

# Achieving a Balance

## Traditional knowledge has proved to be relevant for the management of shrimp fisheries on the Pacific and Caribbean coasts of Costa Rica

The Discussion Table for the sustainable use of shrimp in Costa Rica, organized by the Research Group, which is part of the National Dialogue Round Table geared towards sustainable shrimp exploitation, was a space for dialogue and consensus proposals that took into consideration both scientific and traditional knowledge. These inputs were reflected in the process of participatory mapping. The mapping was developed with the idea of generating a marine spatial planning process that can reconcile conservation and utilization of coastal and marine resources in a more equitable manner.

In this research experience, traditional knowledge has played a prominent role not only because of the scarcity of scientific information, but by opening a space for the considered discussions of all the participants. The process has incorporated the immeasurable contributions generated from the practical experience of fishers (these have had a high level of agreement with regard to scientific knowledge).

In this case study, other aspects were also considered related to the subject, for example, promoting the use of traditional knowledge in decisionmaking, the role of participatory mapping in the application of different types of knowledge, and assessment of the interaction between scientists and fishers, among others.

Among the main results that have been generated is the formulation of a first sampling on ecosystems and coastal resources in the Pacific and Caribbean (Barra del Colorado) coasts of Costa Rica. Furthermore, it was important to build trust and

respect among the participants of the research group towards the sustainable harvest of shrimp.

Historically, the development in Costa Rica has disregarded the sea and its people. This has meant that fisheries have not been given proper consideration. As a result, the following consequences have arisen: weak institutional structures for regulating sea-based activities; poor political support for comprehensive development; ecosystem degradation and declining resources due to overfishing as well as other human-induced and natural causes.

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Conflicts arise specifically because there are no arrangements to demarcate zones for the activities of different fleets, and with the increase in fishing effort (number of boats and hours of work), there is a reduction in fishery resources. This generates interactions between the small-scale artisanal sector and the semi-industrial trawl fleet, giving rise to conflicts characterized by competition for resources and/or the destruction of artisanal fishing gears (this situation has been going on for some 20 years or more).

### Co-operation

Apart from the tensions that exist between the sectors, there are also forms of co-operation both on land and at sea. Unfortunately, these latter relationships are not visible, which widens the gap between fishermen.

*The article is a synthesis of the case study undertaken as part of a regional research project organized by ICSF and CoopeSolidar R.L., on traditional knowledge and the fisheries of the Central American region. It was written by Carlos Andrés Brenes Tencio (carlitos\_brenes86@hotmail.com), social anthropologist and researcher associated with CoopeSolidar R.L., Costa Rica*

Due to the lack of regulatory capacity and incapacity of the different users (direct and indirect) to remedy the situation, the dispute was partially resolved by the Constitutional Assembly (the nation's highest legal body), through Bill No. 201310540 in 2013. The Assembly made the renewal and issuing of new fishing licences for trawlers conditional on legal and scientific

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reform so as to reduce the environmental and social impacts of this fishery activity (both semi-industrial and artisanal).

At the start of 2015, the Government of the Republic of Costa Rica issued the “Directive for generating a national policy for the sustainable exploitation of shrimp, to generate employment, and to combat poverty”, thanks to the outcomes of the first stage in the dialogue process towards managing the shrimp trawl fishery (artisanal and semi-industrial). The Directive envisaged the creation of a body where the technical and scientific options for mitigating significantly the impacts of trawling could be discussed, as ordered by the Constitutional Assembly.

It was in this way that the Research Group for the sustainable exploitation of shrimp was initiated, with representatives of the University of Costa Rica (through the CIMAR), the Costa Rica Institute for Fisheries and Aquaculture (INCOPECA) and other participant institutions being incorporated into it, along with representatives from the fisheries sector on the Pacific and Caribbean (from the Barra del Colorado area) coasts.

Without the contribution of traditional knowledge, it would not have been possible to undertake such a detailed analysis of the different areas and of the fishery resources of the Costa Rican Pacific and Caribbean (Barra del Colorado area) coasts. This

knowledge was not only applied to fill the gaps where scientific data was lacking, but also, from the outset, it was taken into account in the work of the Research Group with the same weighting as scientific knowledge. In this sense, the willingness of the participants to engage in a dialogue facilitated both kinds of knowledge to be incorporated.

The methodological tool that enabled traditional knowledge and scientific knowledge to be incorporated (and actually proved to be the main source of information) was participative mapping. This tool was successful because it provides visual representation (therefore accessible to anyone who cannot read or write). Also, participants were quite familiar with it, which enabled everyone to apply their knowledge directly.

Thanks to participative mapping, the following aspects could be identified: areas of interaction between fleets (areas where shrimp is exploited by each fleet and of latent conflicts); climatic conditions (that give rise to natural fishery closures); determination of the species that live in these areas (commercial and non-commercial), species and critical habitats in need of conserving and/or further research (information provided by academia); types of seabed; varieties of shrimp, their depth zones, and the environmental implications of their capture.

#### Power balance

What is more, the use of traditional knowledge has brought about—albeit not in a premeditated way—a balancing of the power relations between scientists and fishers. Generally, it is considered that scientists are the only ones possessing knowledge and thus—wilfully or unwittingly—the debate is biased by the information or vision that they have; but thanks to the contribution made by the people of the sea, we have been able to equalize the power balance between the protagonists. In addition, both scientists and fishers have taken one another's views into account—

conservation and exploitation, respectively—to achieve a balance.

