

SOLUTIONS IN FOCUS:

Sustainable Fisheries and Aquaculture



Managing partners



Development partners

On behalf of:



of the Federal Republic of Germany



Published by

Blue Solutions
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GRID-Arendal
International Union for Conservation of Nature (IUCN)
United Nations Environment Programme (UN Environment)
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Date of publication

July 2018

www.bluesolutions.info
www.panorama.solutions

Blue Solutions would like to sincerely thank all solution providers for their contribution and time.

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The Blue Solutions Initiative

Marine and coastal biodiversity and ecosystems are fundamental for human well-being and provide valuable services. Despite their global significance, these ecosystems are more than ever at risk. The sustainable use and conservation of marine and coastal biodiversity is a priority for action under the Strategic Plan for Biodiversity 2011–2020 of the Convention on Biological Diversity (CBD). To support practitioners and policy makers in improving the management of marine and coastal biodiversity, the Blue Solutions Initiative is partnering with a range of organizations and programmes to facilitate **global knowledge exchange and capacity development**, and ultimately support the marine and coastal Aichi Targets and Sustainable Development Goals.

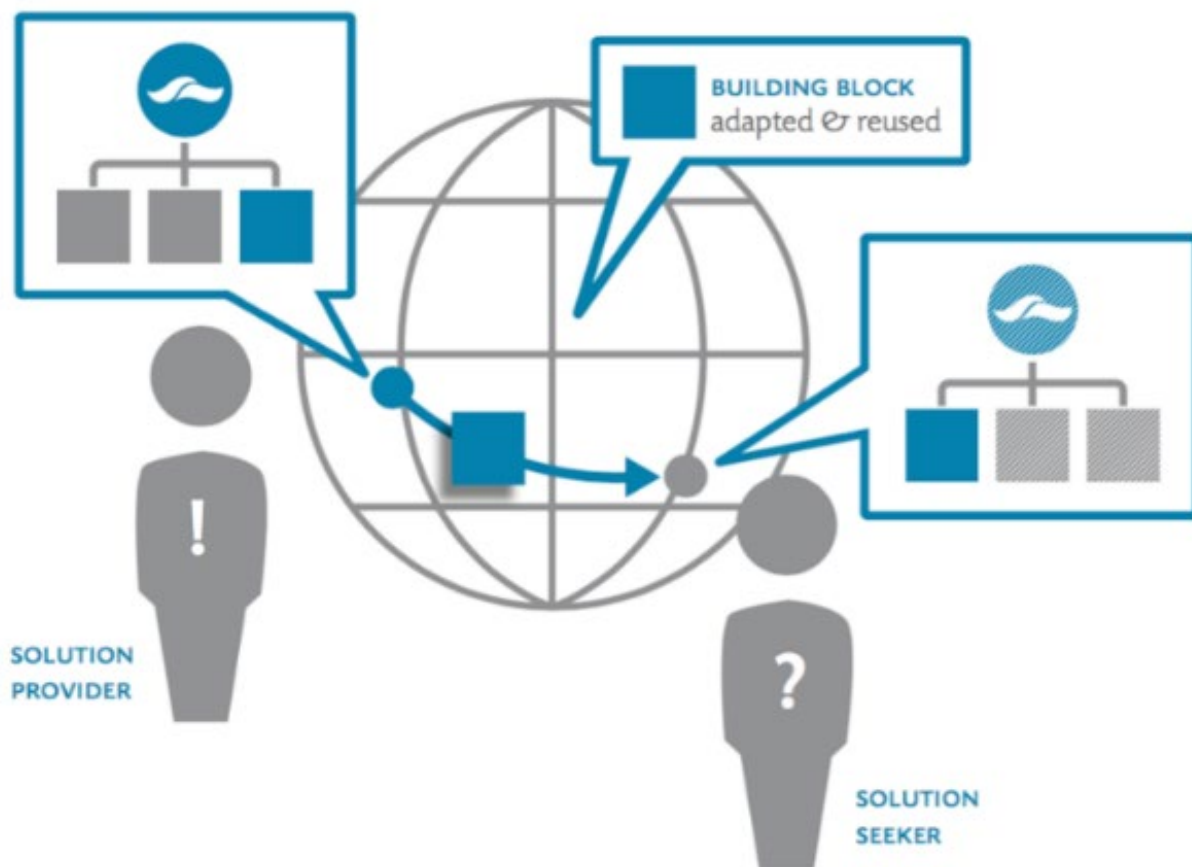
Capacity development

The Blue Solutions Initiative provides a range of capacity development opportunities including trainings on ecosystem services, climate change adaptation, marine and coastal spatial planning and management, and conservation finance.

www.bluesolutions.info

Global knowledge exchange

An essential component of the Blue Solutions Initiative is to collate, document and share successful approaches, or “solutions”, addressing marine and coastal challenges. The sharing and exchanging of these solutions provides others with examples and lessons learned, and can inspire to adapt and replicate these achievements without “reinventing the wheel”, thereby accelerating action for sustaining healthy marine and coastal ecosystems. The Blue Solutions Initiative facilitates exchange around solutions through the marine and coastal solutions portal on the PANORAMA – *Solutions for a Healthy Planet* platform (www.panorama.solutions/marinecoastal) and in face-to-face meetings such as workshops and trainings.





PANORAMA – *Solutions for a Healthy Planet*

PANORAMA – *Solutions for a Healthy Planet* is a partnership initiative to facilitate learning from success in conservation. It promotes examples of inspiring solutions that showcase how nature conservation can benefit society. PANORAMA enables the wider application of such solutions through cross-sectoral global learning and exchange. Through a modular case study format, solutions are being dissected into their replicable “building blocks” and their scaling is facilitated – online as well as offline. www.panorama.solutions

The Blue Solutions Initiative and its four implementing partners are active members of PANORAMA and from 2015 - 2018 have managed PANORAMA’s thematic chapter on marine and coastal solutions.”

Solution in Focus

This booklet is the third in a series of compilations assembling PANORAMA solution case studies on a defined topic. “Solutions in Focus” zooms in on a topic of interest covered by PANORAMA, allowing to explore common elements and shared learnings across success stories. It is a snapshot of the PANORAMA portfolio at a given time, rather than a representative assembly of selected “best practices” on the issue at hand.

All solutions featured in this booklet, and many others, are available on the PANORAMA web platform www.panorama.solutions. We invite everyone to visit and explore the platform, and share their own examples of solutions.

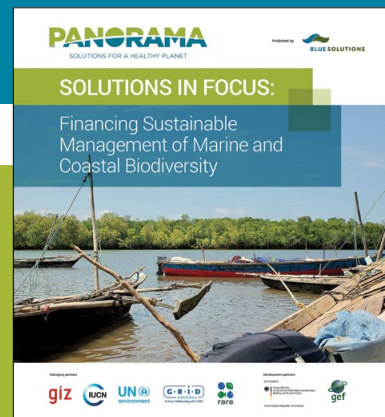


<https://portals.iucn.org/library/sites/library/files/documents/2016-081.pdf>

Further “Solution in Focus” booklets:

Transboundary Protected Area Solutions

Financing Sustainable Management of
Marine and Coastal Biodiversity



Sustainable Fisheries and Aquaculture

Fisheries and Aquaculture provide food and work all over the world, especially in developing countries. Over 80 Million tons are harvested annually from the sea by capture fisheries, and marine aquaculture produces another 26 Million tons. 260 Million people are employed in fisheries worldwide, most of them in small-scale fisheries in tropical and subtropical regions. Fish and shellfish are highly important for food security and provide over three billion people with almost 20% of their animal protein intake.

At the same time, the intense exploitation has led to widespread overfishing, today 90% of fish stocks are exploited at maximum sustainable levels or are already being overfished. Aquaculture – especially of shrimp and salmon – has led to widespread habitat destruction and ecosystem degradation. It has been difficult to find a balance between food production, economic gains, and long-term sustainability of fisheries and of the ecosystems that provide these services to humankind.

On the other hand, there have been many positive examples to ensure long-term sustainability in fisheries and aquaculture and counteract the impacts of past abuse of marine and coastal ecosystems. Here we have compiled a number of inspiring best practice examples – [blue solutions](#) – that have had positive impacts on ecosystems, fish populations and on the economy of fishers and fishing communities. We believe that these examples can be replicated in other contexts and help to make fisheries and aquaculture more sustainable in the long term.



ABALOBI: ICTs for small-scale fisheries governance



Solution provider: Serge Raemaekers, University of Capetown



Implemented by: ABALOBI



Summary: The ABALOBI initiative is a transdisciplinary research and social learning endeavor, bringing together stakeholders with traditional fishers taking center stage. It is a participatory action research project with a strong community development component. ABALOBI, a free app/programme, is aimed at social justice and poverty alleviation in the small-scale fisheries chain, transformation in the way we produce knowledge, stewardship of our marine resources, and building resilience to climate change.



Location: South Africa



agriculture,
forestry & fisheries
Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Impacts

Impacts: 1. Fishers, monitors and cooperatives have actively recorded catches and associated variables in daily logbooks and dashboards. Regular workshops have assisted in fine-tuning the recording and reporting functions and use of the dashboard. As a result of gathering data and discussing emerging trends during workshops, fishers have written letters to the Minister to call for a stop on the overexploitation of a particular fish species, others have discussed climate change related implications and suggested new adaptation responses, and others have used the data to apply for loans to purchase better safety equipment. 2. In November 2015, the Fisheries Minister endorsed ABALOBI as the official catch management system for the implementation of the new Small-scale Fisheries Policy. 3. Fishers in one of the pilot sites have grouped together to discuss and prepare for the implementation of the Policy, and have successfully engaged with a retailer interested in purchasing several seafood species in a Fisheries Improvement Project that will see the use of ABALOBI towards traceability, and a type of Fairtrade certification. 4. ABALOBI now initiated a restaurant supported fishery via the MARKETPLACE app where fishers can sell their produce at a fair price, and patrons can purchase fresh fully traceable seafood.





Building blocks

1

Transdisciplinary social learning process

Social learning can be interpreted in many different ways. In the context of this project, social learning is embarked upon in a transdisciplinary way. This means various stakeholders, beyond just scientists, from multiple disciplines, began working together on this project by jointly framing the problem and the research questions. A participatory action research programme then ensued and led to the co-design of the tool. Different components were carefully designed based on the stakeholders' input and then tested in real-life situations. A social learning programme thus helps the transdisciplinary team in further developing the tool, but also engage with the data.

2

Co-design of the app suite and co-production of knowledge

The pillar of the Abalobi initiative is the co-design of the platform and all its modules, with the core stakeholders; i.e. the fishers and the fisheries authority. Fishers record daily info, some of this info is validated by the monitors as they take a daily sample. Fishers, monitors and local community leaders then engage with the platform dashboards depicting various insights of the data. The fisheries managers from the fisheries authority also then engage with the same information and regular workshops are held. During these workshops, common ground is sought, trends are discussed, and suggestions are made towards further improvements. The basic framework for co-management is slowly and carefully negotiated and designed. Using the common knowledge base, all stakeholders at the co-management table are able to talk about the same fisheries indicators.

Best Management Practices for Silvo-Aquaculture



Solution provider: Lisa Steurer, GIZ



Implemented by: Bac Lieu Experimental Station for Aquaculture (BLES), GIZ, Australian Department of Foreign Affairs and Trade (DFAT)



Summary: By promoting Best Management Practices for silvo (mangrove) aquaculture, as well as supporting Farmer Interest Groups along the Mekong Delta coast, the solution aims to raise awareness of mangrove ecosystem conservation benefits and diversify farmers' incomes. It encourages ecological farming techniques and the integration of mangroves in shrimp ponds.



Location: Vietnam



giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

On behalf of:



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety



Federal Ministry
for Economic Cooperation
and Development

of the Federal Republic of Germany

Impacts

An evaluation conducted in March 2014 found that the Best Management Practices had positive effects on the income diversification and production risk. In 2013, the farmers applying the Best Management Practices earned 320USD per year per hectare more than those who did not. This is explained by increased yield and reduced input cost. This was confirmed by an assessment made in 2017, which found that through the application of the Best Management Practices, the survival rate of shrimp increased by 45%. So far, the solution has had a positive impact on at least 200 farmers and their families.

The initiated Farmer Interest Groups provide active platforms for information exchange and teamwork. The documents and promoted practices spread far beyond the farmers who were directly targeted with the solution. Awareness of the importance of protective mangrove forest ecosystems increased and resource exploitation in the adjoining full protection zone decreased. A number of farmers outside the buffer zone are now also implementing the Best Management Practices and thereby contribute to increased forest cover and resilience. Moreover, some intensive farmers started to operate Silvo-Aquaculture ponds in addition to their industrial ponds. This provides them insurance in case of calamities as Silvo-Aquaculture ponds exhibit a much higher resilience.





Building blocks

1

Development of Best Management Practices

Information on current farm practices are gathered in cooperation with relevant institutions, in particular the province's aquaculture research station and the private sector. Shortcomings of current techniques as well as areas for improvement are identified. At trial farms, these are addressed through the optimization and adaptation of Best Management Practices. These practices promote income diversification and improved aquaculture farm management through optimised species composition, stock density, water management, nursing and mangrove conservation. The Best Management Practices are regularly adapted to address arising issues and new challenges as well as respond to market requirements.

2

Farmer Interest Groups

Neighboring farmers meet regularly to share information and best practices on diversified aquaculture production. They buy seedlings as a group to be more cost-efficient, and grant loans to the farmer most in need. The loan is given on a yearly basis with a fixed interest rate and financed by the group's membership fee.

3

Promotion of Best Management Practices

Members of the Farmer Interest Groups are trained how to implement the Best Management Practices by the extension center. The training is partly theoretical and partly practical, and farmers involved in the development phase open their farm to Farmer Interest Group members so they gather first-hand experience. The extension center promotes Best Management Practices by disseminating information further through the extension officer's daily advisory service. At the same time experiences and lessons learnt are fed back to the extension center to improve the Best Management Practices.

Building a market for invasive lionfish control



Solution provider: Jennifer Chapman, Blue Ventures



Implemented by: Blue ventures, Sarteneja Fishermen Association, Belize Fisheries Department, Belize Lionfish Jewelry (Belioness), Warner College of Natural Resources (Colorado State University), National Oceanographic and Atmospheric Association (NOAA)



Summary: The Indo-Pacific lionfish is a major threat to Caribbean reefs. Blue Ventures is pioneering efforts to build Belize's lionfish fishery, creating an economic incentive for the sustained removal of this invasive species while providing an alternative target for fishers and promoting associated cottage industries, reducing dependency on traditionally targeted fisheries. This effort is supported by an integrated lionfish control strategy, which helps to avoid unintended outcomes, and also details alternative targeted removal methods for sites where fishing is not permitted or practical.



Location: Belize

blue ventures
beyond conservation



BELIONESS

WARNER COLLEGE
OF NATURAL RESOURCES
COLORADO STATE UNIVERSITY



Impacts

Lionfish Fishery: In 2010, no restaurant served lionfish. In 2015, 9% of Belize's restaurants reported serving lionfish, and purchased the equivalent of 30,000 lionfish from fishers, either whole or as fillet. The price for lionfish through this market increased by 50% over four years (2013-17). Blue Ventures and the Sarteneja Fishermen Association (SFA) have both been actively involved in engaging consumers, fishers and restaurants in Sarteneja with the benefits of fishing and eating lionfish. 77% of Sartenejan fishers interviewed in 2016 reported selling lionfish in 2016.

Lionfish Jewelry: In 2014, a jeweler from southern Belize began making lionfish jewelry in 2014, purchasing 5,000 tails from fishers annually. This collection accounts for 25% of her sales. In 2015, Blue Ventures and SFA established a women's group (Belioness), with membership from seven coastal communities. Both sell lionfish jewelry locally and overseas. The purchase of each tail adds 13-40% to the sale price of lionfish for fishers.

Lionfish Status: Lionfish density in Belize peaked in 2011 (159 fish/ha), decreasing to 10 fish/ha in 2015. Highest densities found in areas inaccessible to fishers (No Take Zones). In 2015, 78% of surveyed sites were found to be effectively controlled.





Building blocks

1

Adopt a Coupled Human And Natural Systems approach

The dynamics of human and natural systems are complex and characterised by reciprocal feedbacks that can interact across local and global scales. Successful natural resource management requires a better understanding of these coupled human and natural systems (CHANS), which must be incorporated at the planning stage. A CHANS approach involves both ecological and social concerns, and requires an interdisciplinary team to develop a conceptual framework of socioecological interactions (SEF), aiding all actors to consider potential outcomes from many different perspectives.

As a viable lionfish control programme will impact upon a wide range of stakeholders, it is crucial to develop a lionfish management strategy using a CHANS approach to maximise benefits and minimise unintended outcomes.

A population dynamics model that estimates lionfish population abundance, biomass and size structure under different management scenarios is central to lionfish management planning. Changes to all affected systems can then be interpreted qualitatively using the SEF.

2

Estimate lionfish status and develop catch targets

Although eradication is no longer considered possible, lionfish population suppression allows native fish population recovery. With enormous variability in lionfish population density between reef locations, type and depth, a combination of commercial harvest, culling by SCUBA and deep-water traps is necessary to achieve the desired ecological outcomes.

