



## The role of social norms on conservation programmes in shellfish fisheries



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### ABSTRACT

Ostrom (1990) has argued that in collective action problems, social factors are crucial in order to promote conservation. A survey instrument among shellfish gatherers has been used to analyse their preferences with respect to a proposed conservation management programme, assessing the effect of co-management initiatives and the impact of social norms on extraction. Results show that shellfish gatherers working in a Marine Protected Area (MPA) behave more conservatively with respect to their counterparts in terms of their current extraction patterns, promoting species conservation. With regards to social norms, expected beliefs about the fulfilment of the current extraction regulation in their network, allow for the acceptance of restrictions imposed by the conservation management plan without decreasing the shellfish gatherers' utility in any significant way.

### 1. Introduction: the importance of institutions

Many fisheries are suffering from overexploitation around the world (FAO, [16]). This is a recursive problem, despite the existence of different institutions and management initiatives that have been developed to deal with this issue. Previous studies (such as Nielsen et al. [27]) highlight that the main “challenge to governance in fisheries management” is the establishment and maintenance of institutions. Institutions could be defined as norms and rules that guide decisions in a formal framework [27]. Two perspectives about institutions are highlighted by Jentoft [24]. The first one originally provided by Ostrom [30] is related to the management of common property; referring to knowledge about who are included and what is included within the common pool resource (CPR), the informational structure, and how decisions are being made in a collective way. The second one was initially suggested by Scott [36], who added the value of the moral and normative aspects to Ostrom [30]. According to Jentoft [24], the success of institutions is related to three main concepts: rules (which indicate the prescripts that guide conduct, for example), norms (individuals should follow them and if they are perceived as legitimate, while breaking them could be seen as unethical), and knowledge (some individuals could break the rules because they are unaware of them).

Different management options have been implemented in fisheries worldwide. Hilborn et al. [22] summarize the main ones that are related to the access structure. The most basic option is the establishment of open access areas, which may suffer from the “tragedy of the commons” [20], mainly due to the inadequacy of property rights. Therefore, no institutions exist in this setting. There are also management systems

that consist of establishing access rights: the most commonly proposed systems are limited entry, Individual Transferable Quotas (ITQs), which require the allocation of units of harvest, and Territorial Use Rights for Fishing (TURFs), which allocate units of space.

With regards to the decision-making process, in terms of who makes these managerial choices, there are different options, including a central government which has a board or council for decision-making [22]. Another option is the regulation established by international commissions, and the most recent system, called co-management. According to Nielsen et al. [27], this can be defined as “an arrangement where the management responsibility is shared between the government and the fishing communities,” and has been linked to more successful results in practice than the option of top-down approaches.

Previous literature suggests that the involvement of users is a key factor in achieving successful collective action [30]. In this regard, Pretty and Smith [34] state that economic incentives are important, but that sometimes these are not enough in order to achieve a certain conservation objective. Pretty [33] remarks that social links and norms are important for sustainability. Cardenas [10] argues that economic incentives and institutional actions can sometimes serve to promote personal interests instead of public motivations. Therefore, it seems that both economic incentives and the role of social norms should be analysed when dealing with common public resources (CPR). In addition, Cooter [11] states that the law and the existence of social norms have complementary strengths as means of social control. Specifically, social norms may be perceived as somewhat vague, while the establishment of a regulation may bring about a change from a “vague principle” to an “explicit obligation”, revealing the importance of both aspects. Thus,

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the aim is to promote the idea that it is not only important to consider economic incentives, but also to understand the motives that may lead users to carry out practices that could cause overexploitation.

In the study area, Galicia (NW Spain), despite the fact that co-management is implemented for most fishing resources, and decisions are being made in a bottom-up approach, there are still problems related to institutional weakness, reflected by a significant amount of illegal fishing that contributes to the overfishing problem. In addition to the previous assessments by Jentoft [24], Hilborn et al. [22] state that the main determinants of success of management in fisheries are related to the establishment of appropriate institutions, in which all of the parties involved maximize their welfare with actions, whereby all of the contributions provide a desirable outcome. Specifically, the access structure, decision-making process, spatial scale, and biological and economic factors should also be considered. Hilborn et al. [24] also add the aspect of the group size, where smaller groups are usually more successful than larger groups.

Taking into consideration the importance of both formal and informal institutions, the objective of this paper is twofold: First, to gather knowledge about stakeholders' perceptions and understanding of the current institutional framework from the perspective of the shellfish gatherers themselves. The second objective is to study stakeholders' preferences towards a particular conservation management programme that calls for a trade-off between present and future revenues. Understanding how conservation management policies should be designed is important, particularly when taking into account the role of co-management and social norms. In order to achieve these objectives, a survey with a choice experiment (CE) was conducted among the stakeholders. In this CE setting, the interest is to study the following research questions: 1) Whether the analysis of the theory of clubs postulated by Buchanan [9] can be applied to MPAs. In order to deal with this research question, the sampling procedure contains observations from a marine protected area (MPA, which can be considered as a 'club' in the sense of Buchanan [9]) as well as other selected areas that act as control areas. 2) The analysis that social norms related to compliance play in shellfish gatherers' behaviour. To this end, a range of questions were included to help test whether the presence of a social norm based on compliance with the law among users makes shellfish gatherers comply with the requirements of the conservation management plan. In addition, the survey also contains questions related to fishermen's networks and social relations, as well as the pressure exercised by these groups in order to comply with the current regulation, among others.

