Transcendental Changes in Management of Fisheries in Honduras

Cambios Trasendentales en el Manejo de las Pesquerias en Honduras

Changements dans la Gestion des Pêches Trasendentales au Honduras

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ABSTRACT

Catches in Honduras have been dramatic in the last decade. The bad fishing practices and poor steering control are the main causes. Fishing has considerable economic importance as it remains an essential foundation in most communities. Only on the Atlantic coast has been estimated that depend on this activity 5,500 people.

Fisheries authorities have established different regulatory measures, mainly on the lobster resource, including closures, minimum size limits pots, among others. However, after years of implementation of these measures, overall catches continue to decline. Whereupon, it is urgent to take additional steps if you want to preserve this valuable livelihood.

After different processes at different levels and based on scientific information and the ancestral knowledge of fishermen, the Government of Honduras has decreed a period of six months, new four no-take areas of fishing, covering a total area of 25,100 km². Added to this, fisheries management through strategic alliances with the Navy, the Public Ministry, the Merchant Marine, scientific institutions, industry and communities are forming a public-institutional coalition to develop sustainable fisheries. At the same time, a set of powerful tools for controlling and monitoring are being created and / or improved in order to control illegal fishing. Diligent regulatory frameworks are being approved and true scientific studies are being implemented.

With all these elements in place and operating properly we would be making a change unprecedented in the history of fishing in this country and certainly a remarkable significance in the region.

KEY WORDS: Sustainable fisheries, no-take areas, public-institutional coalition, Honduras

INTRODUCTION

The CEM-SI No-Take Reserve and Sustainable Fisheries Program seeks to secure the protection and effective management of a network of no-take areas encompassing 20% of the suitable fishing areas of the Honduran Caribbean by 2016.

This multi-stakeholder work builds on cutting edge research conducted by an expanding group of researchers based at the Smithsonian Institution (SI) with the on-the-ground knowledge and implementation ability of field practitioners at the Centre for Marine Ecology (CEM for its initials in Spanish). That close collaboration means that interpretable and useful research outputs underpin the design of a network of marine reserves whilst also providing the enabling conditions for evidence-based fisheries reform. The program vision is one of restored marine abundance that ensures healthy marine ecosystem structure and function, reached through a new management paradigm engaging local communities and empowering an estimated 4,000 fishers to become stewards of the Honduras seascape.

Science for decision making is helping to define the right spatial scales for planning and management that are ecologically relevant as well as socioeconomically and culturally appropriate for successful marine governance and stewardship. Major outcomes have been achieved towards effectively protecting 20% of the fishable area of the Honduran Caribbean as no-take reserves. Further, our work is leading to a new approach to fisheries management across the country.

RESULTS

Sea Cucumbers catalyze a national policy to implement no-take areas for all fisheries — The sea cucumber, an inconspicuous benthic invertebrate, has been a trigger for extraordinary change in marine management in Honduras this year, with policy to use no-take areas to underpin sustainability in sea cucumber and other fisheries. Soon after the Director of Fisheries took office in February 2014, he learned that the sea cucumber fishery in Honduras had grown exponentially and unchecked since 2010. By 2013, the fishery was exporting nearly a million kilos of sea cucumbers.

The Director then reached out to the Smithsonian and CEM to provide guidance on how to manage a sea cucumber fishery (Figure 1). With our technical assistance the Fisheries Department developed a framework with three guiding principles:

i) Protect fishers by banning the use of SCUBA for the collection of sea cucumbers,
ii) Spatially separate artisanal fisheries from industrial fisheries through the creation of an exclusive use area for artisanal fishers (ZEPA for its initials in Spanish) in the Moskitia,
iii) Ensure reproductive success and hedge against ecological uncertainty by protecting at least 20% of the fishable areas of sea cucumbers.

Figure 1. New legislation signed in June means sea cucumbers can now only be collected by skin diving and designates 20% of suitable habitats to be protected from fishing in a network of no-take areas. CEM-SI are leading the design process for this network.

The Minister for Agriculture then decided that the network of no-take areas should not just be about sea cucumbers - it should protect these areas from all fishing activities. Since June 10th, a new mandate is in place to set up a network of no-take reserves covering shallow water areas, including seagrasses, coral reefs, and adjacent hard bottom habitats down to 60 ft across the main fishing grounds of the Honduran Caribbean. Each individual no-take area must be at least 39 square miles (100 km^2) and be surrounded by a no anchoring buffer of 3 nautical miles. This buffer provides additional protection to deeper reefs, as boats will not be able to stop and fish there.

The network will be designed by CEM-SI in consultation with fisher groups and the national government. To achieve this we are combining existing fisheries information, habitat maps, current models, and connectivity matrices to inform the decision making process. We are also collating information from fishers to understand where they believe the priority areas for protection should be. The final no-take network will cover a huge area: 1,930 square miles of no-take areas on the outer banks and a further 695 square miles of no take inside the ZEPA.

Importantly, Honduras will become the first country in the Caribbean to have such an extensive no take reserve network and be pioneering in its approach to use this network to underpin the sustainability of its commercial fisheries. In addition to the design, CEM-SI under an agreement with the fisheries department, are also tasked with establishing a monitoring protocol to measure the efficacy of the reserve network.

To address this challenge there is significant applied research needed. We need to study the basic reproductive biology, growth rate analysis, and fill other gaps in knowledge for key commercial species and have a partnership with Cayos Cochinos private marine reserve to use their research station for field work as well as using the Smithsonian Research Station on Carrie Bow Cay, Belize.