In order to develop, implement and evaluate management interventions, it is essential to first determine the current status of lionfish populations. Due to their cryptic nature, the density of lionfish is often underestimated by traditional underwater visual census techniques; the Lionfish Focused Search method produces more accurate lionfish density estimates.

Coupled with prey fish population surveys, and following the method developed by Green et al. (2014: DOI 10.1890/13-0979.1), it is then possible to determine lionfish threshold densities – the site-specific density at which native fish populations can recover. This provides managers with a or management target, and the ability to calculate associated necessary catch target for each area to support long-term suppression.

3

Support emergent lionfish fishery

In areas that are accessible to fishers, commercial lionfish fishing presents the most feasible means to achieve lionfish removal at the frequency and high volume required to suppress populations. Initially, fishers face a large opportunity cost in targeting lionfish over traditionally caught species due to the risk of a lionfish sting, which may cost a fisherman up to 24 hours of fishing time. This is exacerbated by an uncoordinated market and inconsistent demand, and in some cases a low willingness-to-pay for lionfish by consumers. Therefore, willingness-to-pay for lionfish must be higher than traditionally caught species. Restaurants also require access to a consistent supply of lionfish (and regular demand from customers) before including it on their menus.

Key actions:

- Safe-handling demonstrations for fishers provide practical training in:
- Adapting fishing techniques to target lionfish
- Simple first aid for lionfish stings, overcoming concerns of envenomation
- Support to restaurants and seafood distributors seeking to purchase lionfish by linking fishers to buyers and offering marketing assistance through menu inserts and posters.
- A social marketing campaign targeted at consumers to increase demand and willingness-to-pay for lionfish.

4

Value-added lionfish products

Supporting women from fishing communities to create, market and sell jewelry made from previously discarded lionfish parts adds value to fishers' lionfish catch. It also meets several needs simultaneously: poverty alleviation in fishing communities, gender equality as women learn skills and are supported to earn independently, and further awareness raising about invasive lionfish, thus contributing to the conservation of Belize's marine ecosystem.

Other potential lionfish value-added product markets include lionfish burgers, frozen fillets for sale through supermarkets and animal feed. Further benefit to fishing communities could be achieved through establishing lionfish processing plants within the communities themselves, increasing the availability of skilled employment opportunities and providing new skills for local community members.

5

Implement an awareness raising campaign

In order to establish a commercial lionfish market, it is important to understand the perceptions of stakeholders (particularly fishers and restaurant owners) and the general public towards catching and eating lionfish. For example, in a survey of the general public undertaken in Belize in 2015, around half of respondents who had not eaten lionfish stated that they would not try a free sample because they believed it to be dangerous. Furthermore, lionfish exploitation was significantly associated with knowledge about the invasion. Once the barriers and misconceptions around catching/eating lionfish have been identified, they can be resolved by developing a targeted outreach programme with the general public and social marketing campaign targeting restaurants and consumers that informs people about the lionfish invasion in a way that reflects local concerns and values.

Activities may include:

- cooking demonstrations
- educational presentations
- lionfish tasting events (held in partnership with local restaurants/cooks)
- safe-handling workshops
- interactive, educational booths with lionfish tasters

6

Lionfish control in areas inaccessible to fishers

Where commercial lionfish harvesting is not practical or permitted (such as in protected areas), or if the current fishing pressure is not sufficient to suppress lionfish populations below site-specific management targets, a combination of alternative removal methods can be used to reduce lionfish populations, including:

- culling by SCUBA, either by protected area managers or dive operators
- lionfish culling competitions (also known as derbies or tournaments)
- deep-water traps, whilst still at the design stage, have the potential to be used as a tool within a package of lionfish management actions
- Multiple stakeholders may need to conduct one or more of these activities at a given site to achieve a desired level of lionfish suppression.



Building Community Stewardship of Marine Resources



Solution provider: Pablo Granados, Rare



Implemented by: RARE, National Commission for Protected Areas (Mexico) Pronatura Noroeste



Summary: Pride conservation campaigns are implemented in four Latin American countries to generate community stewardship of marine resources, by adopting Fisheries Replenishment Zones (FRZ), alternative income activities and voluntary gear changes. Social marketing, fisheries technical assistance, capacity building and biological monitoring changed community behavior to reduce fishing threats and increase fish abundance, species diversity, and habitat health.



Location: Latin America



Impacts

The most outstanding impacts achieved through the implementation of this Solution include the adoption of new or improved log books for better fisheries data gathering, the voluntary designation of community reserves by the fishing cooperatives, the establishment of market connections from improved sales of fisheries products, the adoption of alternative income activities, voluntary gear changes, fishers' endorsement and adoption of specific existing Fisheries Replenishment Zones, and the adoption of live lobster fishing methods for resource sustainability. The overall most salient impact was the demonstration of the power of community-based marine conservation, and the validation of how organised fishers are better able to maintain fishing rights, increased compliance with fishing regulations, and access to special markets and value added activities.



Building blocks

1

Pride training program

Rare's Pride Program training is a two-year process through which local conservation leaders receive formal university training, followed by periods of field-based formative research and results analyses. Participants learn how to change attitudes and behaviors, mobilize support for environmental protection, and reduce threats to natural resources. Rare's local partners not only receive classroom training, but also implement an entire social marketing campaign in their communities, designed around a specific conservation goal. Participants in the program receive a toolkit for community outreach: Training 1 provides trainees with basic community engagement tools, so that they can start embedding themselves in the target audience and earn their trust. Training 2 takes place after a period of 1-2 months of field embedding, and teaches research techniques for qualitative and quantitative formative research. Training 3 takes place after 2-3 months of data collection and information gathering, to analyse data collected and design the Pride Campaign. Training 4 takes place upon campaign conclusion, to evaluate results and produce final report.

2

Social marketing (SM)

Social marketing (SM) uses commercial marketing methods and tools (e.g. diffusion of innovations, behavior-change-focused communication channels and messages, community mobilization) to promote a voluntary behavior change in a target audience, that benefits society as well as the target group. For a Pride campaign, social marketing is an integral component to promote community stewardship of their resources. Creating a clear, consistent and positive identity (i.e., a brand) around the conservation/management of their resources that resonates with community perceptions, values and traditions regarding these resources helps boost community buy in. This brand is linked to a clear request, e.g., what do you want your target audience to do when it comes to sustainable management of their resources. This will be underlined and repeated throughout campaign activities (e.g. community events, media outreach), and through promotional materials (e.g., posters, booklets, flyers, wall paintings, props, text messages) that form part of the social marketing strategy.

3

Monitoring and evaluation

Monitoring and evaluation (M&E) are vital components of every Pride campaign, without which assessment of the effectiveness of the intervention cannot be conducted. M&E takes place in every component of the Theory of Change (please refer to the building block 'Theory of Change' for a brief description of each component). Monitoring keeps score on how effectively capacities are built, how effectively social marketing efforts lead to changes in behavior, and if those behavior changes lead to desired conservation outcomes. Monitoring tracks every component of the ToC. M&E of knowledge, attitude, interpersonal communications and behavior change is based on pre and post campaign surveys of the fishers, while threat reduction and conservation results use specific protocols validated by experts.

4

Theory of Change (ToC)

A Theory of Change (ToC) is a road map that plots the journey from where we are now to where we want to be. The ToC serves to create a common vision of long-term goals, how they will be reached, and how progress will be measured along the way. A ToC forms the basis for strategic planning, and it clearly articulates how shifting behaviors and social norms will reduce threats to biodiversity. There are seven elements of a Pride campaign ToC: Conservation Result points to the conservation target (ecosystem or species) the campaign is trying to conserve, and what the expected long-term result is. Threat Reduction points to the main threats to the conservation target that can be reduced. Behavior Change focus on the human behavior that must change in order to reduce the identified threat. Barrier Removal identifies the barriers to adoption of the new behavior and how can they be removed. Interpersonal Communication describes what conversations are needed to encourage people to adopt the new behavior. Attitude identifies what attitudes must shift for these conversations to happen. Knowledge is the cognition needed to increase awareness and help shift these attitudes.

5

Technical Assistance (TA)

Unlike Social Marketing, the Technical Assistance (TA) is based on more personal interactions with the fishers at the fishing group level (cooperatives or associations) or at the individual fisher level. This allows the issues to be addressed with more detail and depth, although larger groups of people are not reached. The overarching goal is to promote fishers' support for conservation actions (e.g., creation of FRZ, adoption of sustainable fishing practices). Technical assistance tools are targeted towards building capacity in coastal communities and removing technical barriers, emphasizing leadership among fishers to improve the management of fisheries resources. Examples of technical assistance activities include one-on-one conversations, fishing trips, fisher exchanges among sites, formal training in specific fishing methods through workshops and courses, informal training, meetings with the authorities, follow-up with administrative and legal processes (e.g., fishing concession/permit renewal) and providing organizational materials (e.g., file cabinets, blackboards, etc.).

6

Formative Research

During the planning phase extensive formative research informs the Social Marketing, as well as the Technical Assistance components of a campaign. Research sets the baselines that allow the assessment of social and conservation impacts following a campaign. Qualitative research (e.g. focus groups, observation, in-depth interviews) is geared towards understanding target audience opinions, feelings, concerns and perceived benefits of current as well as desired management practices. Qualitative research is about creating a casual conversation with and between participants to establish a comfortable relationship, and to reveal underlying information unobtainable through quantitative research. Quantitative research surveys capture specific answers to specific questions to describe demography, identify media preferences, and assess the current state of knowledge, attitude, communication and readiness of target audiences regarding a certain behavior change. Both components ultimately inform campaign decisions like objectives, respective activities, materials, and messages for both Social Marketing and Technical Assistance.

Catch Shares: A framework for sustainable fisheries



Solution provider: Ana Suárez Uribe, Environmental Defense Fund de México, A.C.



Implemented by: Environmental Defense Fund de México, Manejo Compartido por Cuotas (MCC)



Summary: The Upper Gulf of California is home to a variety of marine species, including the endemic Gulf corvina whose use provides a livelihood to more than 9,000 people. Unsustainable resource use has led to the overexploited of this species. Catch Shares (MCC) is a framework for sustainable fisheries management, resulting in reduced overfishing while improving the economic wellbeing of fisherfolk dependent on healthy marine ecosystems.



Location: Mexico



Impacts

The communities manage their resources more responsibly, participate in decision-making and implement legislations. Regulated and limited fishing reduce its investment costs by 14%, increase total revenues by 8% and stops price variations of primarily 50%. Guaranteed access right to fish stocks, limits the run on fish and allows fishermen to be more selective, i.e. reducing unintentional by-catch. Catches are reduced by 40% but the prices paid increased by 22% - this improves the ratio of volume and value.



© Carlos Aguilera

Building blocks

1

Fishing access rights

Access rights, such as individual quotas or territorial use rights (TURFS), delimited based on scientific findings and participatory processes, help to avoid overfishing and recover fish populations. They assure fishermen stable fishing over time and exclusive benefits from sustainable management, increasing their stewardship and compliance.

2

Collaborative science

Accurate and updated information is crucial for resource management. Forming Technical Groups enables collaborative science for decision making. These groups consist of participants from public and academic institutions who meet regularly to share information relevant to the fishery's management.

3

Participation and co-management

Fishermen, fishing and environmental authorities, scientists, buyers and NGOs participate throughout the management process, from design to evaluation. Through multi-stakeholder meetings and Advisory Committees, a fishery's objectives are decided, individual quotas are set and common challenges are addressed.

4

Unconventional strategic partnerships

To promote sustainable fishing, it is necessary to create partnerships that promote behavior change, even if they are at opposite ends of the market. A partnership of fishermen and buyers brings mutual benefits such as better prices and higher quality products. This incentivises fishermen to respect catch limits and no-take zones.

Communities leading sustainable Fisheries Management



Solution provider: David Chacón, Vivienne Solis, COOPE Tárcoles R.L



Implemented by: Cooperativa de Pescadores de Tárcoles (COOPE Tárcoles), Cooperativa Autogestionaria de Servicios Profesionales para la Solidaridad Social (COOPE SoliDar), Consorcio Por La Mar



Summary: Costa Rica's coastal population is culturally and economically closely tied to the seashore and strongly dependent on artisanal fisheries. However, blocked access to marine resources, degraded and polluted habitats and declining fish stocks threaten livelihoods and increase local poverty. The artisanal fishermen's cooperative CoopeTárcoles R.L, encouraged the community to use local marine resources sustainably, thus guaranteeing their economic future and cultural way of life. They led a dialogue with the semi-industrial fleet to reach agreements on the use of the marine territory. They have promoted a collaborative governance model for the management of the country's marine territory where fishers and government work together towards responsible fishing and improvement of the quality of life of the communities.



Location: Costa Rica



Impacts

1. Recognition of Marine Area for Responsible Fishing | 2. Local Responsible Fishing Code and participatory mapping and governance model that considers scientific and traditional knowledge | 3. Fishermen from Tárcoles and neighboring communities actively participate in the zoning process. | 4. Environmental management plan for better fish processing practices and clean local beach shores • Database developed to monitor all exploited species in the Tárcoles area | 5. Institutionalised sustainable fishing protects economic future of the community | 6. Cooperative benefits workers in related occupations - often women and youth | 7. Collective action provides an equitable and just distribution of benefits. | 8. Development of a local enterprise that promotes guided visits to learn about local fishing practices | 9. Expanding ecotourism provides alternative income sources. | 10. Proposal for the recognition of a community governance model to ensure the collaborative management of MPAs by communities and government. 11. Establishment of a community-based Marine Area of Responsible Artisanal Fishing of Tárcoles (MARAF) | 12. Uniting artisanal fishers for political purposes through visits to the localities and highlighting Tárcoles as a flagship project in the creation of a National Network of Marine Responsible Fishing Areas.





Building blocks

1

Community-managed Marine Area

The policy that regulates the recognition of a Marine Responsible Fishing Areas (MRFA) is under the control of INCOPESCA, the National Fishing and Aquaculture Institute. In 2009, CoopeTárcoles R.L requested the Costa Rican government to recognise a MRFA in their fishing territory, which was approved in 2011. The recognition of this area and fishers rights helps to conserve both the marine biodiversity and the cultural identity of the local community.

2

Negotiation and Legal Recognition

A participative process with artisanal fishers of Coope Tárcoles R.L., government authorities represented by INCOPESCA and CoopeSoliDar R.L. as a facilitator of the process, was initiated for the development of the MRFA fishing management plan.

Artisanal fishers and semi-industrial trawlers was agreed that semi-industrial trawlers would stay for 3 miles from the coast. During 2009 semi-industrial trawlers made the proposal to move out from water areas with a depth of 15 meters or less but requested that artisanal shrimp fishers had also to respect this no fishing zone so that the white shrimp population could recuperate faster.

There was also an agreement for a one-year ban on shrimp captures by artisanal and commercial fleets, which was transformed in year 2012 by the INCOPESCA Board of Directors into a national decree (AJDIP-193) as stipulated by the MRFA decree.

After the ban, Coope Tárcoles R.L. requested permits for shrimp fishing. This request was backed up by the INCOPESCA research department and approved and the shrimp semi-industrial trawlers were requested to permanently stay out of the agreed 15 meter zone. Later, shrimp trawlers agreed to move out of the area 5 nautical miles from the coast to support sustainable shrimp populations.

3

Participatory Local Governance

MRFA are defined as “areas where fishing activities are regulated to secure the sustainable use of resources in the long term and where the conservation, use and management action of INCOPESCA can count with the support of coastal communities and other institutions”. (Executive Decree No. 35502 of October 1st 2009). This new legislation recognised the fisher’s effort for a collaborative governance model for the management of the marine territory.

The local community developed a Fisheries Management Plan based on their traditional knowledge. A commission, composed of members of the fishing cooperative and governmental authorities, is responsible for the further management of the area.

4

Fishery Database

Each fisher records their daily fish catches, methods and site locations and feeds the information into a database. This information aids in monitoring the abundance and diversity of key species and serves as an important management tool. Data are analysed by technicians/scientists, and the results are discussed with fishermen.

5

Responsible Fishing Code of Conduct

The fishers adopt voluntary standards for responsible fishing based on FAO recommendations. The Local Code of Conduct for Responsible Fisheries helps to ensure the conservation and sustainable use of coastal and marine resources and was applied once the Marine Responsible fishing area was recognised.

6

Sustainable Ecotourism

Cultural tourism provides an additional source of income for the local community. Guided tours promote community traditions, art of fishing and wealth of natural resources. However, if not well controlled and based upon with strong values and rules, recreational fishing can be unsustainable and a source of local conflict. The Consorcio Por la Mar R.L developed guided visits to learn about the culture of being a small-scale fisher in Costa Rica.



Collective Impact: Fisheries and Inter-Sectoral Collaboration



Solution provider: Inés López , Kanan Kay Alliance



Implemented by: Kanan Kay Alliance



Summary: Quintana Roo, high in terms of marine productivity, is threatened by over-fishing. Coastal development has led to the decline of key habitats. The lack of artisanal fishermen's involvement in fisheries management has resulted in unsustainable species extraction. To enable change and facilitate collaboration for conservation, the Kanan Kay Alliance was founded as an inter-sectorial coalition. It establishes a network of fish refuges and empowers fishermen's participation in fisheries management.



