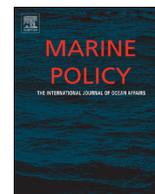




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## Marine Policy

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## Operationalizing an ecosystem approach to small-scale fisheries in developing countries: The case of Uruguay

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## ARTICLE INFO

## Keywords:

Ecosystem approach to fisheries  
Small-scale fisheries  
Co-management  
Social-ecological systems  
Enabling conditions

## ABSTRACT

Small-scale fisheries (SSFs) constitute a critical socioeconomic sector by providing a source of income and animal protein for fishing communities worldwide. In Uruguay this sector has traditionally been neglected. More recently, the Uruguayan government has shown an increasing interest in readdressing this situation by setting a high-level policy for SSFs. This paper addresses the long-term process from conceptualization to operationalization of the Ecosystem Approach to Fisheries (EAF) in Uruguayan SSFs. An overview of the social-ecological enabling conditions that facilitated EAF operationalization across four pilot sites is also provided. Long-term results showed that the intrinsic characteristics of each fishery conditioned the goals achieved. Fishery systems with more favorable enabling conditions served as starting points for operationalizing an EAF strategy. By contrast, SSFs with historical conflicts of use and a complex relationship between the fisheries management agency and fishing communities are still challenging. These results were used as learning platforms to strength and enhance the normative framework regarding management of SSFs. Progresses in EAF implementation at pilot sites have provided initial building blocks for scaling practices to other Uruguayan SSFs. The translation of processes and results into the long-term fishery policy allowed establishing an appropriate legal basis for further EAF development at a national level. Despite the above, long-term political will is critical for sustaining responsible fishing practices and the involvement of fishers as stewardships of their own activity.

### 1. Introduction

The Food and Agriculture Organization of the United Nations (FAO) has been promoting the Ecosystem Approach to Fisheries (EAF) as a framework to redress the critical situation of fisheries worldwide [1]. The aim of EAF is to address the multiple needs of societies by balancing diverse objectives and trade-offs in fisheries [1,2]. Additionally, the approach is intended to reinforce ecological and human dimensions into fisheries management [3–5]. Despite the wide acceptance of EAF, its rate of implementation has been much lower than expected [6,7]. Furthermore, when implemented, the operationalization process has been highly variable and how it is perceived and interpreted depends on each country and fishery sector [8,9]. Indeed, EAF has been mainly focused on industrial fisheries at developed countries where accurate and reliable long-term data is usually available [6].

As EAF has historically been misperceived as a “science-driven process” [6], the data-poor situation of most small-scale fisheries (SSFs), particularly in developing countries, has precluded its

implementation [10]. More recently, FAO led a global process that resulted in the first international instrument entirely dedicated to SSFs, the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries (hereafter SSFs guidelines: [11]). SSFs guidelines place special emphasis on EAF as an important guiding principle for securing long-term sustainable SSFs [12].

Many Latin American SSFs have chased the fundamental steps of conceptualization, development and implementation of EAF, even without making explicit reference to the EAF concept [13,14]. These steps included the existence of long-term policy goals, a combination of tools such as marine protected areas [15], tenure systems [16–18] and participatory decision-making processes as formal governance modes (e.g., co-management: [19,20]). However, management of Latin American SSFs has proved to be challenging, partially because of the weak monitoring and enforcement capacity to ensure compliance with regulations and the lack of investment in research programs to diagnose their biological and socioeconomic status [14,20–22]. This vision implies that “problems and solutions” rely within the domain of fisheries,

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<https://doi.org/10.1016/j.marpol.2018.03.020>

Received 2 January 2018; Received in revised form 19 March 2018; Accepted 19 March 2018  
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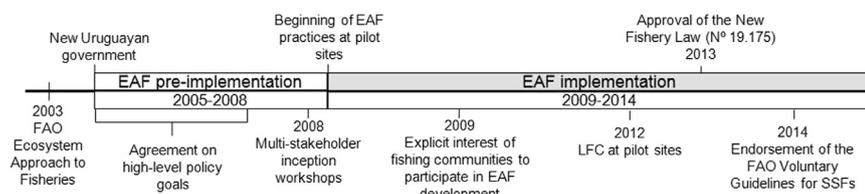


Fig. 1. Milestones that have contributed to the implementation of EAF in Uruguayan SSFs. LFC: Local fishery councils.

although management failures often rely on the interaction between SSFs and the wider external environment [7,23,24]. Indeed, local and external drivers such as coastal population growth, climate change, globalization of markets and implementation of regional and global policies are increasingly affecting SSFs [23,25]. Thus, these social-ecological systems (SES) will not deliver their full socioeconomic potential until these vulnerability sources are addressed in integrated and holistic management frameworks that recognize their biophysical and socioeconomic complexities [21,23].