In addition, SI ecologists are working on models to estimate minimum density requirements for successful reproduction for conch and sea cucumber, to define a minimum threshold level at which the population needs to be maintained to secure long term viability. Our geneticists are investigating connectivity patterns to locate potential sources and sinks of larval connectivity, measure the contribution of the reserve to the wider population, and to define the ecologically relevant spatial scales for management.

We need to answer critical questions such as: do we need to design the network at a "per bank" scale or across the wider seascape as a whole? Finally, the biogeographic modelers are identifying and defining critical habitat, establishing conservation priorities and measuring potential displacement effects on existing fisheries by placing reserves is particular areas. This is a great example of the integration of applied science to support conservation and sustainable management.

Applying Vessel Monitoring Systems for No-take enforcement — The main enforcement tool for the no-take network will be the Vessel Monitoring System (VMS) installed on all industrial fishing boats. The VMS was reviewed by our program in 2013 when we produced fishing effort maps to show how different fisheries used the seascape. The government is ready to adopt the recommendations for full implementation. The VMS can verify whether catches are from inside no-take areas or from illegal fishing in other countries' Exclusive Economic Zone. We will now expand the use of VMS as a management tool by adapting it for artisanal fisheries. We have a partner to test a system specifically for small vessels based on the wireless network and powered by a solar panel. We aim to roll out the pilot in 2015.

Lobster fishery receives Royal attention — The program is receiving international attention. In July, the Prince of Wales convened a meeting at St. James Palace attended by international finance leaders, fisheries experts, and government ministers from across the world to discuss tools to finance a "blue" economy.

The case study was the Honduran lobster fishery, presented by Stephen Box. The delegates learned about the lobster fishery transition from SCUBA diving into safer skin diving within the borders of the exclusive use area, and the proposal to use investment finance to buy out the dive boats. The required investment capital would come from *impact* investors. A small levy on the revenue derived from lobster exports, administered through a trust fund at the Central Bank of Honduras, would repay the initial investment. This simple but elegant solution to a long standing fishery problem sparked wide spread interest, including praise from His Royal Highness at a side meeting with ministerial attendees (Figure 2).

Figure 2. A side meeting during the event on the "Blue Economy" at St. James's Palace. From left: His Royal Highness Prince Charles; Jacobo Paz, Honduras Minister of Agriculture; Maria Damanaki, Commissioner for Maritime Affairs; and Fisheries of the European Union, Stephen Box, Smithsonian Institution/CME.

The Honduran Minister of Agriculture provided political backing to the proposal stating his country's commitment to ensuring sustainable fisheries and put an end to the problems associated with SCUBA dive fishing. Through investment finance Honduras is well positioned to be a global example on how to solve complex fisheries problems. This is at the core of the emerging "blue economy".

The "Green Guanaja" vision — Guanaja has over 220 fishers living in six communities around the island. The work of a committed group of these fishers and a newly elected Mayor, supported by scientific advice from CEM-SI, culminated in the declaration of two large no-take areas covering important sections of the island's fringing reefs and seagrass beds. Importantly, this was a fisher-led initiative. Each no-take area is adjacent to a community whose fishers have committed to help enforcement with backing from the local naval base. The local initiative was recognized by the Director of Fisheries who attended the signing and endorsed the plans on behalf of the national government.

Adjacent to the no-take areas, fishers are establishing lobster shades on shallow, hard bottom areas (Figure 3). This incorporation of no-take areas into a new fisheries plan for the island provides protection to critical coral reef areas and the habitat corridors between them, whilst enabling fishers to use low impact techniques in adjacent areas to benefit from spill over. The Guanaja project is expanding beyond no-take areas and we are helping to package it into a wider *Green Initiative*. Like so many locations, Guanaja has significant plastic waste issues. In the absence of suitable disposal systems much of the plastic ends up in a refuse pyre on a small cay. Plastic continually gets washed in to the sea from this dumping ground drifting ashore and contributing to the global problem of floating debris and breakdown into toxic microplastics in the world's oceans.

With CEM-SI scientific assistance, and compelling imagery from the ILCP photo shoot of the island, Guanaja's Mayor has taken the bold step to stem the tide of plastics arriving on the island. First, with community support, he is passing legislation to prohibit plastic bags. CEM has then facilitated meetings with Coca Cola to transition back to glass and phase out plastic bottles.

Cuero y Salado — A model of Fishers Engagement. The CEM-SI Program has been working with the three communities inside the coastal Cuero y Salado Wildlife Refuge. The area has extensive mangrove wetlands, migratory birds, a population of manatees and a diverse near shore fisheries including coral reefs that the communities depend on and need to protect from destructive fishing practices. The Program has facilitated the process of bringing fishers together to develop a locally managed marine area with defined use rights to the fishers, and a spatial plan incorporating no-take areas and a *fisher code of conduct*.

The Program has engaged in a process of sequential steps: Licensing; mapping; establishing a monitoring system; setting the socioeconomic baseline; identifying critical areas to protect; defining a code of conduct for responsible fishing; and culminating in a local fisheries management plan and spatial management. We have captured the process in a "how-to" manual that CEM has written so that other groups may implement the same approach in other areas.

Figure 3. Lobster's eye view of a Guanaja fisher checking his lobster shade in shallow waters adjacent to no-take areas. Photo: Claudio Contreras, ILCP.