Location: Mexico



Impacts

- 1) A network of fish refuges that protect more than 15,000 hectares of coral reefs, pastizales and costal lagoons was established in a relatively short amount of time.
- 2) An organization of six fisherfolk cooperatives, in which fishermen have strong leadership and a vision for sustainable fisheries as the only way to have a competitive future, was strengthened.
- 3) The Alianza Kanan Kay has been active for three years as a network of collaboration and coordination that involves around 40 organizations from the government, fisherfolk, civil society organizations, academic researchers and private donors.





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Building blocks

1

Empowerment of fishermen

In order to start a capacity building strategy, a diagnosis of the fishing organization is first conducted. Fishermen are trained in different topics such as leadership skills, scientific monitoring, community surveillance, administration of fishing organizations, human development. Training is provided by members of the Alliance, such as civil society organizations, other fishermen, academia and governmental agencies.

2

Design and implementation of fish refuges

Based on a participatory bottom-up process, an effective, legally recognised and locally respected network of fish refuges is established. Sixteen fish refuges have been created since 2012, covering more than 18000 hectares.

3

Inter-sectorial collaboration

The Alliance unites a diverse group of stakeholders and serves as a dialogue board and facilitates the exchange of ideas, capacities and experiences, generating synergies and mutually beneficial solutions.

4

Financial compensation

A combination of public and private funds helps to partially compensate fishermen for their participation in, e.g. biological monitoring activities or general assemblies.

5

Legal and institutional framework

The existing legal framework for the formation of fish refuges is analysed and reviewed. Tools for participatory managed fish refuges are identified, as well as for inspection and surveillance activities.

Community-based aquaculture development and marine protection



Solution provider: Christian Vaterlaus, marinecultures.org



Implemented by: Marine Cultures



Summary: This solution addresses poverty reduction in Zanzibar for its coastal communities through a more sustainable management of their natural resources, additional income, and consequently, better quality of life. The approach of implementing ecological aqua farming of bath sponges with women in coastal communities promotes healthy economic growth, reduces environmental pressure and threats to marine life and other natural wildlife, improves public health and strengthens the economic and social status of women.



Location: Zanzibar



marinecultures.org

Impacts

- Each sponge farm feeds about 2-3 large families with ~10 people. We install 4 new farms per year. Scaling is depending of the production in the nursery farm.
- Women of Jambiani learned how to farm sustainably bath sponges and how they can sell them locally. After one year training they get independency.
- An artificial reef (AR) with reef balls was built with the fishermen committee of Kibigija to learn more about the importance of reefs and biodiversity. Our coral farmers learned to cultivate corals and plant them on the AR.
- The pilot project mooring & buoys in Jambiani & Paje proved that anchor damages can be reduced and corals get protection and more respect. 2016 we will install 40 more buoys in Zanzibar, Pemba and Mafia.





Building blocks

1

Sponge aquaculture as an alternative means of income

The cultivation of seaweed for the production of carrageenan, a thickener widely used in foods, has been a major source of income for Zanzibari women for more than 20 years. An analysis of the local conditions revealed that the cultivation of seaweed is subject to a sharp decline in production due to increasing occurrences of diseases and pests, and a low world-market price. Consequently, unmarried women with kids are no longer able to make a living from seaweed farming.

When searching for alternative means of income many aspects such as the know-how of the parties involved, eco friendliness, market-opportunities, investment requirements, general acceptance of the method, scalability, and availability of resources need to be considered. Aquaculture of sponges was identified to be a suitable alternative to seaweed farming promising substantially higher incomes.

2

Evaluation of suitable sponge species

The slow growth rates of sponges and the seasonal variations given in Zanzibar require evaluation periods of at least two years to allow a judgement for a sponge species' suitability. The process comprises several phases:

- Collection of specimens of different sponge species in the wild (totally, more than 100 species were found and tested).
- Evaluation of each species' suitability as bath- or cosmetic sponges (e.g. consistency, hardness, water absorption capacity, attractiveness). Promising samples were directly taken to potential customers to evaluate market acceptance.
- Growth tests of promising candidates (e.g. growth behaviour, growth rate, pest resistance, susceptibility to algal growth).
- Candidates will be subjected to propagation and farming tests (questions to be answered were: can the sponges be efficiently multiplied via segmentation; what are the chances of survival for a cutting; do the cuttings grow fast enough; how much maintenance is required; is the process profitable etc.)

3

Setting-up a sponge farm

The development of an appropriate cultivation method was started concurrently with the evaluation of suitable species and in close collaboration with the first sponge farmers. In this phase many technicalities had to be clarified and a simple yet robust cultivation system that can easily be multiplied was developed. Some of the details that needed to be worked-out were:

- The minimum water depth at which sponges thrive and at which sponge farmers can spend as much time as possible without being required to swim.
- The optimal spacing between sponges.
- Sourcing rope material suitable for the construction of the farm and attachment of cuttings that is durable, cheap, easy to handle and locally available.
- The ideal cutting size, shape and suspension method.
- The minimum number of cuttings per farm necessary for two sponge farmers to make a living and to ensure that propagation does not require collection of additional sponges from the wild.
- The frequency at which cuttings need to be cleaned and trimmed.
- The right moment to harvest sponges.
- Methods to process, clean, preserve and dry sponges as well as appropriate packaging and labelling of the product.
- A training curriculum for sponge farmers and the outline of technical assistance needed for future support independent sponge farmers.

4

Development of independent business models

While the first sponge farms were set-up the appropriate business model needed to be established. The objective is to generate a stable income for sponge farmers and to enable them to gain independence from marinecultures.org as early as possible. Sufficient access to sales market(s) for sponge farmers is a key necessity, possible solutions include:

- Formation of a cooperative.
- Appointment of a salesperson.
- Direct sales through sponge farmers.
- NGO or company purchases complete or partial harvests for overseas sales.

It is also important to ensure continuous training of new sponge farmers, quality control and establish local competency and responsibility for multiplying sponge farms at existing and new sites.

EcoGourmet: Bringing sustainable fish to your plate



Solution provider: Camila Zambrano Esguerra, Fondo Accion



Implemented by: Fondo Acción, Conservation International, MarViva Foundation, Redefrio



Summary: Since 2009, EcoGourmet has enhanced the technical and administrative capacities of artisanal fishing cooperatives and to achieve responsible fishing. EcoGourmet facilitates the signing of fair agreements between suppliers, fishing cooperatives and restaurants and sensitises consumers to the ramifications of their purchasing decisions. Participating restaurants offer locally sourced, sustainably caught fish. Negative impacts on ecosystems are reduced while profits for local fishers increased.



Location: Colombia



Impacts

1. Institutional strengthening of the organization in charge of the community based Cold Chain Network (Red de Frío) and improvement of their infrastructure and quality processes. 2. Promotion of responsible fishing practices and contribution to the sustainability of fisheries. This includes fishing in allowed areas, not capturing threatened species, using eco-friendly practices, capturing individuals that have reached sexual maturity and are well above the minimum size. To guarantee compliance with these criteria, a monitoring system was put in place. Formalization of the Wok (Chain of Restaurants) - Red de Frío commercial relationship, increased the quality of life of the fishermen, and their participation in the market by 13%. End-consumer awareness of responsible fishing practices: 197 Wok clients attended responsible consumption workshops and almost 600,000 clients saw the restaurants' placemats that contained important information about sustainable fishing practices. Most importantly, at the beginning of the project 6% of clients kept in mind their environmental commitment when it came to selecting fish products, by the end of the project, this number had risen to 21%.



Building blocks

1

Responsible fisheries

Good practices for fishing, manufacturing, storage and marketing of fish products were implemented together with artisanal fishing communities in the Colombian Pacific coast. A way of measuring the proper implementation of these good practices is also being developed. Results and impacts were measured through biological and socioeconomic monitoring of key variables to as to evaluate the changes achieved by the project, both in ecosystems and in organizations or executing agencies.

2

Trade agreements

Trade agreements between restaurants and local organizations promote a fair compensation that recognises the actions taken by grassroots organizations in favor of conservation and sustainable use of natural resources. Restaurants and local organizations sign and implement these agreements to sustainably manage coastal and marine ecosystems. They establish a strategic network to engage in a process whose priority is the sustainability of natural resources.

3

Organizational empowerment

Strengthening administrative and accounting considering the weaknesses identified under two diagnostic tools Interagency Conflict Assessment Framework (ICAF) & FOCO. Implementing best fishing practices with investment in fishing gear, boats and engines, as well in the handling and processing during the post capture handle adequately in the collection centres, according to the quality standards and procedures. This component involves investments in infrastructure, equipment and tools for their processing area. Establish and implement logistic processes internally and externally to ensure the cold chain and distribution.

4

Consumer sensitization

Customers of associated EcoGourmet restaurants are sensitised on responsible consumption via workshops and restaurants' placemats containing information about sustainable fishing and responsible consumption.

5

Communication strategy

Results, achievements and learning experiences of the program were disseminated among different audiences to illustrate the impact of the innovative business model. This implies communications with the end users about arrangements for conservation and sustainable management, ethics and fair nature of trade agreements for suppliers, and the results and impact of this business model, so that their consumer decisions become effective support to it. Communication of lessons learned during implementation of the project is taking into account the different target audiences to share the results and achievements of the project. This explains the EcoGourmet initiative, including stories and experiences, so that not only results count as facts, but changes, perceptions and learning that have a greater qualitative component, especially those involved in the project (organizations, beneficiaries, etc.).



Ecosystem-based management addressing unsustainable fishing and land use



Solution provider: Natalie Scarlata, The Coral Reef Alliance



Implemented by: Kubulau Resource Management Committee, Kubulau Business Development Committee, Wildlife Conservation Society, Coral Reef Alliance



Summary: The Kubulau Resource Management Committee (KRMC) with assistance from NGOs established Fiji's first ever district-wide 'ridge-to-reef' management plan in 2009. Ecosystem-based management planning was allied to community-awareness-raising and capacity building processes to develop a network of 20 MPAs within the Kubulau traditional fishing grounds encompassing 17 traditional-style periodic closures and 3 permanent no-take reserves.



Location: Fiji



CORAL REEF ALLIANCE



Wildlife
Conservation
Society

Impacts

Biodiversity Impact: The largest of the 3 permanent no-take reserves, the Namena Marine Reserve, is known for its world class diving due to steep walls and strong currents that support high diversity at all trophic levels. Fish diversity estimates from rapid surveys in 2003 showed comparable biodiversity to sites in Indonesia (West Bali, West Java) and Papua New Guinea (New Britain). Surveys in 2009 estimated approximately 73% of the total Fijian coral reef fish fauna within and adjacent to the reserve, including the humphead wrasse and bumphead parrotfish, listed as Endangered and Vulnerable, respectively, on the IUCN Red-List. The overall advantage to the community of Kubulau has been overwhelming and this has prompted the communities to protect and focus on issues of food security, livelihoods and poaching. This has provided the incentive to patrol the area and enforce management rules. In addition, the network was designed to protect species during their larval and adult movements. At 60 km², the Namena Marine Reserve is the largest MPA in Fiji, providing adequate feeding and breeding habitat for a diverse range of species.



Building blocks

1

Participatory planning process

Alongside the participatory planning process, NGOs supported establishment of a Community Educators Network in Kubulau, with facilitators training and associated tools. This helped to foster an inclusive, on-going, community-led dialogue on resource management issues, enhancing awareness and engagement for more effective management planning, implementation, compliance and enforcement processes.

2

Research and data collection

Research and data collection to determine the most ecological important habitats to place MPAs was key to a successful network of protected areas. Working with the community through the research process and sharing findings broadly helped familiarise everyone with the importance of protecting their fish stocks and coral reefs for the future.

3

Development of management plan

Developing a management plan allowed for the ridge to reef implementation plan to be outlined with roles and responsibilities clearly stated and explained. The planning process was informed by extensive scientific and socioeconomic research, as well as local and traditional ecological knowledge. The plan contains tables of rules for each habitat which indicate whether the rule is sourced from national legislation or community consensus. Each rule is coupled to a list of management actions, with responsible parties designated for carrying out each action (e.g. using a net in the sea within 100m of the mouth of a river or stream is prohibited, the management action for this is monitoring by fish wardens and reporting breaches to Fisheries department). The plan also contains different options for enforcement, depending on whether the offender is in breach of a law or customary rule, as well as a framework for changing rules in response to environmental change in order to flexibly and adaptive manage Kubulau's coastal and marine resources. In 2011, we helped the KRMC to review and adapt their plan based on new information about reef resilience.

4

Establish institutional capacity

Establishing and building the capacity of a management body is key to ongoing implementation of any program. Trainings, workshops, meetings, and providing support when necessary are all part of the capacity development process. The Kubulau Resource Management Committee (KRMC) is tasked with promoting and supporting sustainable management of natural resources in Kubulau District. The KRMC reports directly to the Kubulau hierarchy council of chiefs, who ultimately must endorse all decisions related to resource management. It is composed of 1 representative from each of the 10 villages plus a chair. Its main functions are: coordinate implementation of the management activities identified in the Kubulau ridge-to-reef plan; raise awareness of the management rules and activities; coordinate enforcement; organise training on sustainable resource management and alternative livelihoods; liaise with stakeholders; and monitor implementation progress. More recently, the Kubulau Business Development Committee was established to assist the KRMC and the council of chiefs to maintain stewardship over their resources.

5

Solidify sustainable financing for management

Ongoing management incurs expenses and there are opportunity costs associated with a community's decision to restrict their access to a resource. A sustainable funding source is crucial to cover management costs and to provide community benefits that can be experienced broadly.



Empowering local communities to manage small-scale fisheries



Solution provider: Alison Clausen, Wildlife Conservation Society (WCS)



Implemented by: Wildlife Conservation Society, Ministry of Marine Resources and Fisheries Madagascar (MRHP), Committee for Sustainable Development of Antongil Bay (PCDDBA),



Summary: This solution adopts a dual bottom-up / top-down approach to local marine resource management in a network of 26 marine reserves. It developed a seascape-scale coastal fisheries co-management plan providing formal national recognition for local fishers' rights, and customary social conventions (dina) between fisher communities. Fishers were resourced to enforce regulations and the dina to increase their role in marine resource management, and compensate for under-resourced Government agencies.



Location: Madagascar



Impacts

A key success of the joint efforts of resource users, WCS and Government was the outlawing of beach seining by the Government in 2006. Analanjirofo Region, incl. Antongil Bay, is the only place in Madagascar where these destructive fishing gears are prohibited by law. As a result of temporary fisheries closures and enforcement of laws regulating fishing gear, local community members noted an increase in catch per unit effort; increase in size of fish caught; increase in abundance of juvenile; reappearance of some species; gradual restoration of habitats; increase in local capacity to manage their resources; improved relations between local communities and local authorities; decrease in the use of beach seines; and an increase in economic revenue from fishing. Monitoring indicated a tenfold increase in finfish biomass between 2013 and 2015 in the restricted areas, while finfish biomass in the no-take zones of the LMMAs doubled in the same period. The management plan also legally establishes Madagascar's first shark sanctuary in Antongil Bay, an important habitat area for sharks with at least 19 species present that are known to be harvested, a third of which are threatened with extinction.



Building blocks

1

Antongil Bay Fisheries Co-Management Plan (ABFMP)

The Antongil Bay Fisheries Co-Management Plan (ABFMP) is a national level legal framework to recognise local community management rights. It was developed through significant collaborative efforts between WCS, resources users, and Government. The result was the first seascape scale traditional, artisanal and industrial fisheries co-management plan in Madagascar covering 3,746 km² of marine habitats that officially confers fisheries management authority to local communities. The plan acknowledges the role of Antongil Bay marine reserves for resource recovery, and fixes maximum levels for traditional, artisanal and industrial fishing efforts. The decree adopting the ABFMP grants the fishermen's associations the rights to develop regulations adapted to the local context, identify and implement practical measures to ensure respect of regulations, register and issue licenses to local fishers, and establish and enforce different zones within the local managed fishing areas. Local fisher associations are officially accountable for the implementation of ABFMP and they actively participate in inspection, surveillance and monitoring activities.



© Wildlife Conservation Society

2

The Dinabe: A social convention between local communities

The dina is a traditional social convention that helps regulate life in Madagascar communities. It enables local communities to develop a set of rules and regulations to govern a particular set of circumstances and is commonly used in relation to natural resource management. Dinas are developed in a participatory manner and given legal weight through their homologation in local courts. Their enforcement lies with the local community. In the case of Antongil Bay, 26 dinas were created – one for each fishers association in each locally managed marine reserve. The dinas encompass: (i) a set of regulations for the principal infractions (destructive gear, fish minimum size, etc.), (ii) a set of regulations in accordance with the local context (taboos, night fishing regulations, etc.), and (iii) a set of sanctions. In addition to the local dinas, the local communities of the 26 marine reserves agreed to create a “dinabe”, which aims to federate the individual dinas and provides an overall framework for sustainable use of the marine resources and coastal areas in the bay in a complementary manner to the Bay-wide management plan.

3

Control and Surveillance Committee (CCS)

With the support of WCS and under the guidance of the Government fisheries enforcement agency, each association has set up a local Control and Surveillance Committee (CCS) that is made up of volunteer community rangers, who are officially recognised by the Government and provided with a registered, numbered identification badge. The CCS allows the application and enforcement of the rules and regulations set out in both the management plan and the dinas. Rangers are equipped and trained to carry out surveillance and enforcement missions and given focused training on: knowledge of regulations; awareness raising methods; dissuasion/sanctions; repression; registration of offenses; and definition of strategies and organization for surveillance and control missions. Rangers come from a range of social backgrounds and include men & women, village chiefs, traditional & religious authorities, private sector operators, school teachers, and fishermen. The CCS carry out missions according to varying schedules and depending on the circumstances with joint patrols by several associations to cover larger areas or joint missions of CCS rangers and Government fisheries enforcement representatives when significant infractions are observed.