The remainder of this paper is organised as follows: the legal and institutional framework of Galician fisheries is presented in Section 2. Section 3 presents the applied methodology, while Section 4 contains the results and Section 5 provides the discussion. The paper concludes in Section 6.

## 2. The legal and institutional framework in Galicia

This study focuses its attention on the shellfish sector of Galicia, located in North West Spain. Shellfish gathering has been carried out for centuries by women and children, as Frangoudes et al. [17] indicate. Nowadays, this sector is an important source of income for around 3800 people, mainly women (more than 75% in 2016).<sup>1</sup> According to data published by the regional government, the Xunta de Galicia [40], the main species collected in this sector are two types of clams (*Ruditapes decussatus* and *Venerupis pullastra*) and cockles (*Cardium edule*). Specifically, during 2014 the total economic value of these species amounted

to more than €53 million, with 6000 t auctioned.<sup>2</sup> This is an inshore fishing activity (and therefore outside of the European fisheries policy), conducted in an artisanal way, and has great social importance. Nevertheless, local policies in domestic waters are conducted with the aim of following the main principles established by the European Union, while taking local institutions into consideration.

Galicia is an interesting study area, because despite the application of several management systems, several species are still seriously affected by overexploitation [19]. Until the 1960s, this sector was characterized by being quite unregulated (a sort of an open-access area), a situation that led to the overexploitation of the resources. From the 1960s onwards, the public administration established limits on the number of people who could work on beaches as shellfish gatherers. Specifically, it became obligatory to hold a special work permit, although it was not until 1993 when the license system known as the *Permes* came into force, to encourage the reduction of the number of fishermen. At the same time, fishing activity became a profession with the establishment of Social Security payments and the imposition of restrictions on the number of working days and catches. To have an idea of the effect of the establishment of the license system, the number of workers during 1990–1991 was about 16,355, while recent statistics estimate that around 3800 people are now employed in the sector [17].

As regards the management system, TURFs have been applied to the shellfish sector since 1992, but problems are still present. In Galicia, shellfish fisheries have their own guilds (*Cofradías*). The Galician Federation of Fishermen's Guilds, [15] defines these associations as “public law corporations, endowed with the legal personality and capacity to act in fulfilment of the purposes and the exercise of the functions with which they are entrusted. These act as bodies for the purposes of consultation and cooperation with the government in promoting the fishing sector, and represent the economic and corporative interests of the professionals in the sector, notwithstanding their representation as organizations of employers and fishermen.” There are currently 63 fishermen's guilds with a long tradition, according to the Galician Federation. They include all of the shellfish gatherers working in a particular geographical area [18]. It is important to note that it is obligatory to be a member of the fishermen's guilds in order to work as a shellfish gatherer. It is compulsory for the members to sell their catches at the daily auctions at the local market, with members also having to pay a monthly fee to pay for administrative costs. It is also interesting to note the importance of fishermen's guilds in controlling and disciplining their members. Under the fishermen's guilds, this shell fishing sector is regulated by strict laws that limit the quantity of products that can be extracted per gatherer per day, but there are also restrictions on fishing gear, catching seasons, and minimum size requirements, which vary from area to area. It is important to take into account that fishermen's guilds are guided by technical support provided by biologists who work together with the leaders of the shellfish gatherers in order to produce the yearly management plan. Therefore, fishermen's guilds support the co-management option proposed by Ostrom [30] and Dietz et al. [12], the importance of bottom-up decision-making<sup>3</sup> strategies, and the involvement of users that can help to deal with situations of over-exploitation and promote a more conservative behaviour. The conservation management plan has to be approved by the assembly of shellfish gatherers and by the fishermen's guilds, and finally, by the regional government, the Xunta de Galicia. Within the fishermen's guilds, shellfish gatherers also have their own organizations, which represent their interests to the fishermen's guilds.

<sup>2</sup> These statistics are available at the online webpage of fisheries statistics: [www.pescadegalicia.com](http://www.pescadegalicia.com).

<sup>3</sup> Ostrom [30] pointed out seven principles of design related to collective action, which are: clearly defined boundaries, congruence between appropriation and provision rules and local conditions, collective-choice arrangements, monitoring, graduated sanctions, conflict-resolution mechanisms, and a minimal recognition of rights to organize. These principles have been used in the MPA in Galicia.

<sup>1</sup> These data are available online, from the web page of the Autonomic Statistics Office, (IGE, 2016): [http://www.ige.eu/web/mostrat\\_actividade\\_estadistica.jsp?idioma = gl&codigo = 0301004](http://www.ige.eu/web/mostrat_actividade_estadistica.jsp?idioma = gl&codigo = 0301004http://www.ige.eu/web/mostrat_actividade_estadistica.jsp?idioma = gl&codigo = 0301004)

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