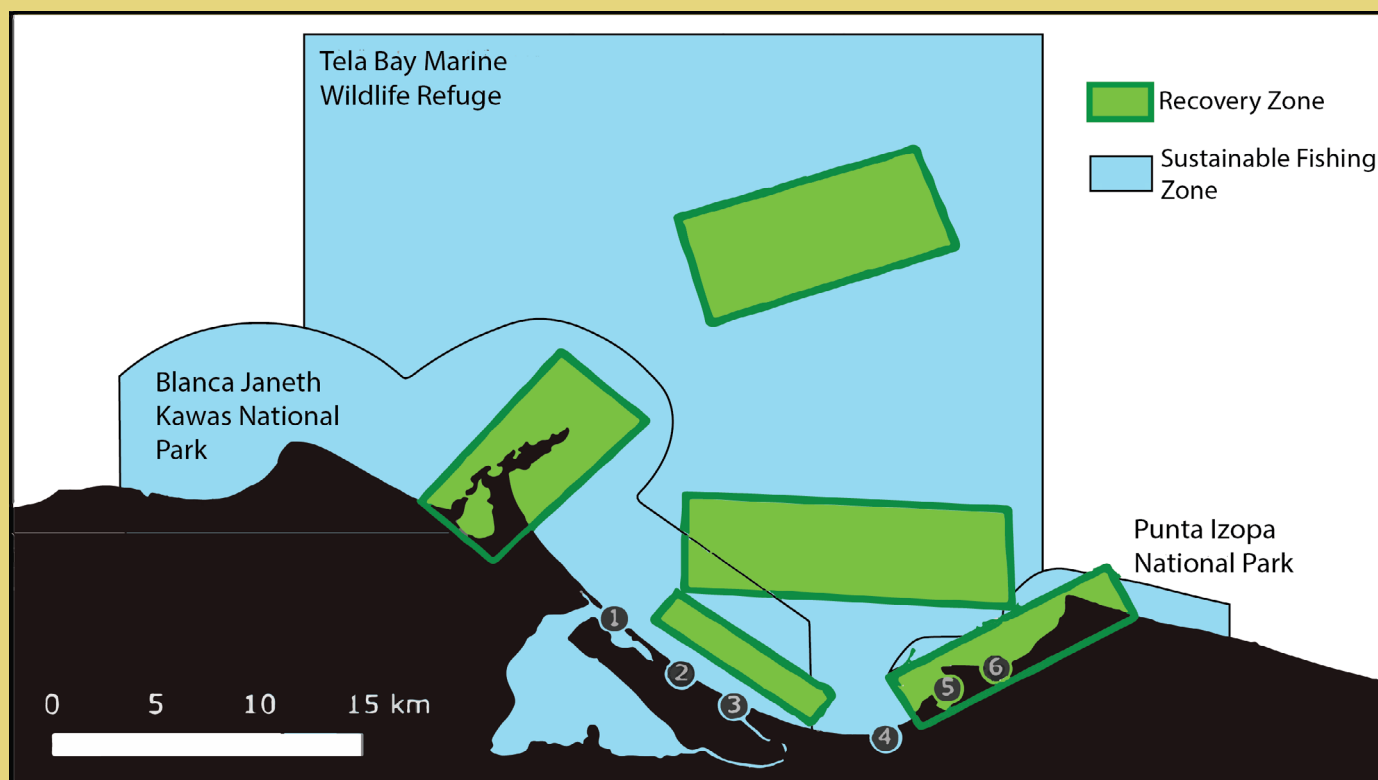


Figure 2. Marine zoning of Tela Bay. Numbered black dots indicate the fishing communities that surround the Bay.

to alleviate any short term negative economic impacts of the new regulations. These projects include egg laying hens, traditional community bread ovens and an aquaponic system with native fish species. Crop and fish closed system aquaponics are being trialled in the local communities. With the help of the community scientists and the Coral Reef Alliance (CORAL), the local co-managers are being trained to continue the aquaponics systems independently and replicate them in local communities.

### **Los Micos Lagoon:**

The Los Micos Lagoon in Tela Bay is critical to the health of the surrounding marine environment, with 80% of the commercially important species dependent on coastal lagoons for a stage of their life cycle.<sup>7</sup> In 2010 prior to the co-management of the rest of Tela Bay, the Ministry of Agriculture and Livestock imposed an annual two month ban on fishing in the lagoon (May-June) to allow the commercial species that spawn in the lagoon a chance to reproduce. Crab fishing and subsistence hook and line fishing are still allowed throughout this period. However, despite the ban the lagoon fishery did not significantly recover, with a 2016 study indicating the lagoon fishery was still overexploited, with foreign fishers largely responsible for the excessive extraction.<sup>7</sup>

In 2017 the newly formed IEC, together with the Honduran Armed Forces, the National Fisheries and Aquaculture Directorate (DIGEPESCA), PRO-LANSATE Foundation and local co-managers, worked to increase the enforcement of the Lagoon fishing ban. As a result of the adaptive co-management, the first Territorial Use Rights for Fishing system (TURFs) in Honduras were also implemented in 2017, to recognise the dependence and fishing tradition of the 12

communities that surround the Lagoon. The TURFs grant the surrounding communities exclusive commercial rights to the Lagoon fishery, with foreign fishers restricted to subsistence fishing only (dependent on quota).