Empowering artisanal fishermen in manta ray ecotourism



Solution provider: Kerstin Forsberg, Planeta Océano



Implemented by: Planeta Océano, Wild Aid, Manta Trust



Summary: The Giant manta ray is a vulnerable species exposed to unmanaged fisheries in Peru. To promote protection of mantas, local fishermen are empowered through manta ray ecotourism. Activities include workshops, financial and technical support, and promotion of ecotourism services. This is achieving awareness and appreciation for manta conservation, while promoting alternative incomes for local communities.



Location: Peru



WILDAID



Impacts

Awareness and appreciation for manta ray conservation is increasing in northern Peru. Knowledge on Manta Rays increased in fishermen participants and environmental leadership was promoted by engaging 10 fishermen in ecotourism.



Building blocks

1

Introductory workshops for artisanal fishermen

Workshops were organised in multiple communities in the region, in order to raise awareness on manta ray conservation status among artisanal fishermen. These general workshops also presented our project, gathered project feedback from artisanal fishermen and allowed introductions to fishermen interested in developing ecotourism. Workshops were promoted through local press, social media and collaboration of fishermen organizations.



2

Business development training

Fishermen were invited to monthly workshops focused on building capacity regarding business and tourism management. These included hospitality management, safety, and basic understanding of English. Manta ray conservation status and data collection was also incorporated in these meetings. Local professionals (e.g. Coast Guard, Tourism authorities, etc.) were invited to give presentations, showcasing local knowledge. Meetings also encouraged fishermen to design their own business plans and strategies to implement ecotourism services, and enabled the selection of the most committed fishermen who would receive funding and personalised support.

3

Tourism infrastructure and mentorship

Two fishermen groups were selected to receive funding to develop ecotourism services, and receive support to acquire the required tourism permits. Necessary infrastructure, including boat refurbishment, life jackets, snorkels and masks, was identified by artisanal fishermen and the local Coast Guard. Agreements were signed with fishermen and the necessary equipment was provided through zero-interest micro-loans. Regular meetings with fishermen provided follow-up and personalised mentorship regarding ecotourism development and environmental leadership.

4

Ecotourism marketing

A simple market analysis was conducted in order to define marketing strategies for ecotourism services, together with artisanal fishermen. Partnerships were also established with local tourism agencies and the regional government to promote these services. Flyers were designed and handed out to advertise trips and showcase manta ray conservation. Workshops in local schools and dissemination through local press also promoted manta ray conservation and presented tourism alternatives. In addition, a proposal for national protection of Giant Manta Rays was presented to national authorities, which will contribute to protecting this valuable tourism resource.

5

Science-based ecotourism

Accompanying fishermen on the initial ecotourism trips provides further training and allows for regular feedback from tourists. In case manta rays are observed, snorkelling and free diving is conducted. Location and time of encounter is registered, and, if possible, a photograph of the ventral surface is collected for photo-identification. Manta sightings are recorded in a database. Ecotourists are thus able to support research during their boat trips, serving as citizen scientists providing ongoing information about the local species population. Fees paid by ecotourists provide an additional income to fishermen, while encouraging manta ray conservation.

Fin Fighters shark investigation and citizen shark science program



Solution provider: Lou Ruddell, Fin Fighters



Implemented by: Fin Fighters



Summary: Fin Fighters is working with researchers and volunteers to collect information and genetic data from Moroccan fishing ports and markets. Results inform research on the impacts of shark and ray fishing and provide input for studies on populations and genetic health. In addition they are the basis for advisory management reports and educational programs. This is part of the larger Fin Fighters Citizen Shark Science program – a solution based approach to shark and ray conservation.



Location: Morocco



Impacts

Over the last 3 years the Fin Fighters team has been able to establish links and successful collaborations with scientific institutions and individuals in need of data from either this region or specific species. Through this investigation Fin Fighters have also been able to generate new studies - such as the Morocco genetic baseline project. We have already begun establishing reports for presentation to Moroccan officials and aim to work with the fishermen and these officials to negotiate policy and scale up our educational program on a national level.

By establishing links with fishermen we have begun to involve them in collecting data and constructing educational programs. Many of these fishermen are now participating by providing continual information on their larger or more unusual catches via emails and photographs throughout the year. Overall this program opens up dialogues between fishermen, conservationists and scientific communities and allows for understanding and solutions to be constructed for mutual benefit.



Building blocks

1

Citizen shark scientists

Volunteers are trained to conduct genetic sampling and necropsies and to gather data by monitoring landings and surveying fisherman. This creates an opportunity for conservationists and concerned citizens to have a positive impact and learn new skills for the benefit of species conservation. This has also enabled the collection over a wide area of a vast amount of viable data for scientific studies. Ultimately it means that Fin Fighters are able to provide a much needed data resource in data deficient areas for poorly understood populations. The participants are trained to ID species from various body parts and to take ID images for our data bank. Some of our volunteers request to be taught more in-depth collection skills such as sampling either in situ on the ports, or in controlled environments. Others further their involvement by learning how to carry out necropsies and to extract samples of specific material – such as sperm, or stomach contents for later study. The volunteers (or Citizen Shark Scientists) are also taught how to survey fishermen, and fishing equipment, and to understand fishing methods.

2

Data from landings and fishing surveys

Surveying fishermen allows a valuable insight to what is being landed across Morocco - and in what quantities, if species are effectively reported and if not why not, what methods are being used to catch elasmobranch species and if species are being heavily targeted for commercial purposes or simply by-catch. Through this we have understood that many fishermen have little or no knowledge of laws and restrictions on shark/ray species and that many international and national trade/catch policies are not translated from management level to the fishermen themselves – who are unaware they are breaking laws. We are therefore working with artisanal fishermen to establish the beginnings of a species education program and on basic training in DNA data collection from their landed catches.

3

Data for better enforcement

Fin Fighters works on the ground and is able to collect any evidence of IUU that may be occurring or is unreported. In the fishing ports and markets we are able to witness firsthand the sale and movement of any CITES listed species or evidence of illegal shark finning. The evidence we have collected so far from the first 2 years of this 5 year study will be amassed and produced in reports (together with our genetic results and data) that will be presented to the fisheries officials and governing bodies. Our aim with this is to prove that despite restrictions and laws (such as CITES and ICCAT) being agreed to by Moroccan governance – they are currently not being managed or enforced effectively. We are currently producing an education scheme, that we hope the Moroccan fisheries ministers will approve (with the reports and fishermen surveys as evidence to back this up) that we will run out across the country in ports and markets. This will provide basic knowledge of different species and outline the laws and restrictions as well as give explanations for why they are necessary.

4

Scientific shark committee

Many of the Fin Fighters are non-scientists and do not have backgrounds in biology or conservation. We have therefore created a system of collaboration with scientists to produce a tangible and reasoned method of generating action for species conservation. We established a committee of shark scientists to share skills and bring new technology to shark conservation, and specifically to the Moroccan studies. Working with scientists to collect data for their studies as well as for our own reports ensures a relationship based on common need. Scientists come to us with data requirements, we fill these by collecting data, which is then used in their scientific research. The results are made available for Fin Fighters to use in pushing practical conservation or working to implement enforcement/policy. In this way, we are all working collectively to ensure our needs are met and any papers published credit Fin Fighters as an institution for data collection, which adds to our credibility.



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Fish Forever in Brazil: Solution for community-based fisheries management



Solution provider: Jessica Blakely, Rare



Implemented by: Rare Brazil, Brazilian Environmental Agency (ICMBio),



Summary: As coastal development increases in Brazil, artisanal fishers struggle to protect their resources. By leveraging the government-created Extractive Reserves' (RESEXs) legal structure and working with government, local fishers' organizations, and communities, Rare's Fish Forever program in Brazil has 1) established community-led governance and authority over artisanal fisheries; 2) designated managed-access fishing areas, combined with no-take reserves; and 3) improved participation of fishers and community members in fisheries management and decision-making.



Location: Brazil



Impacts

Fish Forever Brazil engaged 11 communities with 9,800 community members, committed to community-led sustainable fishery management.

357,096,000 ha of RESEX area across different sites are covered by this project. 14 no-take reserves were established, adding 1,383 ha protected by the local community (Table 1).

Behavior change campaigns promoted sustainable fisheries behavior at the site level (Table 2) and increased knowledge, interpersonal communication, and behavior change toward sustainable fishing practices, also at the national level. The campaigns encourage communities to participate directly in fisheries management and planning, contribute to scientific monitoring, and to create new regulations at the local level (Table 3).

Nine target-species with environmental, social and economic importance are now managed sustainably by communities, following best harvest and management practices. For the first time, 620 fishers (32% of target-fishers) are organised & use logbooks to record catches, allowing them to connect their catch to daily living expenses. Logbooks were implemented to comply with the RESEX fishery data-reporting requirements, and are accepted at many economic institutions as proof of income. The community-based approach to developing governance, planning, and decision-making capacity provides benefits by enhancing adaptive capacity in the face of climate change.





Building blocks

1

Understanding People and Context

Qualitative and quantitative research is conducted to produce profiles of both the fisheries and the fishers. Final decision for implementation sites and institutional partners for Brazil's first cohort were based on:

- site fit (suitable ecological, fisheries, and social dynamics);
- potential for strengthening the implementation of TURFs (=Territorial Use Rights for Fishing) and creation and implementation of no-take zones;
- regional experience and lessons learned;
- funding opportunities;
- government (ICMBio) and partner priorities as opportunity for scaling; and,
- analysis of potential threats to developing a TURF-Reserve (such as upstream dams, pollution, etc.).

This process is also instrumental to develop partnerships with local associations and leadership to approve the implementation of the campaigns in all sites.

2

Participatory Managed Access Design & Implementation

Using the data from profiling, fishers and community leaders are engaged over a series of workshops that guide them through a) defining their community goals in relation to fisheries and conservation, b) evaluating their reserves, c) delineating areas for managed access, and d) agreeing on the rules within their managed access areas. Once these have been agreed on, they are codified in policy, and institutional arrangements are put into place for implementation. Through behavior change campaigns, Fish Forever is increasing the productivity of management bodies. These bodies are then planning and approving new laws and roles for fisheries that will positively impact the community.

3

Support Community Engagement & Behavior Change

The behaviour change campaign team at each municipality uses a mix of creative materials and community mobilization activities to inspire and educate fishers and their families about the benefits of working together to manage their fisheries better. In the 'Readiness' phase, the messages are focused on getting fishers to become registered fishers, complying with basic fishing laws, and participate in meetings. In the second phase, after the managed access areas are institutionalised, the messages focus on building compliance for the rules and monitoring of their catch. Through social marketing, Fish Forever can more easily earn buy-in from communities to follow best practices for fishing and encourage new solution innovations from communities for sustainable fisheries management.

4

Value-Organizational Development and Capacity-building

There are several critical organizations within communities that need to be developed or strengthened in order to ensure long-term success of the fisheries management. Campaigns must ensure that the fishery councils, the management bodies, and the fisher associations are organised and well-functioning. They are trained on topics like adaptive fisheries management, management essentials, volunteer management, and team building

Fish Forever in the Philippines: Campaign for managed access and sanctuaries



Solution provider: Veera Mitzner, Rare



Implemented by: Municipality of Looc, Occidental Mindoro, Rare



Summary: A social marketing and behavior change campaign is being implemented to encourage community support for the set-up of Managed Access Areas + Sanctuaries, a fishery management approach that designates exclusive fishing areas for certain groups of fishers in exchange for compliance with more sustainable fishery practices. This is paired with a household resiliency strategy to help build financial assets for households supporting the program.



Location: Philippines



Impacts

1,144 hectares of municipal waters have been legally declared as a Managed Access Area + Sanctuary, which will support protection of critical habitats and allocation of exclusive access to fishers that comply with more sustainable practices.

More than 800 fishers have been reached by awareness campaigns about sustainable fishing practices, and have participated in knowledge-building and decision making sessions.



Building blocks

1

Adopt Understanding People and Context

Qualitative and quantitative research is conducted to produce profiles of both the fisheries and the fishers, so that current fishing grounds, gears and practices are documented. Current knowledge, attitudes and sources of information are also measured.

2

Estimate Participatory Managed Access Design & Implementation

Using the data from profiling, fishers and community leaders are engaged in a series of workshops that guides them through a) defining their community goals for fisheries and conservation, b) zoning and marking off their municipal waters, c) evaluating their reserves, d) delineating areas for managed access, and e) agreeing on the rules within their managed access areas. When these have been agreed on, they are codified in policy and institutional arrangements for ongoing implementation.

3

Support Community Engagement & Behavior Change

The campaign team at each municipality uses a mix of creative materials and community mobilization activities to inspire and educate fishers and their families about the benefits of working together to manage their fisheries better. In the 'Readiness' phase, the messages are focused on getting the fishers to become registered fishers, comply with basic fishing laws, and participate in meetings. In the second phase after the managed access areas are legalised, the messages focus on building compliance for the rules of the MAA+S and continued monitoring of their catch.

4

Organizational Development and Capacity-building

There are several critical organizations within the community that need to be developed or strengthened. The campaign must ensure that the fishery councils, the management bodies, and the fisher associations are organised and well-functioning. They are trained on topics like Adaptive Fisheries Management, Management Essentials, Volunteer Management, and Team Building.

5

Implement Financial literacy and resiliency

To shift to more sustainable fishing, fishers needed to build up their savings to cushion their households against crises and shocks. Savings clubs were organised across the municipality using the Village Savings and Loan Association model. After 9 months, 4 clubs with 95 members had been formed and clubs had an average of Php 3200 saved per member.

Fisheries Co-management: Fisherfolk Part of the Solution



Solution provider: Gloria C. Diaz, FARMC



Implemented by: FARMC Project Philippines



Summary: Fisheries and Aquatic Resource Management Councils (FARMC) constituted by representatives from local fisherfolk, government, academia, civil society and private sectors serve as a legal forum to jointly discuss and decide solutions for the sustainable use of municipal marine resources. Through the FARMC resource users have a legal status and are actively involved in the management of fisheries and aquatic resources and take part in the decision making process.



Location: Philippines

FARMC Project *Philippines*



LIGHTHOUSE FOUNDATION

Impacts

FARMC is a successful social reform measure covering 99% of the Philippine's coastal municipalities and cities. Fisherfolk became part of the solution and is involved in all steps of sustainable fisheries management processes. Partnerships and community leaders emerged adding social resilience. They help in establishing fish sanctuaries, marine protected areas, fisheries regulations and compliance. FARMC and Fish Catch Monitoring and Database Management System tested for nationwide application. Fish catch increased where FARMC works, improving livelihood of fisherfolk.



Building blocks

1

National FARMC Program Management Centre

The Bureau of Fisheries and Aquatic Resources (DA-BFAR) established this national centre that implements and coordinates the national Fisheries and Aquatic Resource Management Council (FARMC) program of the Philippine government. It is charged with the facilitation, coordination and spearheading program implementation nationwide. Strategies and policies to enhance program execution are formulated and based on regular program evaluation.

2

Regional FARMC Program Management Centres

Regional FARMC Programme Management Centres established in every region of the Philippines facilitate all programme activities. Their designated programme coordinators work directly under the supervision of the Bureau of Fisheries and Aquatic Resources (DA-BFAR) regional directors. DA-BFAR supports the implementation at all levels both logistically and technically and in cooperation with partner agencies including local government units.

3

Inclusion of Fisherfolk Leaders

Regular participation and consultation of fisherfolk leaders is sought from the beginning. These leaders are appropriate advocates for responsive and effective co-management planning and implementation since they are directly affected and speak the language of coastal dwellers.

4

Capacity Building for FARMC Members

Continuous training equips stakeholders with the necessary know-how and skills to set up and run a FARMC. It includes assistance on habitat assessment and monitoring, the establishment and management of marine protected areas (MPAs), mangrove rehabilitation, fisheries law enforcement, integrated coastal zone management (ICZM) and impacts of climate change on marine ecosystems.

5

Rewards and Incentives

The national incentive system for FARMC, a regular programme in BFAR, serves to recognise outstanding FARMCs and FARMC coordinators that may act as role models. It includes cash prizes, trophies and appreciation by the President of the Philippines that are regularly awarded in accordance to a nationwide evaluation process.

6

Partnerships and Networking

Partnerships with research, government and civil society institutions help FARMCs in the planning, implementation of their activities and achievement of their objectives.

Helping fishermen reduce their impact



Solution provider: Jorge Antonio CastrejónPineda, National Commission for Protected Areas (Mexico)



Implemented by: CONANP, Universidad Autónoma de México (UNAM)



Summary: High levels of marine productivity around the National Park Isla Isabel attract fishermen, who have been using the island as a temporary camp site for almost 100 years. However, a steadily growing number of fishermen and a lack of organisation have increased the pressure on the island's natural resources. CONANP initiated a participatory process with the local fishermen to improve the management of the fishing camp and ensure that all activities meet environmental regulations.



