

ARTISANAL FISHERS' PERCEPTIONS ABOUT TOP-DOWN MANAGEMENT TRANSCEND NATIONAL BOUNDARIES: COMMONALITIES BETWEEN SOUTHEASTERN BRAZIL AND COASTAL URUGUAY

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Introduction

Since the late 1980s, understanding fishers' perceptions and attitudes has been increasingly acknowledged as an important factor towards the successful implementation of management policies (e.g. Gelcich et al. 2005, Richardson et al. 2005). In this paper we present and compare fishers' perceptions about the current status of artisanal fisheries in Ilha Grande Bay (Southeastern Brazil) and coastal Uruguay, as well as fishers' suggestions for management improvement in these two regions in South America.

In Brazil, the artisanal fishery sector represents 52.5% of the total catch (the remaining 47.5% corresponds to the industrial sector; 2002 data, Diegues 2006). These figures vary across the different regions of the country. In the Southeast region (where Ilha Grande Bay is located), 34.3% of the total catch comes from artisanal fisheries (2000 data). The relative importance of artisanal fisheries catch in Brazil (even in the Southeast) is much higher than the estimates for Uruguay (where only 3% corresponds to the artisanal sector). Despite this low figure in Uruguay, however, artisanal fisheries employ many more people than the industrial sector, indicating that this is an important socio-economic activity for the country (e.g. Astori and Buxedas 1986, Defeo et al. 2009).

In the region of Ilha Grande Bay, artisanal fishery is an important source of subsistence for several communities, including Caiçaras (a distinct cultural group descendent of aboriginal groups, European colonists - mainly Portuguese, and black slaves) (Begossi et al. 2010). It was estimated that 40-70% of the protein consumed by Caiçaras comes from marine resources (Begossi 2006). In Uruguay, artisanal fisheries sustain numerous coastal communities, either in the Río de la Plata or in the Atlantic Ocean (and associated lagoons). Fishing was also part of the

livelihoods of the indigenous groups that lived in the current Uruguayan territory, but all native people were exterminated after the European conquest in the XVI century.

In terms of management, fisheries are considered State property in both countries. In Brazil, the Ministry of Fisheries and Aquaculture is the national government institution in charge (since 2009), whereas in Uruguay, the corresponding institution is DINARA (National Directorate of Aquatic Resources) - within the Ministry of Livestock, Agriculture and Fisheries. Despite the evident importance of artisanal fisheries in both countries, the governmental policy for fisheries development in Brazil and Uruguay has focused almost exclusively on industrial fisheries.

Methods

It is worth noting that the idea of this paper was conceived during the OMRN (Ocean and Marine Research Network) conference, held in Ottawa (Canada), in October 2009, when we compared the results of two studies, one conducted in Ilha Grande Bay and the other in coastal Uruguay, coincidentally with the same overall purpose: to understand artisanal fishers' perceptions about the current state of fisheries and their management (Oliveira et al. 2009, Trimble and Lázaro 2009).

The Brazilian study was conducted between January and March 2009: we visited 34 communities in Ilha Grande Bay and interviewed 413 artisanal fishers (approximately 50% of the artisanal fishers who live in those communities). The Uruguayan one was conducted during July and August 2009: semi-structured interviews were carried out with 19 fishers at 13 landing sites in coastal Uruguay. In both study areas we asked fishers about the current problems and suggestions for improvement of their fisheries. Sampling methods differed between the two studies: while the number of fishers interviewed in Ilha Grande Bay was determined based on the number of households in each locality visited (see Begossi et al. 2010), in Uruguay just one to three fishers were interviewed at each landing site (the purpose of the study was exploratory). Consequently, in the present paper we compare the findings of the two studies qualitatively rather than quantitatively.

Results

Based on fishers' responses to the question "What are the main problems of your fishery?", we elaborated 10 categories of problems found both in Ilha Grande Bay and coastal Uruguay (Table 1).

In spite of all the commonalities found comparing fishers citations in the two regions, some problems were cited in only one of the two areas. For example, two types of problems identified only by fishers from Ilha Grande Bay were related to protected areas and to the diversity of gear groups (fishing gears in Ilha Grande Bay include hook and line, gillnet, bottom trawl, squid jig, cast net, long-line, purse seine, and spear fishing, whereas most artisanal fishers in Uruguay use long-lines and gillnets). In Uruguay only, fishers expressed that the excessive numbers of sea lions (*Otaria flavescens*) feeding from their nets and damaging them, was one of the main problems of their fishery.

Table 1 Problems identified by artisanal fishers from Ilha Grande Bay and coastal Uruguay.