Since it has not been the practice to take fishers' knowledge into consideration when binding decisions are made at the national level (according to those interviewed), the fishers' representatives were asked how they felt about sharing their traditional knowledge with the Research Group. The reply was unanimous, mainly for two reasons: (a) because historically no one had taken their views into account in making the decisions that had affected them directly, but now this was happening; and (b) because a space had been opened up for scientists to listen to them.

However, it is necessary that traditional knowledge is transmitted verbally and it can vary according to the expertise of each person; above all, it must be systematized and verified. During the sessions of the Research Group, it was possible to cross-check the contributions made by the artisanal and semi-industrial trawler sectors. "Because each sector was implicated in the contributions presented, it is possible to confirm the validity of the information provided by each sector" said Molina.

Regarding the degree of consistency between traditional and scientific knowledge, both types of knowledge have a wide margin of coincidence (although not total), judging by what representatives of both the sectors implicated and the team facilitator told us. This confirms the validity and relevance of the knowledge of the people of the sea.

Scientific knowledge was provided thanks to the participation of academia, represented by two officials from the Centre for Marine and Limnology Research (CIMAR) of Costa Rica University. Academia played a double role in this context: (a) as participants, because they complemented the information provided by the fishers, and for the inputs that they brought into the discussion (regarding shrimp and other species that inhabit the zones exploited by the two fleets), which significantly enriched the discussion;

and (b) as a kind of "arbiter" through its impartiality, such as when the artisanal and semi-industrial trawling sectors could not reach agreement on how the zoning of their activities could be established, they requested the academics to provide criteria and they came up with an option that benefited exploitation as well as resource conservation. (It must be underscored that academic participation in this process of fisheries management does not imply that this endorses the process that is being undertaken. Its function is to incorporate the best scientific information to achieve the best decisionmaking possible).

Below, we provide a proposal on zoning presented to a representative of academia, with the objective of defining an isobath (depth gradient on the map) to protect gravid female sharks. "Only artisanal fisheries can fish from 0-40 m depth and up to the Eastern end of Caño Island, and this should be a priority research area (to define which kind of fleets and fisheries can be undertaken)", said Borrás

In addition, the role of the Research Group is not only relevant because it facilitated the incorporation of traditional and scientific knowledge, but also because it facilitated the interaction of scientists and fishers. Both scientists and fishing-sector representatives felt that there was a good interaction, a positive assessment that was due to a complex and wide process of work undertaken in its entirety by the all



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the parties. And despite the differences between, and within, the sectors, the participants were open to dialogue and to achieving consensus in order to generate sustainable exploitation of shrimp resources.

The incorporation of traditional knowledge also responds to a “democratic ideal” on knowledge and the management of natural resources, as it incorporates different uses and perspectives on a public resource. Historically, the fisheries sector has been marginalized at the political level and in the taking of decisions. But through the application of their knowledge in the Research Group, fishery-sector representatives were empowered in a context where the contributions provided by them were taken into account in decisionmaking at the national level.

Without the contributions provided by traditional knowledge, it would not have been possible to achieve the level of detail about marine resources in the different zones mapped. Neither would it have been possible to achieve consensus on the criteria applied for using the resources of each area.

Participative mapping was a tool that facilitated exchange of knowledge; however, there are other kinds of technical methodologies that could be used to achieve this. But more important than the technique is what is conveyed by it; those interviewed in this investigation highlighted the following points with regards to the development of a methodological proposal for this: “definition of a clear goal and a methodology to break down this fear (between scientists and fishers)”, said Wehrtmann; “should be visual, in a form that allows the contributions to be understood immediately, and to allow those who don’t know how to read and/or write to understand what is going on” said Solis Aguilar and Muñoz; “should be interactive in three ways: (a) not to listen for four hours to the same person talking, while we are seated listening”, said Chacón (b) the tool should enable participants to move about, to make these lengthy sessions more

productive (especially for fishers who are not used to sitting for long in only one place); and (c) should enable participants to develop in-depth discussions, and not just reply to a particular interviewer.

The work of the Research Group marks a milestone in the way fisheries resources are managed in Costa Rica. However, it involved a lengthy process of agreeing and disagreeing (with a high level of conflict), where trust and dialogue became necessary vehicles “to manage the human activities that depend on these resources, because the resources manage themselves alone.” (Molina, personal communication, 2016).

Through the management process, relationships have improved between some representatives of the artisanal sector and some representatives of the semi-industrial trawl sector (which has a long history of disputes over the use of different resources). Both sides recognize that they both must eat (through their fishery activities), but they must also carry out their activities in an environmentally sustainable way. During the process of participative mapping, both sectors were able to define their criteria with respect to the different zones where shrimp and the other species found are exploited within a particular area (there exists a great deal of similarity between the knowledge contributed by the representatives of the artisanal and semi-industrial sectors, according to their respective areas of expertise). This contributed to the resolution of conflicts between the parties.

In order for traditional knowledge to be incorporated into decision-making processes at the policy level, it must first of all be systematized and verified. In this sense, the work of the Research Group, which is part of the National Dialogue Round Table geared towards sustainable shrimp exploitation, has been successful. 3

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