Location: Mexico



Impacts

The regulation of camping condensed in the recovery of previously irritated vegetation zones e.g. by ceasing to use trees as firewood to prepare food. The exploitation of native birds and reptiles of the island and their products stopped. The placement of the camping side with 30 ecological latrines ended open air defecation. Residuals have been eliminated and the risk of human introduction of alien species has been reduced.

Fishermen do now participate in the conservation of the island; these actions also have been extended to the surrounding marine area. The conflicts between the fishermen and with the national park's personal are decreasing. Moreover, if conflicts are emerging now there exist adequate canals and norms to solve them.

For the operators of the national park the regulation of the camping resulted in an improved and more efficient use of their own resources. For the fishermen the security to have temporary camping during fishing activities, in this case far away from the coast, means lower investment costs and an increase in their economic activities.



© CONANP



Building blocks

1

Consensus on natural resource use

Regular meetings with relevant stakeholders, including representatives from academia, governmental agencies, national park staff and local fishermen, promote consensus regarding directives for the use and protection of natural resources.

2

Management plan for the National Park

Although The conservation and management programme formalises jointly agreed regulations. It contains various sub-programmes with defined objectives, actions and guidelines to improve the state of conservation and management.

3

Education campaigns

Environmental education campaigns raise awareness of issues associated with the fishing camp. Special emphasis is placed on the control of introduced species, waste management and outdoor defecation. Information is disseminated via various media.

4

Roles and responsibilities within National Parks

Roles and responsibilities are defined for all stakeholders. To achieve the required compliance with administrative rules, stakeholders are actively involved in inspection and surveillance activities. The violation of an agreement can result in temporary denial of access to the island.

5

Thematic workshops for fishermen

Workshops are conducted to increase local fishermen's capacities. These focus on conservation, sustainable fishing techniques, biosafety measures and solid waste management. Meetings with fishermen from other protected areas in the region, NGOs and research centres facilitate knowledge transfer.

Integrated Mangrove Fishery Farming System (IMFFS)



Solution provider: Dr. V. Selvam, M.S. Swaminathan Research Foundation (MSSRF)



Implemented by: MSSRF, GIZ



Summary: The solution provides sustainable adaptation for people depending on vulnerable coastal areas of India that are further stressed by climate change, particularly sea level rise. Socio-economic and ecological characteristics are used to plan and implement an innovative brackish water farming system. In this system, mangrove plantation is integrated with aquaculture, with mangroves and halophytes planted on outer and inner bunds (dam) of the system to protect against rising sea level, cyclones and other natural disasters and water spread area used for aquaculture for income generation.



Location: India



Impacts

The solution demonstrated the community how to develop a simple, replicable and efficient integrated aquaculture model to cope with deteriorated coastal conditions due to salinization to secure income, livelihood and to reduce vulnerability to natural disasters and climate change. The community gained skills to reproduce the solution and thus to increase the number of benefitting families. The solution transforms a saline affected area into a productive sustainable aquaculture with no environmental pollution effects. Coastal protection is enhanced through mangrove and halophytes planted on bunds.

The UNFCCC has identified IMFFS as one of the adaptive strategies to Sea Level Rise and provided funds to demonstrate the same in about 50 ha in Machillipattinam in Andhra Pradesh state of India under Adaptation Fund.



Building blocks

1

Situation Analysis and Vulnerability Assessment

Participatory rural appraisals help to draw a picture of both the socio-economic and environmental situation and the major concerns. Geographical assessments and the use of geographical information systems help to identify the project area and risk zones that are affected most by climate change impacts like sea level rise and salinity.

2

Village Level Institutions

Gender and socially balanced village management committees are established in the target community which are governed by agreed rules. They develop regulations and micro plans for all activities and are responsible for their implementation. They try to consider the concerns and priorities of different stakeholders. Training allows them to also take into consideration new climate change findings.

3

Construction of Integrated mangrove fish ponds

In the identified saline affected area, fish ponds were constructed with an innovative approach. Normally, fish ponds will have only four earthen bunds to hold water. In this model, apart from these four outer bunds, inner bunds are also created and the ponds look like a mitochondria. The inner bunds are created to provide more space for mangrove plantation. The water spread area is used for fish culture. Thus, in this system, nearly 60% to 70% is given for fish culture and nearly 40% is given for mangrove plantation. To create inner bunds a lot of soil was dug from the pond and this makes the pond floor lower than the tidal level. As a result, tidal water enters the system during the high tide and drains out during the low tide by gravitation. Any amount of water can be kept in the system by placing tidal water inlet and outlet at appropriate height. Due to regular tidal flushing, this system requires no energy for pumping water in and out of the pond. Due to regular flushing by tides, no chemical treatment is necessary to maintain water quality. Since tidal water brings a lot of food, there is only a minimum requirement for artificial feed. Thus, this system of fish farming is environment friendly.

4

Participatory Monitoring

A team composed of representatives from the target community, local NGOs, and local government agencies monitors the progress of project implementation and its individual activities on a regular basis. This allows to adapt plans and to modify implementation whenever required to ensure successful completion and fulfilling expectations of all stakeholders.

Isn't there an App for that?

Smartphone Apps in marine resource management



Solution provider: Team MACBIO, GIZ MACBIO



Implemented by: Secretariat of the Pacific Regional Environment Programme (SPREP), International Union for Conservation of Nature (IUCN) Oceania Regional Office, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH



Summary: Managing marine resources heavily relies on data, but in many contexts, including Pacific Island countries, data deficiency in fisheries and other marine resources prevents informed management decisions. Find here the full documentation of smartphone app use and development for (marine) resource management:

- The spectrum of Smartphone Apps in natural resource management
- A guide for App Development
- Open Data Kit for data driven marine management in Fiji as example.



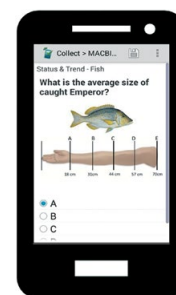
Location: Fiji

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Impacts

Full documentation of conceptualizing, development and implementation of smartphone apps for (marine) resource management made available. Fiji Locally Managed Marine Area (FLMMA) network representatives trained in use of collaboratively developed smartphone surveys for data collection in the network's 400 communities. Additional Fijian stakeholders from marine resource management trained in use of collaboratively developed smartphone surveys for data collection. Marine spatial planning stakeholders from various government ministries in Kiribati trained in use of collaboratively developed smartphone surveys for data collection. Several hundred natural resource management and development cooperation experts trained in smartphone app conceptualizing, development and implementation through Massive Open Online Course (MOOC) on Digital Development.





Building blocks

1

The spectrum of Smartphone Apps in (marine) resource management

There is a wide spectrum of Smartphone Apps in (marine) resource management. This Block gives orientation in the app jungle, starting with definitions and background on smartphone and app usage, and the opportunities this provides e.g. for natural resource management.

Also, there is no need to reinvent the wheel, if the answer to "Isn't there an app for this" is yes. A list provides an overview of different app types and examples from marine management and other sectors, with a special focus on the Pacific region.

2

A guide for App Development

App development and use is a strategic process. This guide aims to assist in this process, following the Digital Principles. First objectives and types of apps are analysed, before looking at strengths and weaknesses, as well as alternatives to smartphones and apps as technology. A guide on researching the existing app market concludes this chapter.

Secondly the enabling environment of app development is considered, from user centred development, over budget considerations and development options.

Lastly, technical aspects of app development are explored, dwelling on user needs, functionality, platforms, back and frontend, distribution and hardware considerations.

3

Open Data Kit for data driven marine management in Fiji

The MACBIO project assists its partners in developing effective approaches to marine management. In 2015 the project was requested to support the design and development of open-source mobile solutions for data collection in locally managed marine areas in Fiji, among others. Thorough research and testing of existing platforms and proven examples identified Open Data Kit (ODK), as a suitable open source solution, especially in combination with KoBoToolkit.

Kawawana community heritage area: good life recovered through conservation



Solution provider: Salatou Sambou, KAWAWANA



Implemented by: APCRM (Association des pêcheurs de la Communauté rurale de Mangagoulack)



Summary: Kawawana ("our local heritage to be preserved by us all") is an estuarine territory where the ancient governance and management rules –renovated and agreed upon also by the municipal and regional governments – are finally again respected. With not a cent of outside support, the local fishermen govern, manage and provide much needed surveillance operations for their own Kawawana, which has dramatically recovered in quantity and quality of biodiversity (fish, dolphins, crocodiles, birds...)



Location: Senegal

Kawawana



Impacts

The "good life" is back in the villages: fish are available in good quality and quantity to households at an affordable price. The ingenious three-zone management plan has fostered local food sovereignty (better diet and prosperity) and in part reversed the urban exodus. The practice of collective governance has consolidated local solidarity. The community has learned sophisticated methodologies and regularly monitors fishery and socio-economic results. Local interactive radio programmes allow to dialogue with all who need to know and respect the rules. Traditional anti-salt dikes were restored, allowing for the recovery of land for rice cultivation. The environment (spaces, species, ecosystems) has recovered and now better play its role as an ecosystem services provider. Local conflicts have diminished and attempts to exploit resources, which presented potential sources of conflict, were kept under control. For example, the burning of the Mangagoulack forest was avoided thanks to the influence of the initiators of the Kawawana ICCA, supported by the entire population of the 8 villages. In Senegal, 6 ICCAs are currently being set up and seeking legal recognition, following the example of Kawawana.





Building blocks

1

Community organization

The ICCA was created by the community itself, through the association of fishermen from the rural community of Mangagoulack (APCRM).

2

Rehabilitation and strengthening of traditional rules

Assertion of community collective rights and capacity to govern (decide and implement decisions) and manage (provide surveillance, monitor) its heritage territory Re-establishment of ancient rules (for instance, no entry in the zones where the spirits live).

3

Broad discussion of the community rules with the community

Strong communication efforts (exchanges, meetings, popular debates, interactive radio in local languages) were maintained throughout the process of establishing and operating Kawawana. This has given fruits, as today other community-conserved areas have been created close to Kawawana and more are in progress.

Kick-starting marine conservation through local fisheries management



Solution provider: Rupert Quinlan, Blue Ventures



Implemented by: Blue Ventures



Summary: Voluntary and temporary closures of octopus fishing grounds are used as a point of entry for community-based conservation. Closures typically cover 25% of a community's overall octopus fishing area and are in place for 2-3 months at a time. There is compelling evidence that this improves fishery yields and local incomes, thereby building support to protect natural resources through locally managed marine areas (LMMAs); areas where the management of marine resources are at least in part under community control. These LMMAs often employ marine management strategies such as bans on destructive fishing practices and community-enforced permanent no-take zones.



Location: Madagascar

blue ventures
beyond conservation

Impacts

Research into the effectiveness of the octopus closures has shown that they can improve catches and income, with landings from closed fishing sites increasing by more than 700% in the month following the lifting of a closure, boosting the catch per fisher per day by almost 90% over the same period. On average, we've found that 1 dollars' worth of octopus left in the closed fishing site has grown to \$1.81 by the end of a closure. In Madagascar, the success of early closures has led to other communities following suit, with more than 270 closures having taken place to date. Adoption continues to grow each year, not only in Madagascar, but now in other countries in the region. The approach has also been introduced to artisanal fisheries for mud crab and spiny lobster. Following the successful establishment of the closures, fishing communities across Madagascar have grouped together to establish more than 190 management associations and 70 LMMAs that ban destructive fishing practices. MIHARI, Madagascar's LMMA network, now covers over 17% of the island's seabed, and is championed at the highest levels of government. At the end of 2017, Blue Ventures' work in Madagascar is improving the lives of over 200,000 people. The imperative now is to bring this successful approach to coastal communities across the Indian Ocean.





Building blocks

1

Community assessment

Preliminary diagnostics are carried out with communities to assess their perception of the state of marine resources, the need for management and their motivation to take responsibility for management. To ensure adequate community ownership, it is critical that the support organisation (e.g. an NGO), does not pressure the community into agreeing to management measures that they are not necessarily motivated to enforce. If adequate recognition of a need for management and community motivation exists, the support organisation can move on to the next step.

2

Peer-to-peer learning exchange

Fishers from target communities visit other communities already implementing temporary fishery closures or other marine management strategies. By learning directly from the real experiences of fishers from similar backgrounds to themselves, target communities realise that this is something that they can adapt to their own contexts. Experienced communities often recount not only the benefits but also the challenges that they have faced in implementing community management and thus allow new communities to prepare for, or even avoid these challenges themselves.

3

Collaborative closure design

Communities select a target species for temporary closures. This should be short lived and fast growing to allow clear benefits to fisher catches, and preferably economically important to ensure financial returns on the opening. A second step is selecting the area to be closed. Communities discuss and agree site selection and fishing area with the establishment of the closure. Closures are better-suited to smaller villages to avoid them being overfished on opening day. Good collaboration between villages for surveillance and benefit-sharing at opening. Consult with commercial seafood buyers prior to closure implementation, to ensure that they are aware of the closure and supportive. If they are not supportive, they may encourage fishers not to respect the closures, or refuse to buy catches from closure-implementing villages. They also need to be ready to process a glut of seafood on opening day, which can present logistical challenges. Decide on timing of closure and opening. Seasonal variations in fishing and resource use patterns may mean that an area is only suitable for closure establishment during certain times of the year.

4

Collaborative regulation setting

The rules and regulations of the closure need to be decided upon in a village meeting setting, encouraging participation by as many people as possible to ensure a high level of community ownership and support. If the regulations are not widely agreed upon as fair, they will be very difficult to enforce. Once the community is satisfied with the rules and regulations for the closure, local laws should be discussed openly and agreed upon. Fines should be an amount that is realistic for fishers to pay, but large enough to effectively discourage theft. It is also important to determine procedures for enforcement of the local laws at the time of its creation to avoid future delays and/or confusion if an infraction is observed. The concept of local laws is often familiar in Madagascar, and there may already be an established procedure for enforcement. In such a case, it is best to work with well-established procedures. Local laws should be formalised in regional courts to ensure legality as well as to provide strong institutional backing if a local law infraction needs to be taken to court.

5

Community-based opening of closures

Closure openings can be an exciting and hectic time. All closures in an area need to open the same day (to avoid massive affluence in one site, low individual catch rates and undesirable habitat impacts.) If not well defined and organised, they can cause conflict within and between villages, as well as feelings of being cheated, and discourage the establishment of future closures (e.g. gear specifications). Opening day procedures are established well in advance, with the participation of all concerned villages and coordinated well with buyers. They need to be well communicated, so that everyone understands the rules, and so it is easy to enforce a fine on someone who does not respect them. If possible, simple catch monitoring is carried out on the opening day, to give the community some simple and rapid feedback on the effectiveness of their closure.



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Mainstreaming the recovery of marine fisheries and ecosystems through collective action and science



Solution provider: Maria Jose Espinosa-Romero



Implemented by: Comunidad y Biodiversidad, A. C. (COBI)



Summary: Mexican marine ecosystems are not exempt from overexploitation. Approximately 17% of the Mexican fisheries are overexploited, 70% are at the maximum sustainable yield, and only 13% are underexploited. With 41% of the Mexican population living in coastal municipalities and 11,000 coastal communities with less than 15,000 habitants mainly relying on the marine resources and ecosystems, sustainable fisheries are crucial to ensuring employment, income, and food security for many people. COBI has developed four building blocks to reverse the degradation of the marine environment: 1) capacity building of leaders and fishing organizations, 2) sustainable fishing, 3) marine reserves, and 4) support to public policies. For each, COBI develops demonstrative models that can be adopted by fishing organizations and other stakeholders in Mexico and elsewhere. The transversal elements of our work are collective action, citizen science, and gender equality.



Location: Mexico



Impacts

COBI and community partners have:

1. Strengthened the skills of 38 leaders, 26 cooperatives, four fishery committees and one regional alliance to invest in marine conservation and sustainable fisheries. | 2. Made visible the contribution of women to the fishing sector. | 3. Identified biophysical, socioeconomic, and governance principles for the design of marine reserves in three priority ecosystems: Baja California kelp forest, Gulf of California rocky reefs, Mesoamerican coral reefs. | 4. Contributed to the design, implementation, and evaluation of 790m2 of marine reserves (notake areas). | 5. Trained more 200 community divers (15% women, 85% men) to do the monitoring of 350 marine species and environmental changes in poor information sites. | 6. Implemented best practices in 11 fisheries (chocolate clams, white clams, red clams, red rock lobster, ocean tilefish, penshell, Pacific sardine, thread herring, spiny lobster, swimming crab, yellowtail). | 7. Contributed to 50% of the Aichi Targets, 90% of the SDG14 targets, 100% of the FAO voluntary guidelines for securing smallscale fisheries in the context of food security and poverty eradication. | 8. Published the results, lessons learned, and knowhow of demonstrative models in more 100 peerreviewed articles and technical reports. | 9. Shared demonstrative models and lessons learned with other 11 countries.





Building blocks

1

Capacity building for leaders and fishing organizations

We have three capacity building programs to pursue legal, sustainable and competitive fishing practices:

1. *Capacity building for leaders:* It focuses on human development at the individual level. We identify community leaders and provide the tools and knowledge to strengthen their leadership for the common good. The leaders develop sustainable fishing and marine conservation projects, to which COBI provides follow-up. We have had 38 fellows from 18 communities.
2. *Capacity building for fishing cooperatives:* It provides legal guidance and training to fishing cooperatives to improve their operations, be more competitive, and ensure financial sustainability in the mid and long-term. 26 cooperatives have participated in the program.
3. *Capacity building for fishery committees and alliances:* Designed to increase collective action in working groups that represent different stakeholders and interests within a given area or resource. The program provides guidance to define common goals, rules for decision-making and operations, working plans, and a follow-up strategy. Four committees and an alliance have participated in the program.

