

# Co-Management of Beach Seine Fisheries in Mozambique: A Case Study

*Cogestion des pêcheries à la senne côtière au Mozambique*

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In Mozambique, compliance with regulations in a beach seine fishery is improved when the fishers themselves choose the season the government will declare closed. Beneficial side effects of co-management include a stronger sense of community and individual responsibility toward the common good.

*Au Mozambique, des études ont montré que les décisions en matière de clôture de la pêche à la senne de plage telle qu'exigée par les instances gouvernementales étaient mieux respectées dès qu'elles étaient prises par les collectifs de pêcheurs eux-mêmes. Parmi les avantages que présente la cogestion, on note un sens communautaire plus marqué ainsi qu'une conscience plus aiguë de la responsabilité individuelle à l'égard du bien commun.*

## Introduction

This article reports on a case study of fisheries co-management in the community of Inhassoro in the northern part of the province of Inhambane, about 800 km north of the capital of Mozambique, Maputo. In this community, a specialized form of beach seining using tractors with winches to pull seines has been in use since the early 1960s. The efficiency of this technology has created a need for the development of a co-management system for the fishery.



*Beach seine used in Mozambique.*

*Photo by Jesper Raakjaer-Nielsen*

## **The Legal Basis for Fisheries Management in Mozambique**

All fishery management measures in Mozambique are based on the “Lei n° 3/90 de 26 de Setembro” — also called “Lei das Pescas”. The law defines the different types of fishery practised. These are subsistence, artisanal, semi-industrial, industrial, scientific and experimental, and recreational and sports fisheries.

The mechanized beach seine fishery falls within the semi-industrial category, while the manually operated seines belong to the artisanal sector.

The law places responsibility for administration and development of the fishery sector on the Council of Ministers. The Ministry of Agriculture and Fisheries is

responsible for its practical application. In the “Regulations of the Marine Fisheries”, made public on 15 June 1971, it is stated that fisheries in Mozambique are licensed.

The Ministry is authorized to issue and withdraw licenses for operators within the fishery sector. It can propose, authorize and introduce management measures necessary to secure a sustained utilization of the fishery resources, and to solve conflicts within the industry. It is also responsible for controlling the different management measures. Administrative sanctions can be actuated by the Ministry, or those authorized by the Ministry.

Within the traditional, non-colonial system for management of natural resources, utilization of marine resources seems to have



been based on limited access. These traditions need to be studied in order to learn how they influence *de facto* property rights of the coastal population today, as opposed to *de jure* rights.

### The Study Area

The District of Inhassoro covers an area of 6 300 km<sup>2</sup> with a population of about 34 000. Fishing is by far the most important source of cash income.

There is a 50-km stretch of continuous beach which makes up the eastern coastline of the District, 33 km of which is affected by the co-management system. The mechanically operated seines are restricted to fishing within 14 of the 33 km affected by the closed season because of the gradually more difficult bottom conditions towards the margins of the zone.

### The Development of Local Management Measures in Inhassoro

In 1973, 15 mechanized beach seines were in use in Inhassoro. The distance over which the seines were pulled had increased from between 500 and 1 000 m some years before to 3 000 m in 1973. Even with this quite substantial increase in fishing effort, the quantity caught per unit had constantly diminished according to the fishers.

In October 1973, it was made public in a Despatch from the *Governo-Geral de Moçambique* that no more licenses for the mechanized beach seine fishery were to be issued. In addition, a ban on fishing on Saturdays and Sundays was introduced. Biological investigations continued to March 1974. As a result of biological investigations, a closed season of 90 days was introduced

from 15 June 1974 by the *Governo-Geral*. These regulations are still in force.

In addition to the closed season, there are restrictions on the size of nets and meshes. A mechanical net should have a maximum length of 120 m, while a manually operated net should not be more than 180 m. Mesh size should be at least 38 mm at the cod end.

In February 1995, there were seven units operating mechanized beach seines. No owner had more than one seine.

One of the first measures taken by the new FRELIMO government was to assemble fishers to discuss matters involving their interests. At a meeting with all the fishers in Inhassoro in 1975, it was clear that the fishers wanted the regulations introduced by the Portuguese to be continued. This started the tradition of meetings taking place some time before the closing of the season each year.

Originally, the meetings were called by the District Administrator. The conclusions reached by those assembled were forwarded as proposals by the Provincial Government to the Ministry of Energy and Industry, then responsible for the fishery sector.

In 1981, a Fishermen's Association was organized, with holders of fishery licenses as members. Since its formation, the association

has been calling the annual meeting at about the close of the season.

Normally all of the fishers meet. Those having the right to speak and to forward propositions are the holders of *de jure* fishing rights, which means all with a fishing license. This includes not only those holding licenses for beach seining, but also fishers holding licenses for gillnets, handlines, fish traps, and spearfishing (Table 1). There is no closed season for those other fisheries, however. The meeting is open to the public, although holders of *de facto* fishing rights are not expected to take part in the discussion, since their rights are not recognized by the authorities.