In Uruguay, since the development of the fishery sector in the 1970s, the government has given special emphasis on industrial fisheries [26]. More recently, the Uruguayan government showed an increasing interest in setting high-level fishery policy goals, enhancing SSFs. Thus, the National Direction of Aquatic Resources (Dirección Nacional de Recursos Acuáticos: DINARA for its acronym in Spanish) drew up a Fisheries Management Program, with a clear long-term strategy directed to transform the utilization of Uruguay's fisheries resources into sustainable production systems through the integration of ecosystem-related principles and concepts into national legal and planning frameworks.

The aim of this paper is to address and review the long-term process from conceptualization to operationalization of EAF into SSFs of Uruguay. Despite a common institutional framework at the national level, operational contexts varied widely among Uruguayan SSFs. Thus, an overview of the operationalization of EAF across four pilot sites with dissimilar social-ecological enabling conditions is shown. In order to identify which factors facilitated or hindered the implementation of EAF, an assessment of such conditions in each pilot site through a broad participatory consultation with local experts related to SSFs is provided. Strengths and weaknesses detected during the whole process at local and national levels are also highlighted. Finally, key barriers to overcome and potential pathways towards future effective participation of SSFs beyond piloting experiences selected as learning platforms are discussed.

## 2. Small-scale fisheries of Uruguay

Uruguayan SSFs are characterized by low capitalization levels, performed by a single or a small group of fishers operating in small-scale vessels with < 10 Gross Register Tonnage (GRT; [27–29]). Coastal shellfisheries developed on intertidal rocky and sandy shores through hand-gathering techniques are also defined as SSFs. Uruguayan SSFs are based primarily on continental and coastal waters extending from the intertidal to 7 nm offshore. Approximately 56% of small-scale fishers are concentrated in the area of influence of the Río de la Plata and the Atlantic coast [29]. There are 59 main ports in the country where about 675 small-scale vessels operate, exploiting some 50 species of finfish and shellfishes. The main species caught are whitemouth croaker (*Micropogonias furnieri*), brazilian menhaden (*Brevoortia aurea*), streaked prochilod (*Prochilodus lineatus*), brazilian codling (*Urophycis braziliensis*), stripped weakfish (*Cynoscion guatucupa*), boga (*Leporino obtusidens*) and tararira (*Hoplias* sp.). This sub-sector, which historically accounted for only 3% of Uruguayan landings in the second half of the last century, represents nowadays more than 20% of total landings and supports approximately 46% of the total number of fishers (the sector supports 1250 full and part-time fishers and 3750 indirect workers; [27,30]). Most small-scale fishers have developed an informal and

marginal system, which prevented their social inclusion, access to credits and loans, and their active participation in the management process [31].

SSFs landings are locally sold and eventually exported to international markets, representing a substantial source of revenues for low income families. However, several factors are threatening Uruguayan SSFs, including [27,30,32–34]: (i) technological interdependencies with industrial fisheries; (ii) generalized lack of control and compliance with fishing regulations, (iii) weak collective representation at both local and national levels; (iv) low market competitiveness due to the lack of adequate fish conservation infrastructure, marketing channels and final product elaboration for direct consumption; (v) habitat degradation (i.e. reproduction and nursery areas) and, in some cases, compromised stock situation.

## 3. Moving ahead: EAF pre-implementation into practice

Although the institutionalization of EAF into the national fishery policy is not a necessary and sufficient condition for its implementation, long-term political support would facilitate EAF inception and development. Thus, the initial steps taken by DINARA for the period 2005–2007 included mechanisms for consensus building and public awareness of the need to promote EAF as a high-level policy goal (Fig. 1). The political juncture detailed above encouraged the conceptualization and development of the project “*Piloting of an Ecosystem-based Approach to Living Aquatic Resources Management*” financed by the Global Environment Facility (GEF), implemented by FAO and executed by DINARA for the period 2008–2014 (Fig. 1). This government agency-led project had a fundamental role in translating high-level policy goals into tangible and operational measures in Uruguayan SSFs. Two of the most important goals pursued were: (i) implementation of ecosystem principles into SSFs; and (ii) development of capacity and empowerment of fishers through the institutionalization of co-management as the governance mode, which was explicitly included in an EAF context.

### 3.1. Setting the scene for EAF operationalization: a participatory approach

The identification and participation of stakeholders since the very beginning of the process was a critical element for consolidating next steps. To this end, DINARA carried out discussion meetings attended by a wide range of stakeholders and created bonds between institutions and across fishing communities. Multidisciplinary and multi-stakeholder inception workshops (fishery managers, lawyers, FAO staff, scientists and fishers) resulted in positive feedbacks and the explicit interest of fishing communities to participate in the EAF process (Fig. 1).<sup>1</sup> Among other relevant stakeholders, The Uruguayan Coast Guard, local municipalities, the Ministry of Social Development and the Academy were also fully engaged. High-level policy goals, including EAF, co-management and fishery protected areas, as well as the path to make them operational by setting EAF management units and Local Fishery Councils (LFCs), were discussed from the very beginning to incorporate novel concepts in the normative framework.

<sup>1</sup> Several local fishing communities expressed their interest through formal letters in which they committed themselves to provide support for project activities through human resources and logistics (April 2009).

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