2

Sustainable fisheries

We promote the adoption of international standards for responsible fishing in collaboration with fishing organizations, governments, academia, and industry. We use the Fair Trade (FT), Marine Stewardship Council (MSC), and Monterey Bay Aquarium (MBA) standards to frame our action plans. The four phases of the building block are:

1. *Healthy stocks.* We evaluate the status of the fisheries in order to determine the proper management methods and instruments to apply, depending on the fishery (e.g., catch shares, effort control, size limits).
2. *Healthy ecosystems.* We evaluate the effect of the fishery on other species and habitats, as well as the effects of environmental change to fisheries and community. The latter to promote adaptation.
3. *Robust governance systems.* We promote the formation of groups to define management rules (both formal and informal) in a collective, transparent, and democratic way. We also calculate investment costs in sustainable fishing and define sustainable financial plans.
4. *Social justice.* We apply social justice principles and practices within the fishery: clear access rights, compliance with occupational, health standards, and access to fair prices.

3

Marine reserves (no-take zones)

In collaboration with fishers and key local stakeholders, we design, implement, and monitor marine reserves to foster the recovery of fisheries and marine ecosystems, both within and beyond the reserves. This building block has three branches:

1. *Design.* We have workshops with resource-users to present the marine reserves theory and to design the map of uses and ecosystems. We then conduct acceptance and cost analyses. We define the objectives of the reserves, select the best sites to meet these objectives, and finally define operation procedures, financial sustainability plans, and formal agreements with the cooperatives.
2. *Monitoring and evaluation.* We select indicators and monitoring methodologies to collect the data. Then, we train the community in the monitoring techniques so they can collect data, evaluate progress, and engage in the process.
3. *Management.* We support our community partners in all the paper work to make the reserve official, as well as to elaborate and refine operational plans for the success and adaptive management of the reserve. We have 79,500 marine hectares protected, more than 300 species monitored, and 100 Mexican fishers (including 18 women) trained in submarine and oceanographic monitoring techniques.

4

Public policies support

The results of our demonstrative models provide us with recommendations to improve national public policy and strengthen public agencies. The components of this program are:

1. *Identification of problems and potential solutions.* We conduct participatory research that engages both experts and local knowledge.
2. *Evaluation of working arena.* We develop a stakeholder map and an assessment to have the political context and identify key allies, including our community partners.
3. *Work plan design.* We design a plan (strategies and actions) aligned with national goals and international agreements, using the best information available.
4. *Work plan implementation.* We implement and evaluate our activities and strategies to ensure our impact is strengthening public policy and agencies.

Currently, we have five strategies: capacity building for sustainable fisheries and aquaculture; the creation of the National Prize for Sustainable Fisheries and Aquaculture; the strengthening public participation in fisheries management and research; and the alignment of local actions to international agreements and instruments (Aichi Goals, SDG14, and FAO SSF Guidelines).



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Monitoring Fish Landings by Coastal Communities



Solution provider: Jorge Jimenez, MarViva

Implemented by:

MarViva, Asociación de Pescadores Artesanales de Hicaco, Asociación de Agro-Pescadores Unidos de El Pito (Golfo de Montijo, Panamá), Asociación de Agro-Pescadores y Concheros de Puerto Pedregal, Red de Frío, Bahía Solano, Colombia, Asociación Comité Local de Pescadores de Nispero, Asociación de Pescadores Artesanales de Paquera, Asociación de Pescadores de Bahía Pavón (Osa, Costa Rica), Cooperativa de Pescadores de Puerto Remedios (Golfo de Chiriquí, Panamá), Asociación de Pescadores de Puerto Pochote, Asociación de Pescadores y Pescadoras Unidos de Playa Blanca, Recibidor de Mariscos Don Chino, Recibidor de Mariscos Cama-Pez de la Costa, Consejo Comunitario de Bahía Cupica Chocó, Consejo Comunitario Los Delfines



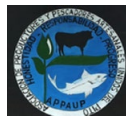
Summary:

Lack of data on artisanal fisheries landings is a common element in tropical countries. The Participatory Monitoring Program includes the gathering and synthesis of biological information by organised groups of artisanal fishers. Multi-year data gathered by the fishers is presented and discussed with the community to highlight information on species, minimum sizes, volumes, trends and seasonality in the captures. This process has resulted in significant changes in fishing practices and management



Location:

Panama, Costa Rica and Colombia



Impacts

Landings data gathered by the communities may be the only fisheries information available in remote coastal regions. Its low cost and the permanent presence of data gatherers have significantly improved fisheries statistics. The collection and presentation of this information has allowed the development of sustainable management plans for specific fishing grounds. These plans linked with awareness campaigns, changes in gear types and best practices agreements have improved fisheries management and reduced fishing impacts. As part of the process, Marine Protected Areas and Exclusive Artisanal Fishing Zones have been established with ample support from coastal communities. Also a 80% reduction in shark and ray captures has been achieved.





Building blocks

1

Insertion in the community

A requirement to a community led participatory monitoring program is the prior development of strong relationship with the community leaders. The nature, objectives and methods to be used were discussed and agreed with the community before its implementation. Awareness on the lack of and the great value of fisheries landing data was clearly established within the community at the onset of the monitoring program.

2

Participatory methodologies to collect information

Over 25 communities in three countries, involving over 2000 fishers, have participated actively in this monitoring process for over 4 years. Young people were selected and trained in monitoring techniques and data compilation to identify species, measure length and weight and describe the gear used, capture location, and other variables.

MPAs and Certified Sustainable Small-scale Fisheries



Solution provider: Andy Bystrom, Asociación Red Costarricense para el Ambiente y la Educación (ARCAE)



Implemented by: ARCAE, Endangered Marine Species Rescue Center (CREMA)



Summary: The solution is adding value to the artisanal bottom longline catch in Costa Rica. A stock assessment based on 10 years of landing data (snapper lengths) showed that the fishery is fully exploited to slightly overfished. Therefore, a local management plan was put in place that caps effort to sustainable levels. At the same time, the size of the area's multiuse MPAs have been increased to better attenuate impacts from destructive fisheries. Value chain improvements including a product certification strategy are being implemented to raise and stabilise fisher earnings.



Location: Costa Rica



Impacts

Fishery researchers began recording the Nicoya Peninsula artisanal snapper fishery's catch data (landing data) in 2007. Now, 10 years later, the fishery's target species, the spotted rose snapper (*Lutjanus guttatus*), has undergone a length based stock assessment. A management plan (what local fishers refer to as their local sustainability strategy), designed to address concerns raised by the stock assessment, has been implemented. Because the stock was found to fluctuate throughout the last decade between being the overfished threshold and its target threshold (with some instances of under-fishing), the management plan has taken this into account and fishers have been advised to not increase effort and to continue to work with researchers to better determine the stock's status.

35,000 hectares of multi-use marine protected areas are currently protected from destructive fisheries but open to low impact gear types. Additionally, conversations between fishers and the government are ongoing in order to expand these areas to better protect the snapper stock from less selective fisheries.

Fishers are also working to stabilise the price/kg of snapper at 2,000 Costa Rican colones (roughly 4 USD). Since the price tends to drop as low as 800 colones/kg, a more stable price would significantly improve fisher earnings.





Building blocks

1

Catch Composition Data Collection and Analysis

In order to develop and manage an environmentally sustainable fishery, a number of performance indicators need to be established for its target species, common bycatch species, environmental factors, and management regimes. Examples of these for the Bejuco artisanal bottom longline snapper fishery include the stock's status, bycatch and discard rates, endangered and/or protected species catch rates, gear impacts to the seafloor and associated benthic organisms, local management plan, and national fisheries management capacity. Since 2007, the catch composition of the Bejuco bottom longline fishery has been continuously monitored by dock side observers and researchers who accompany fishers on their nightly trips. This information, along with the collection of fisher ecological knowledge, has allowed researchers to identify many of these indicators. In close collaboration with the national government, protected area and management plan development initiatives are also taking shape.

2

Artisanal Snapper Fishery Management Plan

Catch composition data, a snapper stock analysis, and fisher ecological knowledge gathered through fisher led focus groups, workshops, and other participatory events were compiled into a management plan that was evaluated by and eventually approved by the two fishing associations. The plan is a local governance tool that details fishing methods and measures that are undertaken to maintain a sustainable snapper fishery. This plan will be presented to other snapper fisheries on the Peninsula desiring to develop management strategies and tools. Co-management strategies are not recognised in Costa Rica, but approval of local management plans is a way to promote their development.

3

Development of multi-use MPAs

Two multi-use MPAs have been developed between researchers, fishers, and the Ministry of the Environment in the district of Bejuco to better manage the local snapper stock. These areas allow for the use of artisanal bottom longlines (the preferred fishing gear of the area's snapper fishers) and hand lines but do not permit more unselective methods to be used including shrimp trawl nets. Costa Rica's coastal MPAs began as marine extensions of previously established protected terrestrial areas, and Bejuco's MPA are no different. Their original intent was to protect sea turtles from shrimp trawlers, but they have evolved into more complex spatiotemporal coastal resource management tools.

The area's MPAs provide a legal framework that protects the interests of local fishers against the industrialised shrimp trawl fleet (shrimp trawlers target snappers in the area because it is not economically viable to fish for shrimp in Costa Rica). Costa Rica is developing climate change adaptation strategies funded by the Adaptation Fund. Inherent in these is the continued development of protected marine areas and the feasibility of expanding the two existing areas is being discussed.

4

International Sustainability Certification

In 2015 the Bejuco snapper fishery underwent a full assessment by the Marine Stewardship Council (MSC). The certification process was discontinued, however, in 2016 due to serious national governance shortcomings. Because of the difficulty for many small-scale fisheries to satisfy the rigorous requirements of the MSC, Fair Trade USA has developed a Capture Fisheries Program that combines the MSC's environmental standards with robust social requirements. The certification process is gradual and allows fisheries to develop the tools necessary to comply with the standard's requirements over a 6 year period rather than all at once at the time of assessment like the MSC requires. The Fair Trade process better addresses the social and management realities within which the majority of artisanal fisheries operate. Because of this, fishers and value chain stakeholders have begun an initial Fair Trade pre-evaluation of the fishery. This solution's certification building block has undergone many changes throughout the years, but project members feel they are making headway towards viable, long-term socio-economic improvements which have, since the beginning of the MSC process, been the driving force behind the certification initiative.

5

Alternative markets for high quality fish

The purpose of this building block is to promote the socio-economic development of this fishery through increased fisher earnings. Area tourist resorts and restaurants are interested in supplying locally sourced, sustainable snapper to their guests as many tourists who visit Costa Rica are environmentally conscious and want to frequent businesses that offer sustainable dining options, and are willing to pay a premium price for these services. Upscale fish markets and restaurants in San José are also interested in purveying high quality seafood to their clients.

Because the demand for sustainable fish in Costa Rica is growing, project members are working with the two fisher associations from Bejuco in order to build their value chain management capacity. Associations are now legal entities with boards that actively participate in the decision making process. Infrastructure and cold chain improvements have been implemented in order to raise the quality of the artisanal snapper catch. The local fish processing site is being brought up to code to comply with Health Ministry requirements. Cash flow and other administrative concerns are also being addressed in order to facilitate fish sales.

MSP for integrated fisheries management in the Northern Gulf of California, Phase I



Solution provider: Peggy J. Turk Boyer, Intercultural Center for the Study of Deserts and Oceans (CEDO)



Implemented by: CEDO, Comisión Nacional de Acuacultura y Pesca, Comunidad y Biodiversidad, A.C., Niparaja, A.C., Universidad de Baja California Sur, Instituto Nacional de Pesca, Voces por la Naturaleza, A.C., Centro de Investigación Biológica del Noroeste, Campus Guaymas, The Nature Conservancy



Summary: In the Biological Corridor from Puerto Peñasco to Puerto Lobos, Sonora a coastal -marine spatial planning and ecosystem management process is emerging. It is a framework to resolve growing conflicts between different stakeholders/users in the region and a mechanism for building ecosystem stewardship. Through a bottom-up process, traditional users (fishers & oyster farmers) are engaged in designing spatial solutions with a management team including scientists and government.



Location: Mexico



Impacts

The fishing communities of this Corridor were mostly unorganised and had little experience working together to find solutions. The continued and active participation of fishers to improve resource management is a testimony of a positive impact. They have designed and agreed upon a variety of fisheries management instruments: 1) fisheries refuges (protecting about 5% of the area); 2) locally managed areas (which even in their conception are strengthening stewardship); 3) permits and 4) catch quotas (the latter two help control fishing effort and overfishing). The process is strengthened with regular capacity building exercises and activities such as monitoring and workshops for designing management tools, seeking meaningful engagement of fishers in planning for their own future. The creation of a governance structure with the local users at the center, where they have access to government and scientists, creates a transparent process which helps build confidence and stewardship for the management plan within and between communities. The proposed solutions focus on fishers' primary economic activity, address their needs, help clarify rights and reduce conflict. It is too early to see the environmental impacts of this solution, but the spatial management instruments are designed to improve fisheries catch while offering protection of key habitats and species at the same time.





Building blocks

1

Building trust and meaningful relationships

Our initial approach with fishermen was to have them identify the problems they were facing. Since fishing is their main economic activity, we gave focus to addressing their needs through this lens. They expressed a need for fishing permits, so we began helping them through the process for registering their boats - a first step, and by connecting them with the government who is responsible for giving them permits. We helped build a governance structure and transparent and inclusive process which gives fishers access to the government by bringing the government to the table to address their problems. Individually they were unable to get the government's attention. This has helped build working relationships with authorities where they have to respond directly to stakeholders, building meaningful relationships along the way. The Corridor program addresses their needs, especially their economic needs. In addition to helping resolve fishers need for clarifying their rights to fish and helping them move towards more sustainable fisheries, we also are identifying alternative economic options of interest to communities, such as ecotourism and will help find resources to move these forward as sustainable economic options. We will also connect fishers to sustainable markets.

2

Strengthening Capacity for Collective Action and Informed Decision-Making

The fishing communities of the Corridor are isolated from one another and are marginalised from the regional economy. They have few opportunities to interact at that scale. Even within a community there is little social structure. The project created a forum for interaction and collaboration for solving problems. To strengthen capacity to participate in this forum and planning process, we have focused on building fisher capacity to represent their communities in an Intercommunity Management Group. Workshops have been offered on communication, negotiation, and other leadership skills. We developed materials, held workshops and organised exchanges with other fishermen to give them a better understanding of the variety of management tools that can be applied to improve fisheries and reduce conflicts. This is key to setting the stage for informed decision-making and adopting new management instruments. For more comprehensive acceptance of the process, all community members should be informed. Communication programs involve the entire community through messages on billboards, radio addresses, social media and workshops, the program, to understand and support the process.

3

Participation throughout the process

This project involves fishermen and other actors in planning their future use of the coastal marine area of the Puerto Peñasco Corridor, but it also seeks meaningful engagement of stakeholders from the onset by engaging them in implementing actions to improve ecosystem management. Many practitioners of CMSP are frustrated with the timeframe involved in moving from planning to implementation. Stakeholders get frustrated too. This project gets stakeholders involved in activities such as cleaning beaches, monitoring resources, analyzing data, distributing materials to their communities and in supporting youth in their community. It shows them what collective action is and how it can be implemented in so many ways. It also serves in building their capacity for ecosystem management.

4

Integrating scientific data and traditional knowledge to inform management

The Corridor ecosystem has been well-studied and over 200,000 geo-referenced data points are available to help establish spatial management plans. Fisher communities have participated in monitoring resources in the past and currently are generating data on their catch. This in combination with other data from the literature, and from interviews and mapping processes that fishermen participate in, help integrate a wealth of traditional knowledge and scientific information to produce realistic management proposals. Even when presented with complex analyses of this data resulting from computer models such as INVEST and ZONATION, fishers have shown confidence in the information presented to them and they validate it. By creating a decision-making process that uses evidence from these various sources that all stakeholders believe in, we are building a science-based decision making process. We plan to work with stakeholders to define the best indicators for tracking the impacts of management, and then design a participatory process for monitoring these, developing a common, science-based language for measuring the effectiveness of the program. The program is building a digital platform that will serve to communicate the advances.



Net-Works (TM)



Solution provider: Nick Hill, Zoological Society of London (ZSL)



Implemented by: ZSL



Summary: Net-Works tackles the growing problem of discarded fishing nets in some of the world's poorest coastal communities. It has established a community-based supply chain for collecting these discarded nets in rural coastal areas in the Philippines and Cameroon. The nets are shipped to Slovenia, where they are recycled into nylon yarn that is used to create beautiful carpet tiles. Net-Works is a partnership between the Zoological Society of London and Interface Inc.



Location: Philippines, Cameroon



Impacts

Since 2012, over 142 metric tons of waste nets have been collected through Net-Works. At least 1,500 families have been given access to finance through the community banks that Net-Works sets up, and 62,000 people have benefitted from a healthier environment. By 2020, Net-Works aims to give 10,000 families access to finance, create a healthier environment for 1 million people and better protect 1 billion square meters of ocean.