The political changes taking place in the country with the liberalization of the economy in 1987, and the peace agreement in 1992, have influenced the way that fishery regulations in Inhassoro are handled. Since 1991, decisions regarding the closing and opening of the beach seine season have been made exclusively by the fishers. Even if the District Administrator, the Provincial Secretariat for Fisheries, and the local Representative of the Maritime Administration are present at the annual meeting, the fishers and the officials with whom we spoke agreed that they do not interfere with the decisions.

Table 1. Number and type of fishery licenses in Inhassoro, February 1995. Source: Delegação de Administração Marítima, Inhassoro.

Type of fishery	Number of licenses
Manually operated beach seine	48
Mechanically operated beach seine	7
Handlining, motor boats	2
Handlining, sail boats	82
Gamboia	5
Gillnets	6
Collecting sea cucumbers	12
Spearfishing	6
Total	168

The only rule which has to be followed is that the closed season has to last at least 90 days.

The decisions made at the meeting are communicated by the Provincial Secretariat for Fisheries to the Ministry of Agriculture and Fisheries for authorization. As this process takes time, the fishers stop the beach seine fishery on the date agreed upon, and start again as decided, without waiting for the formal procedure to reach its conclusion.

Because the Maritime Administration lacks resources, the *de facto* management of the regulations is left to the fishers. To make sure they take this responsibility seriously, decisions are based on consensus. There is surprisingly little disagreement about practical questions, like the duration of the closed season and the closing and opening dates, even though the fishing community in Inhassoro has its fair share of other kinds of conflicts. No violation of the closed season has so far been observed, we were told.

### **Biological Implications**

The original proposal to close the fishery from 15 June to 15 September was based on the amount of juvenile fish in the catches. The reason why the fishers so easily accepted the closed season, and also one of the reasons why there have been no violations of the regulation, could be the same. The months from May to September are the "cold" months in Mozambique, and during this period we were told that the bigger fish migrate from the shallow waters near the beach to deeper water. Because of this, the catches are small, and the mechanical seines would lose money by continuing to fish during this period. The

manually operated seines, having lower operational costs, could be fishing profitably even after the mechanical ones started losing money. But very soon the effort would outweigh the profit even for those.

During their discussions at the annual meeting, the fishers profit from their intimate knowledge of the local marine ecology in fixing the dates for closing and opening the fishery. If the decisions are made in a way acceptable to all the parties involved, there is little to gain from breaking the accord, as the closing and opening of the season are set to dates when an assumed break-even between effort and result would be as closely matched as possible. In other words, the season is closed and opened on, or very close to, the dates any reasonable fishers would choose for themselves.

It is important to keep in mind that, even if they are losing money fishing with beach seines during the cold months, the common sense in not catching juvenile fish, and thus reducing the long-term biological and economical output of the resource, is probably just as important for the fishers as the short-term economical considerations. As soon as the *Governo-Geral* took the initiative to end a practice no one really wanted, the fear of free-riders gaining from the individual seine owner showing self restraint by not fishing during the cold months was relieved. The negative circle of no one wanting to show responsibility for the common good by ending overfishing on one's own, because it could become someone else's gain, was broken by an initiative from the authorities. When this was done, both the individual fisher's self-interest and their understanding of what the common good gained

could be served by the introduction of a closed season. Because of the special circumstances, the two objectives strengthened each other instead of being in conflict.

The fishers are complaining about decreasing catches in 1995 compared to what they were in 1972-73. Since none of them are, or have been, recording their catches, it has not been possible to verify those claims. On the other hand, one of the biggest buyers of fish in Inhassoro, himself owner of one of the mechanized beach seines, expressed the opinion that for the individual net, catches have never been higher than today.

### **Constraints and Conflicts: An Analytical Approach**

What characterizes the social situation in Inhassoro is not lack of conflicts, but that no party seems to have sufficient power to block others from exercising choice. Because of this balance, the conflicts observed do not tend to have a destructive effect on the community. On the contrary, they rather seem to contribute to a strong social dynamism. The conflict of interest between the owners of the mechanized and the manually operated beach seines gives the co-management system its dynamism, for instance.

One of the most obvious conflicts, and the one most openly expressed by the owners of the manually operated seines, was the one between the owners' need to make sure they have sufficient manpower to set and haul the nets, and the laborers' wish to maximize their income and the disposal of their time. To operate efficiently, a manual seine needs a crew of 24. The seine owners also try to avail of a situation where a few buyers can dictate the terms of the fish trade.



The result of this struggle for economic and social independence is a complex and changing network of alliances within the fishing community. There can be little doubt that this intensive interaction is strengthening the integration of the individual within the community, contributing to a strong group feeling and making it easier for the socially competent to utilize the existing economic possibilities.