Categories of problems	Examples of fishers' responses
Intergroup conflicts: when artisanal fishers referred to a different gear group than their own (e.g. trawlers, spear fishing, "bate-poita"), or to larger vessels (generally industrial vessels but also large "artisanal boats"), touristic vessels, and recreational fisheries, as a problem for their fishery.	<ul style="list-style-type: none"> - <i>Trawlers are the problem of fisheries.</i> - <i>Industrial boats fish too close to the beach.</i> - <i>Touristic divers and vessels frighten fish. Fish go away!</i>
Decline of fish stocks or scarcity of fish (including live bait).	<ul style="list-style-type: none"> - <i>There is less fish today.</i> - <i>It has been difficult to capture live bait.</i>
Lack of (effective) enforcement	<ul style="list-style-type: none"> - <i>There is no enforcement of big vessels fishing inside the bay.</i>
Pollution/environmental degradation	<ul style="list-style-type: none"> - <i>The problem is the nuclear waste from the nuclear power plant.</i> - <i>Too much oil in the ocean.</i> - <i>Destruction of mangroves.</i>
Relationships among stakeholders: when fishers complained about lack of communication with other stakeholders (e.g. government, fishers).	<ul style="list-style-type: none"> - <i>We are not informed "why" the new regulations are established.</i> - <i>We have problems with IBAMA (environmental agency in Brazil)</i> - <i>The fishers' organization (Colônia) does not take our complaints to the government.</i> - <i>There is a lack of union among fishers.</i>
Physical constraints: limitations to land or to access the sea with the boat; weather constraints; climate change.	<ul style="list-style-type: none"> - <i>The river mouth is too shallow.</i> - <i>We cannot build a dock because of IBAMA.</i> - <i>Storms are more frequent now.</i>
Government regulations/high fishing pressure: when fishers attributed the problem of fisheries to laws, protected areas, ineffectiveness of the licensing system, or to the increasing number of fishers.	<ul style="list-style-type: none"> - <i>The problem is the ESEC Tamoios (a protected area in Ilha Grande Bay where fishing is forbidden).</i> - <i>We do not receive the subsidy for the closed season on time.</i>
Economic constraints: high prices of fuel, equipment, and ice; middlemen; lack of local markets; lack of subsidies from the government; lack of adequate credit systems.	<ul style="list-style-type: none"> - <i>Fish price paid by middlemen is too low.</i> - <i>Fishing gear is too expensive.</i> - <i>Ice price is too high because of tourism.</i>
Technology: when fishers referred to high technology fishing equipment.	<ul style="list-style-type: none"> - <i>The problem of fisheries is the sonar.</i>

Table 2 shows some of the common suggestions proposed by fishers from both areas when they were asked "What should be done to improve your fishery?". Nevertheless, and not surprisingly, some suggestions differed between both sites. For example, in Brazil, some fishers suggested that fishing areas should be determined for the different gear groups. In Uruguay, several fishers argued that the population of sea lions should be reduced.

Table 2 Suggestions made by fishers from both study sites (Ilha Grande Bay and coastal Uruguay) to improve fisheries management, according to the categories of problems showed in Table 1.

Categories of problems	Fishers' suggestions
Intergroup conflicts	- to ban destructive fishing activities such as trawlers and big vessels (industrial fisheries).
Decline of fish stocks	- to ban destructive fishing activities.
Lack of enforcement	- to have effective (legitimate and unbiased) enforcement from authorities .
Pollution	- to monitor pollution sources; - sewage treatment; - environmental education.
Relationships among stakeholders	- to be consulted about regulations before they are established or modified; - to increase the communication with the government through "active" fishers organizations; - to create cooperatives or associations of fishers; - to have the fisheries managers come (more often) to local fisheries.
Government regulations/ high fishing pressure	- to control the number of fishers, vessels, nets, and/or catch.
Economic constraints	- to have government subsidies for fuel, boats, ice, and fishing gear; - to have financial support from government through credits. - to reduce the dependency on middlemen through the creation of local fish markets where fishers can sell their fish at better prices. - to have government intervention in regulating fish prices.

Discussion

This paper has shown that artisanal fishers from both Ilha Grande Bay and coastal Uruguay are concerned about their fisheries. Moreover, some problems and suggestions cited by fishers allowed us to confirm that the management regime in place is indeed top-down oriented. For example, fishers complained about their lack of participation during the development and implementation of regulations, and they showed no satisfaction with the current management.

Top-down management regimes have proved ineffective in several parts of the world, due to their simplistic assumptions about the nature of fisheries, lack of adaptability of rules to unexpected or unforeseen changes, and lack of or ineffective enforcement (Berkes 2007). Why is it, then, that a hierarchical regime of fisheries governance (with negligible fisher participation in management decisions) is still prevalent in both study regions (and countries)?

One possible answer could be related to the history of authoritative governments in both countries, when all forms of social organization (and thus, participation) were suppressed by the military dictatorships (in Brazil from 1964 to 1984, and in Uruguay from 1973 to 1985). This hypothesis has been previously suggested in the case of Brazilian fisheries (Kalikoski et al.

2009). An additional answer to the question posed above could be that the governments of both countries found no need to look for alternative management modes because artisanal fisheries were largely ignored by them (it was only recently that they seem to have realized of the socio-economic importance of artisanal fisheries).

In Brazil, there have been some initiatives of co-management in inland and coastal fisheries (de Castro 2002, Kalikoski et al. 2009). Recent improvements regarding the involvement of local communities in natural resources management observed in Brazil is partially due to the National Plan of Coastal Management (Law n° 7.661, 1988) and the National System of Conservation Units (Law n° 9985, 2000). These legal instruments state the need for local community participation in decision-making, as well as for legitimacy of traditional practices of resource management (Kalikoski et al 2009). In Ilha Grande Bay, even though fisheries management is still government centralized, a type of co-management arrangement known as “fishing agreements” (*Acordos de Pesca*) is currently being evaluated by the Ministry of Fisheries and Aquaculture (MPA & FIPERJ 2009).

In Uruguay, the only reported case of fisheries co-management is that of the yellow clam (*Mesodesma mactroides*) in the late 1980s, in which fishers participated in enforcing regulations (Castilla and Defeo 2001). However, fishers’ participation has been increasingly receiving more attention in the country. In particular, the new fisheries law that now stands before the Parliament (since September 2009) includes the creation of Fisheries Councils for artisanal fisheries co-management.

Conclusion

Artisanal fishers’ perceptions about Ilha Grande Bay and Uruguay coastal fisheries (both with a top-down management regime) transcended national boundaries: fishers identified similar problems and suggestions to improve their fishery. The governments of both countries have shown interest in institutionalizing participatory modes for artisanal fisheries management. The recently proposed co-management initiatives (fishing agreements in Ilha Grande Bay and Fisheries Councils in Uruguay) have the challenge now, of giving actual participation to these coastal communities, leaving behind the prevalent hierarchical governing mode.

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