To evaluate the effect of the closures, daily landing data is collected, as well as monthly fish biomass monitoring undertaken by CORAL scientists in collaboration with local fishers and PRO-LANSATE Foundation. The inclusion of local fishers from different communities in each monthly monitoring, fosters relationships, trust, and understanding of the state of the fishery.

### **How Successful Has It Been?**

Through collaboration and inclusion, the Tela Bay community implemented regulations to ensure the sustainability of their fishery. The consultation process built community ties and strengthened trust, giving the fishers more ownership and sense of responsibility to protect their fishery.

### **Marine Area:**

Before the Fisheries Management Plan the average length of commercial fish species had been steadily decreasing. After the Plans implementation in 2017 the average length of *L. synagris* and *C. crysos* increased, the two species with size limits applied. Stock assessments also indicate that *L. synagris* has recovered from an overexploited state in 2017 to a fishing mortality rate below the maximum sustainable yield in 2019. For *Scomberomorus spp.* however, where fishers did not accept a minimum catch size, there has been a reduction in landings and average length highlighting the importance of management interventions.



Photo credit: CORAL

Figure 3. Extensive community engagement ensured all involved in the fishery supported the final Fisheries Plan



## Key Challenges and Lessons Learnt

- Time spent in the community, building interpersonal relationships with all stakeholders was critical for the success of the new regulations.
- Incorporating socio-economic research into the planning was an essential step for understanding the community's dependence on the resource, and making the community feel heard.
- Enforcement is crucial to the success of management actions. Once enforcement was increased, the gains from the two month fishing ban in Los Micos Lagoon increased drastically. Enforcement ensures that the good actors are rewarded for their short-term sacrifices in the interest of a sustainable fishery.

## Lead Organisations

Coral Reef Alliance (CORAL)  
 PROLANSATE Foundation  
 National Fisheries and Aquaculture Directorate (DIGEPESCA)  
 Tela Fishermans Union  
 Inter-institutional Committee on the Environment and Protected Areas of the Municipality of Tela

## Additional Resources

[Tela Bay Fisheries Management Plan](#)

### Los Micos Lagoon:

The Los Micos Lagoon fishery demonstrates how the effectiveness of fishery management can vary based on enforcement and strategy employed. In 2017, the two month fishing ban increased average landings by only 10%, with associated small increases in income post ban. However, in 2018 after enforcement efforts had increased there was a 171% increase in landings biomass post closure. In 2019, after the implementation of the TURFs in combination with strong enforcement, there was a 689% increase in biomass. The introduction of TURF's in combination with strong enforcement and a two month ban, doubled the average income of local fishers compared to pre ban. A steady increase from the pre ban biomass between years is also apparent since the increase in enforcement.



## References

- 1 FAO, Duke University & WorldFish. 2023. Illuminating Hidden Harvests – The contributions of small-scale fisheries to sustainable development. Rome. <https://doi.org/10.4060/cc4576en>
- 2 Salas S, Chuenpagdee R, Seijo JC, Chales A (2007) Challenges in the assessment and management of small scale fisheries in Latin America and the Caribbean. Fish Res 87:5-16
- 3 M. McField, M. Soto, N. Craig, A. Giro, I. Drysdale, C. Guerrero, M. Rueda, P. Kramer, S. Canty, I. Muñiz (2022). 2022 Mesoamerican Reef Report Card. Healthy Reefs Initiative [www.healthyreefs.org](http://www.healthyreefs.org)
- 4 Rivera A, San Martin-Chicas J, Myton J (2021) Transitioning to co-management in Caribbean reef fisheries: Tela Bay case study. Sustainability Science 16:1233-1250
- 5 Defeo O (2015). Fisheries ecosystem approach: Fundamental concepts and their application in small-scale fisheries in Latin America. FAO Fisheries and Aquaculture Technical Document, FAO, Rome, 84.
- 6 Randazzo Eisemann, Francesca. (2014). Social study of fishing communities in Tela Bay (p. 45). Fabric: The Coral Reef Alliance.
- 7 Carbajal E, Sierra L, Lopez E (2017) Diagnosis of artisanal fishing activity in the Bay of Tela. Science Portal, 12, 36-50