Building blocks

1

Inclusive business model linked to conservation

Applying the principles of fair trade and inclusive business, we create efficient community-based supply chains for raw materials (plastics and seaweed carrageenan) that are available in abundance. We link these raw materials to conservation actions that reduce plastic pollution and restore coastal ecosystems. Increasing incomes from these raw materials reduces dependence on fishing – enabling communities to set aside larger no-take zones to replenish fish stocks.

2

Selling raw materials into a global supply chain

We sell the raw materials into global supply chains, giving international brands opportunities to source premium products with positive social and environmental stories, giving fishing communities a more transparent and dependable price, and providing sustainable funding sources for local conservation and development actions. This ensures the sustainability of larger, more effective multi-habitat marine protected areas, and quality controls and standards can be maintained independent of external donors.

3

Community bank infrastructure

To manage local supply chains, we set up community banks, bringing communities together in informal cooperatives and providing much needed access to financial services. These community banks are the 'social glue' at the heart of Net-Works, enabling members to invest in their sustainable livelihoods, building a Net-Works' conservation constituency.

4

Environment funds

Community bank members regularly contribute a small amount of money from net sales into a dedicated Environment Fund, which is used to help finance local conservation projects such as community-managed marine protection. The money gathered via the fund can be leveraged to secure additional funding from local government or NGOs.

5

Partnerships and cross-sector collaboration

Redesigning global supply chains and delivering an inclusive business model linked to conservation requires a diverse set of expertise that requires collaboration. Net-Works was co-created by conservation charity ZSL and carpet-tile manufacturer Interface Inc. Strong partnerships with local communities and local partner organisations are vital to Net-Works' success. Communities need to feel motivated to get involved and working with local partners who understand the local context and customs ensures that outreach and engagement is done in the right way.

Octopus management - an entry point for collaborative fisheries management



Solution provider: Lorna Slade,



Implemented by: Mwambao Coastal Community Network



Summary: This solution addresses sustainable marine management in Zanzibar in the face of increased fishing pressure. It illustrates that the implementation of a successful octopus management regime can improve yields in a very short period of time through 3-month voluntary no-take zones (NTZ). The participatory approach in training, learning and data analysis can provide an entry point for the wider introduction of collaborative management, to the benefit of all stakeholders.



Location: Zanzibar, Tanzania



Impacts

- Successful demonstration of local management capability
- Successful demonstration of a successful management regime for octopus
- Increased quantity and average size of octopus over the project period (early 2015 to today)
- Improved understanding of local governance and MCU (Marine Conservation Unit) regulations both by Village Fisher Committee (VFC) and by Pemba Channel Conservation Area (PECCA) managers
- Understanding of the mechanism of establishing local by-laws
- By-laws in place
- Steps in building collaborative management understood and documented in a manual
- Ability to collect, log and analyse basic catch data locally
- Ability to document experiences and observations using participatory video so that lessons can be shared more widely
- Community willingness to both repeat the closure for octopus but also to begin exploring targeted management regimes for other species such as sea cucumbers, cowries and key fish species
- A close relationship has developed between marine conservation unit authorities and the local village fisheries committee (VFC).





Building blocks

1

Community data collection and participatory analysis

This building block relates to the ownership and in situ analysis of collected monitoring data. At the pilot site, four village school-leavers were recruited and trained to record data on octopus catches at each of two landing sites. Training was given in weighing and measuring the catch of 30 fishers/day over the 16 main fishing days of the lunar month (spring tides). Data books were then submitted monthly to the data logger; a local school teacher who was trained in excel using a laptop computer. Project leaders kept in regular contact with data recorders and the results were checked to identify problems at an early stage. After 8 months of recording, two parameters were chosen by which to examine the results of the exercise with the recording team: total catch per fishing period for both landing sites, and average size of octopus per fishing period. Recorders were shown how to make bar-charts to display the results. A detailed discussion with project leaders explored what the data and trends might suggest. The data recorders then visited the headquarters of the Department for Fisheries Development and presented their results. An ensuing discussion explored the implications for management and any changes suggested.

2

Participatory video for documentation and lesson sharing

Participatory video (PV) is used to explore octopus management in depth, document success, challenges or traditional knowledge of the octopus fishery; and monitor changes in attitude, knowledge or yield over time. Trainees, many of whom have never handled film-making equipment, are trained in the basic techniques; they decide the content of the film and work together to design the storyboard; they also decide who and where to interview and all film is reviewed and discussed daily on return. Editing is time-restricted (2-3 days) and is guided by a 'paper edit' carried out with trainees/community members. Having left the film location, subsequent editing is not carried out (apart from subtitling) so the film remains as reviewed by trainees/village communities. The resulting film is a visual output that is used to share lessons and experiences about octopus management and that builds on the oral traditions of local fishing communities in a language and terminology that is accessible to them. The aim is not to produce perfect cinematography but to produce a community product and communicate octopus management issues and options to a wider groups of stakeholders including new villages. This only needs repeating in one or two communities but is useful in the piloting period.

3

Fisher Committee capacity building

Collaborative management explores opportunities within current fishery regulations and laws and provides an opportunity to make improvements in the management of octopus and other species fisheries. Challenges lie both in lack of capacity of Village Fisheries Committees but also the ability at Fisheries Department level to hand over management responsibilities to these committees. Officers are often unfamiliar with the principles of collaborative management and how it can improve fisheries management locally and assist the Department in discharging their responsibilities e.g. patrolling, local closures etc. Project leaders have involved Fisheries Department officers in all trainings of Village Fisheries Committees and ensured regular feedback to the Department's HQ. A manual has been compiled to assist Department officers and to guide Village Fisheries Committees. It includes sections on:

- Standard operation procedures for Shehia Fisheries Committees
- Mechanism for handling conflicts
- Process for by-law formulation Guidelines for record keeping
- Strategy for self financing
- Communication strategy

4

Value chain analysis for key fisheries

This entails the collection of information through focus groups and interviews with fishers and buyers to understand the octopus fishery, number of buyers, prices, processing, export destination and decision-making criteria, in particular whether a fisher is 'locked' into a relationship with a buyer. The interviews use the value chain questions included in the STEP survey designed by E. O'Neill of Stockholm Resilience Center. Interviews and focus groups were held with octopus, sea cucumber and cowrie collectors and buyers and seaweed growers. Information has been gathered as to export markets and collector/buyer relationships. The supply chain for octopus has been elaborated, key players identified and links established. Buying price fluctuation has been noted and reasons explored. This information is invaluable when designing an intervention to add value to the fishery or when looking at the viability of new market buyers or destinations. This work in Pemba has been followed up with 'participatory market system development' workshops (supported by FFI) with all stakeholders. This resulted in commitment from all players to play their part in supporting the intervention, including buyers agreeing to negotiate a set price with fisher committees before 'opening day'.



“Pesca Responsable”: responding to climate change through sustainable responsible fishing and mangrove rehabilitation



Solution provider: Mariana Echaníz, National Commission for Protected Areas (Mexico)



Implemented by: CONANP, Espacios Naturales y Desarrollo Sostenible (ENDESU), Rare



Summary: By consolidating a participatory management strategy based on the strengthening of fishing communities within the Biosphere Reserve “La Encrucijada”, CONANP has managed to promote a high level of community self-organization. Fishing cooperatives now are able to negotiate, regulate and enforce, amongst themselves, their own agreed best practices for sustainable, responsible fishing and mangrove rehabilitation, in order to reduce climate risks such as storm events and prevent coastal erosion.



Location: Mexico



Impacts

After two years of working along and of strengthening CONANP's processes, and with the participation of the fishing cooperatives of 8 local communities (with a total population of 3029 habitants), 591 fishermen have benefited directly. CONANP has worked to improve their capacities on:

- Improved, sustainable fishing practices, and increased catches, which are possible because of protection and conservation actions on the mangroves systems, which have been substantially improved. The rehabilitation of 84 km of canals, estuaries and lagoons has improved the hydraulic circulation within the mangroves leading to the improvement of water quality, increased ecosystem productivity, greater mangrove seed dispersal, and more diversity of species entering the mangroves.
- Increased incomes for eight fishing communities, resulting from increased production and sale of fishery and artisanal products, as well as from payments for ecosystem services which the cooperatives carry out aimed at the rehabilitation of the mangrove.
- Improved systems of governance within fishing communities which have strengthened social cohesion within the zone, as well as providing the confidence needed to initiate changes requiring high levels of organization, such as the development of direct forms of commercialization for their local products, without involving costly intermediaries.





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Building blocks

1

Creating a sense of belonging to local ecosystems

CONANP has acknowledged that "without peoples' interest, you won't get anywhere" in terms of promoting sustainable community use of local ecosystems. It is therefore not only important to raise awareness within local communities of the relevant connection between mangrove ecosystems maintenance, fisheries and local livelihoods, it is of vital importance to create a sense of identity and belonging of those communities to those ecosystems. Identity can be developed by raising the awareness of the benefits of sustainable management of the resources directly in terms of benefits to local livelihoods. However, identity can also be further strengthened by encouraging the self-organised engagement of all members of the community in not only making use of different parts of the ecosystem to sustain livelihoods, but also in engaging in its nurture and rehabilitation. The rest of the building blocks in this solution all aid this further development of identity of the local communities as a part of their local ecosystems.

2

Increasing community self-organization

Levels of community self-organization have been improved within fishing communities by strengthening their various capacities needed to define and self-regulate policies on sustainable fishing. This was done by:

- trainings on fishing catch limits and productivity possibilities, how resources and fishing are interlinked;
- In the field, mentoring by NGOs on how fishermen can make group decisions and effectively plan the zonation of ecosystems into conservation and fishing/productive areas;
- Involvement of the fishermen's wives and children in awareness-raising activities, leading to a strengthening of the learning process within families.

This has led to social cohesion within the zone, allowing the fishing cooperatives to negotiate and regulate amongst themselves to agree and enforce best practices for sustainable fishing; and increasing their capacity to find direct markets for their products, without the need for intermediaries. Being able to self-organise to the point of coming up with and implementing their own sustainable fishing solutions, made the communities owners of those solutions, which means the latter will be more likely to be maintained into the future.

3

Creating adaptive capacity as a buffer against risk

In areas CONANP is encouraging the fisher wives to diversify their families' economic activities into the production and sale of niche mangrove products, such as mangrove flower honey; and into setting up ecotourism activities, such as running tours inside the mangroves, bird watching trips.

CONANP is supporting this diversification in the following ways:

- Providing capacity development to these cooperatives in the area of touristic business development and administration
- Providing support for finding markets for new products.

The benefit of CONANP's approach is to provide the fishing communities with an adaptive capacity buffer in terms of multiple income sources, to reduce economic risks when fisheries are affected by tropical storms or when CONANP is working to solve the problem of river contamination due to upriver communities.

The risk reduction approach also increases the link between the fishing communities and the mangrove ecosystems in terms of identity and belonging, by opening up more opportunities for its sustainable use.

4

Rehabilitating channels and hydrological flows in mangroves

In order for problems of salinity to be solved in perturbed mangrove ecosystems, as well as for fish production and migration to be optimised, it is vital that channels within the mangrove systems are properly cleared and maintained, even if this means cutting some trees. Clear and well-maintained channels permit the hydrological flows between salt- and freshwater sources in a mangrove to find a natural balance, favouring biodiversity. They also permit the movement of fish to and from the ecosystem in rhythm to those flows, as well as facilitating the natural expansion of the mangroves via greater seed dispersal



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Promoting aquaculture for a better preservation of Soariake Marine Protected Area



Solution provider: Alison Clausen, Wildlife Conservation Society (WCS)



Implemented by: WCS, Indian Ocean Trepang – IOT, Compagnie de Pêche Frigorifique de Toliara - COPEFRITO



Summary: Like most coastal areas in Madagascar, Soariake MPA is located in a remote area where people depend on fishing activities for their subsistence and the lack of alternatives leads to overfishing of marine resources. In 2016, WCS Madagascar established a partnership with two private companies – COPEFRITO and Indian Ocean Trepang – operating in South West Madagascar to promote aquaculture in Soariake MPA through an industry approach based on “village farmers”. Sea cucumber and seaweed farming have been chosen with regards to local context and potential. For sea cucumber farms, IOT provides technical support and seed at a competitive price, and they are committed to buy the harvest. WCS ensures the equipment for the enclosures and the local communities are in charge of the management of the farm. For the seaweed aquaculture, COPEFRITO provides plants, equipment and technical support, the local communities manage the farms and sells the harvest to COPEFRITO.



Location: Madagascar



Impacts

In August 2017, nine farmers had their first sea cucumber harvest from their farm in Andravona. 250 kg, representing around 40% of the total production were collected and sold to IOT. Farmers earned USD 850 (100USD per farmer), which represents around three months income compared to traditional fishing, adding significant revenue for fishers. 40 households have participated to the launch of seaweed farming in November 2016. The seaweed has a short harvest cycle – 45 days, and provides substantial income to households: around 53USD per month for a farmer at a starting phase (an increase of 75% compared to income from fish catch), and 130USD for those in an advanced stage (3rd cycle).

Thanks to these positive results, we are extending the partnership to implement seven new enclosures in three villages, and to reach around 200 new farmers in seaweed farming. The extension is based on Soariake MPA potential (2ha for sea cucumber and 1500ha for the seaweed farming) and its capacity further to environmental assessment of the MPA. In addition to the business agreement with the farmers, an environmental friendly ruleset has been designed to respect the MPA's potential: farms will not infringe reefs, coral habitat and sea turtle nesting sites. The value chain approach, mutual confidence between partners, a transparent and win-win partnership are the key pillars of this project.





Building blocks

1

Value chain approach

The farming program covers the whole process from production to marketing, including drying (for seaweed) and storage, to ensure that it will provide the expected quality sell the final product at a fair price to ensure their income. Thus, we collaborate with the private sector through a “village farmer approach”: Ocean Farmers for the seaweed industry, and Indian Ocean Trepan for the sea cucumber industry. In addition to a global partnership between the private sector and WCS, each farmer has an agreement with the private sector that determines each party's roles.

For the sea cucumber, IOT provides (i) juveniles at a competitive price, (ii) technical support to farmers; and then buys the product to the farmers at an agreed price. WCS ensures (i) raw materials and equipment for the enclosures, and (ii) organizational support to farmers. The farmers manage and look after the farm and the equipment. Farmers' can commit to more than one production cycle. If they withdraw from the program they must leave the equipment and enclosure to the local association for other farmers.

For the seaweed farmer, Ocean Farmer provides plants, equipment, technical support and buy the product at an agreed price. Villagers manage the farm and build the storage. WCS ensures organizational support.

2

Technical support

Prior to launching the industry, WCS, Ocean Farmers and IOT have launched a feasibility study on the two industries – seaweed and sea cucumber. The result highlights that Soariake has the highest potential for seaweed farming in the South West, in terms of area and quality of the place. Promotion of sea cucumber is feasible within two villages. Potential for each industry already take into account the environmental assessment of the site. During the implementation phase, the private sectors provide technicians to each village to support local community during the implementation and management of the farm. Each village has its sea cucumber technician or seaweed technician depending on the available industry in the village.

Due to the innovation of the two industries, local communities need a close and periodic support while starting and managing the farm. Local technician gives practical and on ground training to farmers in terms of plantation (seaweed), maintenance and monitoring of the farm. He works closely with the village to plan the site activities; he supervises each farm, advices to farmers when needed. Technician liaises directly with private sector in case of important issues.

The technician works closely with WCS local animators when raising awareness among villagers.

3

Co-management of Soariake MPA

Soariake is an IUCN category VI MPA that aims at protecting natural ecosystems while allowing the sustainable use of natural resources. It is currently co-managed by WCS and local community gathered in Soariake Association.

Local communities are at the same time actors and victims of overfishing. As MPA co-manager, WCS is in charge of scientific research and monitoring to assess the value of the site, communicate, raise awareness and support local communities to identify and implement suitable conservation measures, identifying alternatives to better manage natural resources, and identifying key partners if needed. WCS also provides capacity building in terms of project management, social organization and fishing regulation; thus ensuring the integrity of the MPA and the livelihoods of the communities.

WCS also supports the local community to define different zoning of the MPA, local conventions on resource management, ensure patrolling through Community Control and Surveillance, collect fish catch data, and promote alternatives that are environmental friendly.

Community involvement in the management of the MPA is key to build a local ownership, one pillar to warrant sustainability of on ground activities.



Reduce Overfishing and Improve Livelihoods of Artisanal Fishers – SmartFish



Solution provider: Ben Scheelk, The Ocean Foundation



Implemented by: The Ocean Foundation, SmartFish



Summary: The SmartFish Group, a social enterprise, directly incentivises Mexican artisanal fishing cooperatives to improve their environmental and social performance. SmartFish NGO incubates worthy co-ops to market readiness with responsible seafood, empowering fishers to catch and produce high quality, responsibly caught seafood to overcome the vicious cycle of overfishing. SmartFish Inc. acts as a “good intermediary,” placing their triple impact seafood into preferential markets with transparency and traceability, rewarding them for their responsible practices.