The intensive interaction resulting from changing alliances ensures that all the group members keep the agreement about closing and opening the fishing season, once an agreement is reached. Contrary to what might be expected, the highly valued individual independence among the fishers in Inhassoro contributes to keeping each member in line, because of the specific circumstances under which independence has to be achieved. Breaking a rule which all members of the community have agreed upon means doing something which sets you apart. The result could easily be exclusion from taking part in the discourse that constantly repro-

duces and changes the social network on which each of its members depends.

Because of the central place it occupies in the social as well as the economic life of the members of the fishing community, the co-management system has become more than a way of reducing the fishing effort during the period of reproduction and growth of the fish stock. It also seems to be functioning as a symbol of identification for those taking part in the process of establishing the agreement, setting them apart from others, and giving them a positive image of themselves as individuals as well as a community. This function could mean that even if the economic incentive to stop fishing during the cold months diminished, few violations would be encountered, because violations would mean breaking one's self-image. The ones most prone to act otherwise would probably be those with the strongest economic ties to the outside world. In other words, the members of the local economic elite. The reason would be because they are relatively less dependent on local acceptance to be able to

continue their activities, as these take place both inside and outside the community.

One important question the team was unable to study in detail was the relation between those holding *de jure* property rights in the marine resources, and those holding *de facto* rights. There was no open conflict between the members of these two groups, as shown by the practice of tying small nets with very small meshes behind the big ones when those were approaching the shore. Even if those nets are officially forbidden, the owners of the licensed beach seines accepted the practice because, as they said, "It's the livelihood of those people". Neither could we observe any hostility toward those fishing with beach seines without a license, of which there was said to be a number. Fishing mainly south of the zone affected by the closed season, they do not interfere with the co-management system. They are also fishing in areas where the heavy, licensed seines cannot operate, which obviously makes it easier for those holding licenses to accept their existence. Basically, however, it seemed that the rule governing the attitude of the *de jure* property right holders was that even if those holding *de facto* rights have no formal right to fish, they do have a moral right to survive. They also have *de jure* rights to practise some kind of subsistence fishery, even though the concept of subsistence may sometimes be stretched a bit in relation to those fishing illegally with beach seines.

People exercising *de facto* fishing rights may be quite common in Mozambique. We know very little about the extent and the nature of such rights, and an effort should be made to gain insight. It has been shown that



Fishers dragging a beach seine in Mozambique.

Photo by Jesper Raakjaer-Nielsen



changes in fishery laws and regulations without sufficient knowledge about how people have organized the use of marine resources locally available to them have often resulted in breakdown of both social systems and biological resources. In Mozambique, *de facto* rights giving access to marine resources is part of a subsistence economy. Subsistence fishery needs no licenses. However, as the case from Inhassoro indicates, the border between subsistence and commercial fishery may be vague and floating. In order to optimize the resources available to them, people functioning in a money economy will sometimes have to sell their catch. At times, some may start to take advantage

of the system, and in fact become illegal, commercial fishers. If the authorities take action against such activities without sufficient knowledge, it could easily result in people who have exercised their rights in a proper way being punished, and, in the worst case, unreasonably being denied access to the source of their livelihood. As the experience from Inhassoro shows, co-management systems will also include the knowledge about local conditions necessary to avoid such unwanted socioeconomic consequences.

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# Impact Evaluation of Community-Based Coastal Resource Management Projects in the Philippines

*Evaluation de l'impact des projets de gestion communautaire des ressources côtières aux Philippines*

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The benefits of decentralizing the management of coastal resources to local governments and resource users have long been recognized, but the best systems for coastal resource management depend on many factors. A number of community-based management and co-management projects were started in the Philippines in the early 1980s. This report describes a comparative assessment of these projects to determine where improvements can be made in the design of future community-based coastal resource management projects. Early and continuing involvement by project beneficiaries is one of the factors that contributes to the success of project development, implementation, and evaluation.

*Les avantages de la décentralisation et du transfert de la gestion des ressources côtières aux collectivités locales et aux utilisateurs de ces ressources, ont depuis longtemps été reconnus bien que la viabilité de ces systèmes d'aménagement dépende toutefois de nombreux facteurs. Un certain nombre de projets communautaires d'aménagement ont été mis en place aux Philippines au début des années 1980. L'étude comparative ici proposée de ces projets vise à cerner les aires d'amélioration nécessaire dans la mise au point de futurs projets communautaires d'aménagement côtier. La participation précoce et continue des bénéficiaires de projets est l'un des facteurs qui contribuent à la réussite des phases de conception, de mise en oeuvre et d'évaluation de ces projets.*

Recognizing the need to decentralize the management of coastal resources to local govern-

ments and resource users and to increase the participation of resource users in management, a

number of locally- and foreign-funded projects were initiated across the Philippines by