Location: Mexico



THE OCEAN FOUNDATION



Impacts

Overfishing jeopardises the wellbeing of artisanal fishers and ecosystems worldwide. In Mexico, artisanal fishers lose out, adding 80% less value to their catch than the global average. The SmartFish Group takes the novel step of directly incentivizing fishermen to fish more sustainably, yielding impacts including the following:

- >30% increases in ex-vessel prices for fishers;
- new employment for women and other family members processing their catch on site;
- Elimination of wildlife bycatch including sea turtles;
- Shift of fishing effort to more resilient target fish populations and sizes;
- Unprecedented supply of responsible seafood in México.

Our triple bottom line: fishers can earn more catching less, avoiding overfishing and bycatch; their relatives (majority women) earn new wages processing their catch; and SmartFish makes a margin to scale this success.





Building blocks

1

Partner fishery selection criteria and process

To maximise SmartFish's impact, we drew on empirical research and years of experience to establish fishery selection criteria. Fishery partners must:

- Be formally organised, with effective institutional structure (eg a cooperative) that includes mechanisms for decision-making, for enforcing group decisions and a collective understanding of and commitment and adherence to fishery sustainability principles;
- Have previously and formally adopted sustainability measures (eg: fishing reserves, daily catch quotas, or size limits);
- Target biologically resilient species.

We established an Impact Division within SmartFish to determine the eligibility of potential fishery partners as well as to track the social, environmental and business performance of partners before, during and after our interventions. Please see Impact Evaluation building block for more information.

2

Fishery impact and evaluation

Once SmartFish NGO determines that a fishery is a candidate for our Value Rescue model, we carry out a detailed diagnostic of the fishery's current triple impact, and potential to attain the four dimensions of the Value Rescue model:

- Environmental performance and the possibility to attain a third-party certification or to implement a fisheries improvement plan (FIP) that meet certification criteria;
- Social performance - degree of organization of the cooperative or enterprise, including the degree of participation in and effectiveness of decision-making structures and the possibility of including other community members, especially women in the value-rescue process;
- Business performance of the group, including both production and sales/marketing;
- Potential social, environmental and economic impact of an intervention.

3

Economic Acumen

We rescue value in fisheries in order to make fishing more profitable based on quality rather than volume.

4

Responsible Seafood Production Co-ops

We partner with co-ops and NGOs to empower fishermen and their families to rescue value by catching and producing the best quality, higher sustainable seafood. This cultivates demand for their exquisite seafood among distinguished customers.

5

International Fishing Improvement Projects

We design and implement international fishing improvement projects (FIP) in the region with an all-encompassing multi-stakeholder group to identify, assess, and improve the fishing practices of sand bass.

6

Incubating co-ops to rescue the value of their catch

Where Based on the results of the diagnostic evaluation conducted by our Impact team, SmartFish designs an improvement plan to ready the group and its products for preferential markets. After thorough review with fisher partners and any outside partners (eg facilitating NGO), SmartFish and the fishing group sign a formal contract that defines the terms of the intervention. Subsequently, SmartFish incubates the fishing group to improve their fishing, handling, processing and other business practices to produce premium quality seafood that is independently verifiable as socially and environmentally responsible or improving. To bring their seafood to preferential markets, SmartFish helps partner fishers achieve the following:

- independent evaluation or certification of environmental sustainability (eg MSC, Seafood Watch, or FIP)
- independent evaluation of social sustainability (eg. Fair Trade)
- optimization of catch, handling, processing, packaging, transport, and other technical aspects
- optimization of general business practices
- incorporation of traceability system
- leveraging of local infrastructure to retain as much value locally as possible locally, including opportunities for women and other community members



Sustainable Fisheries in the Galera-San Francisco Marine Reserve



Solution provider: María Cecilia Terán, Instituto Nazca



Implemented by: Instituto Nazca de Investigaciones Marinas, Conservation International, Asociación de Pescadores Artesanales del Cabo San Francisco “ArteLangosta”

Summary: The Galera-San Francisco Marine Reserve is one of the most important zones for biodiversity conservation in coastal Ecuador. Local residents are heavily dependent on it, with artisanal fishing as a core activity. The fishing association Arte Langosta and the Nazca Institute created a participatory management system which promotes the protection of biodiversity and sustainable local development. Stakeholders and authorities develop an effective governance model with fair economic alternatives.



Location: Ecuador



CONSERVATION
INTERNATIONAL



Impacts

Social:

- The fishers association has more fishing autonomy, is better organised and has more management capacities.
- Continuously more fishers want to join the project, there is more interest for environmental issues and environmentally friendly fish as well as an increasing support for fishing regulations.

Economic:

- An enhanced remuneration for the fishers was achieved, with 60% revenue for the fisher and 40% for the association which is the owner of the fishing boats.
- The fishers are selling their catch directly without any traders that could monopolise the prices of fish.
- A lot of fishers could reinvest their revenues into the improvement of their housing and installations for the access to basic supplies.

Ecological:

- Through a fishing ban of the green spiny lobster at the Cape of San Francisco for two years, the population was able to recover.
- Less incidents of unintentional turtle and shark catches were recorded as fishing techniques changed and protected areas are enforced.
- Single yarn and trawl nets have almost completely been vanished.



Building blocks

1

Participatory fisheries monitoring

A community-based catch-monitoring programme is designed to document the quantities of fish and lobster harvested in the area. This type of data creates (and constantly updates) a reference point, meeting the information requirements of decision-makers and managers of the marine reserve.

2

Low impact fishing activities

A conservation agreement promotes the application of fisheries and zoning regulations in the marine reserve as well as the implementation of guidelines based on the FAO Code of Conduct for Responsible Fisheries.

3

Economic incentives

Fishermen who desire to engage in activities with low environmental impact are provided non-destructive, selective gear which reduces the catch of non-target species or undersized fish. Training on product handling and eco labelling schemes help fishermen to assure high quality products, access to markets for sustainably harvested resources and thus better prices for their products.

Sustainable Management of Morocco's Marine Resources



Solution provider: Houssine Nibani, Association de Gestion Intégrée des Ressources (AGIR)



Implemented by: Association de Gestion Intégrée des Ressources (AGIR), International Union for Conservation of Nature (IUCN), MAVA Foundation, United Nations Development Programme (UNDP), Global Environment Facility (GEF), GEF Small Grants Programme (SGP)



Summary: Implementation of an ecosystem-based participatory planning program for the benefit of artisanal fishermen operating in the Mediterranean. Under this program, fishermen were able to identify the challenges posed by illegal trawling and dynamite fishing. The creation of a monitoring committee allowed them to take their part in fighting these threats. Their overall income increased thanks to the commercial management of fishery products in the newly created cooperatives.



Location: Morocco



Impacts

After the project: Responsible fisheries emerged within the marine protected area of the Al Hoceima National Park (PNAH) (ZMPNAH) thanks to:

- The eradication of dynamite and copper sulfate fishing.
- The notable reduction of osprey nest disturbances and the doubling of the number of young ospreys. The eradication of illegal trawling inside the ZMPNAH. Our sensitization campaigns against juvenile fishing have contributed to the 2013/2014 adoption of a legislation obliging trawlers to carry localization devices; Vessel Monitoring Systems (VMS).
- The increase in marine resource abundance, estimated at 20 to 30 % among the species and the ecosystems. Local and national stakeholders were involved in the biotope and species restoration.
- The poverty reduction of 30 % for approximately 1.200 artisanal fishermen
- The project's financial viability via participatory planning and the use of a sustainable commercialization strategy for the fishery products from the project zone





Building blocks

1

Stakeholder involvement in the management of marine areas

Goals:

- Improving the knowledge about threatened species by conducting targeted research and monitoring.
- Involving local communities in the management of coastal and marine resources, biotopes, and threatened populations.

Process:

A workshop was organised to launch the project and to establish a climate of trust between the stakeholders. At least 50 representatives of the Gendarmerie, the Maritime Fisheries Department of the High Commissariat for Water and Forests and Desertification, the local fishing communities and the NGO AGIR joined the participatory workshop. A multiparty caretaking committee was elected to involve all stakeholders. The committee is presided by the Governor of Al Hoceima Province. The AGIR team and the fishermen are equipped to participate in a study of monitoring and participatory evaluation regarding the conservation state of resources and habitat. Monitoring of threatened flagship species is led in coordination with the relevant authorities. Weekly field trips were organised for the monitoring of the surveillance and control program of illegal activities within the MPA. A scientific report reflects on the new conservation state (habitat restauration, threatened species, and marine resources).

2

Community management of no-take areas within the MPAs

Goal: The artisanal fishermen of three cooperatives are trained and involved in the resource management plan in the National Park's marine area.

Process: Organization of 2 x (3) training sessions on participatory planning as a resource management tool in the National Park's marine area. Proposal of no-take zones or Fisheries Reserved Areas (FRAs) within the National Park's marine area. A monitoring report for the captures within the National Park's marine area are being prepared in a collaborative manner by the fishermen who provided the data and the team of AGIR who wrote the report, which served to evaluate the project's benefits.

3

Sustainable commercial management of marine resources in MPAs

Goal: The artisanal fishermen's quality of life has improved by approximately 30% within the MPA's coastal zone through good resource management. The MPA contributes also to an income increase via the implementation of a participatory strategy aiming at the commercialization of fishery products.

Process: The fishermen cooperatives organise participatory workshops aiming at the definition of a commercialization strategy for the artisanal fishery products. The goal is to reduce the global pressure from fisheries in the National Park's marine area.

Creation of "Rotating funds for fisheries" to support income generating activities. These funds are available to the fishermen cooperatives, operating in the marine zone of the National Park, but also to their wives.

4

Participatory research and planning through a systemic and prospective sustainability analysis

Goal: In order to engage the artisanal fishermen in natural resource conservation, the analysis carried out has included sociocultural, economic and ecological topics. The goal was to fill the lack of data to allow all the stakeholders to realize the initial decrease in biodiversity and the solutions brought by the project.

Process: The participatory approach used by this study has allowed for all the stakeholders to accept the results. The study was carried out in accordance with a systemic approach including several components:

- Scientific: "Sociocultural, economic, ecological indicators"
- Participatory: the study has not only involved the project holder, but also the stakeholders
- Prospective: the study has allowed to identify "current, potential and alternative scenarios"

The systemic analysis has led to an integrated action program for the sustainable management of the artisanal fisheries sector within the National Park's marine area.

5

Network of Mediterranean Fisheries Cooperatives

Goal: An informal network of Mediterranean fisheries cooperatives was established in the Mediterranean MPAs.

Process:

- Implementation of a workshop on the exchange and sharing of knowledge and MPA management methodologies, for the benefit of national Mediterranean artisanal fisheries cooperatives:
- Online forum for the exchange of knowledge, methodologies and impacts concerning the project.
- Implementation and publication of a popular guide about the self-management of MPAs.
- Implementation of an external evaluation on the capitalization of the project.



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“Tagging” fishing vessels to improve compliance and revenue generation



Solution provider: Marcel Kroese, SmartFish



Implemented by: Smart Fish



Summary: The solution addresses the challenge of how to identify and ensure that legal fishing vessels pay their license fees to district authorities, which are important as they fund fisheries management and enforcement efforts of local government structures. It uses a color coded small plastic zip-lock cable tie to identify licensed vessels, enabling fisheries officers and local community-based structures to determine if a vessel is legal and has paid the relevant fees for a particular district.



Location: Tanzania



Impacts

Improved revenue collection by seven district authorities - between 20 – 100% increase in most districts as boat owners licensed and registered IUU fishing vessels and fishers registered themselves and took out licenses. Improved compliance with licensing and registration provisions of fisheries regulations, up to 110 % in one district lead to a decrease in the number of delinquent fishing vessels and fishers. The exceeding of compliance indicates that more boats were actually present in the district than appeared on the records. These may be vessels that had not yet registered with the appropriate DFO. This improvement in registration and licensing resulted in reduction in the number of IUU fishing vessels and fishers as vessels and fishers were now in compliance with regulations. Improvement in governance and management as the actual numbers of fishing vessels and fishermen are known per district.





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Building blocks

1

Strengthening the management ability of local government

District fisheries officers are supported to travel to fish landing sites and carry out briefing sessions with the local management unit (BMU), vessel owners and fishers to explain the tagging purpose and legal implications of non-compliance.

2

Cable tie tags for licensing fishing vessels

Color coded (small plastic zip-lock cable tie) tags are attached to licensed fishing vessels in a pilot approach to determine their identification effectiveness, using two colors per district: one purple for registration on a long duration tag with alpha numeric number, and one orange for the annual fishing vessel license.

3

A financing scheme through vessel registration and licensing

In areas Fishing vessels are required to be "registered" as a fishing vessel before they can obtain a fishing vessel license. The Department of Surface Transport issues a vessel registration document, on the basis of a letter of support from the DFO, containing vessel name and other specifications. Subsequently, the local government's fisheries department, specifically the DFO, needs to be approached to obtain a fishing vessel license. Upon evaluation that the vessel is duly registered, DFO issues a fishing license for the specific vessel, and a District alpha numeric code and number are attributed to it, for example TEM – 1001.

The FISH-i Africa Partnership



Solution provider: Mark Ssemakula, Stop Illegal Fishing



Implemented by: FISH-i Africa, Stop Illegal Fishing, Nordenfjeldske Development Services (NFDS), The Pew Charitable Trusts, Trygg Mat Tracking (TMT), Indian Ocean Tuna Commission (IOTC), Indian Ocean Commission (IOC).



Summary: FISH-i Africa is a partnership of eight Southeast African countries, regional organisations and international experts that gathers, analyses, shares and strategically uses information to take action against illegal fishing operators. The initiative has shown that enforcement against illegal operators can happen, even if capacity is low and the ocean areas to monitor are vast. Key factors have been access to timely and relevant information and intelligence, effective information sharing and close regional cooperation.



Location: Kenya, Comoros, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, Tanzania



Impacts

The information sharing and cooperation in FISH-i Africa has led to successful enforcement actions. Every action has made illegal fishing less of a low-risk high-reward activity and puts illegal fishing operators under the spot light, while giving enforcement officials confidence to take further action. Overall, more than USD 3million of fines have been paid, vessels have been de-flagged and vessels operating under false and multiple identities have been identified. Fishing with forged licenses has been identified and prosecuted. Analysis of how illegal fishing, illegality, crime and lawlessness in the fisheries sector is taking place in the WIO shows common methods and techniques being employed. These modus operandi enable illegal operators to undertake illegal activity, often undetected, and when investigated to get away with it or minimise penalties and sanctions. Features of FISH-i Africa that were deemed the most valuable by users were the provision of access to information about fishing vessels and licenses from other FISH-i countries; regional cooperation resulting in timely communications; advice provided to support decision making in respect to potential or realized cases and enforcement actions; and increased awareness about illegal fishing.





Building blocks

1

Information sharing and regional cooperation

The FISH-i Africa Task Force has routine mechanisms to share information on their flagged and licensed fishing vessels and those active in their fishing zones and ports. They cooperate towards shared objectives, which are to take action against those identified as illegal fishing operators. FISH-i Africa uses an easy-to-use and secured web-based interactive communication platform through which relevant information can be shared in near real-time. This information includes satellite tracking data, vessel information on identity, flags, ownership, fishing activities, networks and trade routes, as well as systematic research on illegal fishing activities. Members can post requests and discuss operational, legal or strategic questions. Dedicated face-to-face meetings at least twice a year enable further discussions, analysis, strategy building and planning, whilst building relationships and trust. At country level further information-sharing and cooperation is needed to turn information and evidence into action. FISH-i Africa supports interagency cooperation between fisheries, port, customs, transport, police, health and other authorities to take effective enforcement action.

2

Technical support and research

The FISH-i Africa Task Force is facilitated and supported by a Technical Team of operational, legal and analytical experts and institutional partners, such as the Indian Ocean Tuna Commission and the Indian Ocean Commission, that provide the information, skills, networks, experiences and insights required to assist the national enforcement officers of the Task Force. Using advanced satellite technology, vessels are tracked and profiles of the vessels, their fishing activities, their owners and the operation network are analysed. In the case of suspected illegal fishing activities, evidence is gathered and intelligence reports shared with the Task Force. Information is fed into a vessel database that will become a valuable tool for risk assessment, control and enforcement. With limited MCS capacities it is important to focus inspection efforts on vessels identified as high risk. Research on patterns and players of illegal fishing operations, on legal questions, on tools and technology as well as on links to fisheries crime improve the systematic understanding of illegal fishing in the WIO and this information informs future strategies.

3

Raising awareness and promoting effective approaches

Illegal, unreported and unregulated (IUU) fishing is increasingly discussed in international fora and receives increasing attention in the context of fisheries crime and maritime security. However, little is known about real cases of illegal fishing and how resource-poor countries can effectively take action against illegal operators that often work in highly flexible, well-financed networks. FISH-i Africa offers examples of concrete cases of IUU fishing, which can inform about current trends and can shed light on often vague discussions about illegal fishing. FISH-i has also nurtured political champions to elevate the issue in the global arena and to push for policy and regulations that serve the needs of Africa and the developed world. Creating an opportunity for Task Force members to speak for themselves in international meetings has built confidence amongst Task Force members who are now better able to promote actions against IUU fishing both domestically and internationally. In negotiation processes, such as the FAO Committee on Fisheries (COFI), for FISH-i member states to join together as part of an African Group results in increased influence on the agreements made, making them more relevant to the continent's IUU issues.



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