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A quantitative and qualitative assessment of the discard ban in European Mediterranean waters

Santiago García-Rivera [a,b,*], Jose Luis Sánchez Lizaso [a], Jose María Bellido Millán [b]

[a] Unidad de Biología Marina, Departamento de Ciencias del Mar y Biología Aplicada, Universidad de Alicante, PO Box 99, Edificio Ciencias V, Campus de San Vicente del Raspeig, E-03080 Alicante, Spain

[b] Instituto Español de Oceanografía, Centro Oceanográfico de Murcia (IEO), C/Varadero 1, Apdo. 22, San Pedro del Pinatar, 30740 Murcia, Spain

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ABSTRACT

The new Common Fisheries Policy aims to reduce the discard rate in Europe, and one way in which it seeks to achieve this goal is by making it compulsory to land all species subject to catch limits, and some of species managed by minimum catch size. The characteristics of the Mediterranean Sea raise serious concerns over the viability, efficacy and consequences of these measures, and the purpose of this study is therefore to analyse these with a view to improving discard management in this region. The Port of Santa Pola was chosen as a reference fishing port in the Spanish Mediterranean for quantitative analysis, comparing all the species caught with those proposed by the CFP. Additionally, a qualitative SWOT analysis was performed, incorporating the views of fishermen, administrators, NGOs, scientists and entrepreneurs on the regulation. The daily discard rate during the period analysed was 11.7 t (*All Species*) and 1.8 t (*Regulated Species*), with annual discards totalling 2623 t (47.3%) (*All Species*) and 421 t (7.6%) (*Regulated Species*). The regulation was found to have more weaknesses and threats (72.6%) than strengths and opportunities (27.4%). The governing system should take into consideration the contextualisation of discard management according to the specific characteristics of each métier; coordination between stakeholders; and caution about the ecological cost of landing discards. The high logistical, surveillance, monitoring and ecological costs produce a negative outcome despite the objective pursued, the willingness of the fishing industry to reduce discards and the profitable use of the resource by its proposed end users. This may lead to the measure proving unviable in the Mediterranean Sea and its ensuing failure to reduce discards. The alternatives proposed in this paper may help to improve the management of discards and create more sustainable and profitable fisheries.

1. Introduction

1.1. Fisheries discards

Fisheries discards have existed ever since man first started to fish systematically. The reasons for discarding species are determined by economic, sociological, environmental and biological factors that can lead to major variations in discards in terms of both time and geographical area [1–4]. Some of these reasons are associated with the governing system and others with the system-to-be-governed itself. Jentoft [5] has explained that the governing system (i.e. the fishing management system) only has a social component: it is made up of institutions and steering instruments and mechanisms. This author also defined the system-to-be-governed (i.e. discards and bycatch) as partly natural and partly social: it consists of an ecosystem as well as the users and stakeholders who form political coalitions and institutions among themselves [5].

Kooiman and Bavinck [6] and Jentoft [5] argued that the properties of the system-to-be-governed include aspects such as diversity, complexity, dynamics and vulnerability. In this sense, discard levels vary due to spatiotemporal variations and the life cycles of the different species [7], environmental conditions and species biology [3,4,8] the absence/presence of a market [9], the community economy [7] or values, customs and ethical standards on the consumption of species [10].

Discards can lead to alterations in the ecosystem due to the changes produced by the disruption of trophic chains [11]. Dead biomass favours the proliferation of scavengers and opportunistic species as well as primary production due to the re-suspension of nutrients [12]. Furthermore, discards represent a future economic

* Correspondence to: Unidad mixta de investigación Universidad de Alicante-Instituto Español de Oceanografía. Universidad de Alicante, PO Box 99, Edificio Ciencias V, Campus de San Vicente del Raspeig, E-03080 Alicante, Spain. Tel.: +34 636688934.

E-mail addresses: sgarcia.rivera@ua.es (S. García-Rivera), jl.sanchez@ua.es (J.L. Sánchez Lizaso), josem.bellido@mu.ieo.es (J.M. Bellido Millán).

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loss, are a cause of mortality that can alter population dynamics [11] and even contribute to overfishing growth and recruitment [13].

However, the positive role of discards as a food source for species of conservation concern that are targeted by fisheries, as well as their contribution to ecosystem productivity and even benthic-pelagic coupling, have generally been overlooked [7]. They are also a source of food for several marine bird species [14]. In oligotrophic areas, such as the Mediterranean Sea, any kind of residual input may possibly have a positive effect on certain populations, as has been shown in the case of nutrients from fish farming establishments [15].

Discards are a biomass extracted from the sea that is not taken into account in statistics on abundance [8], which may bias the quality of scientific recommendations, and thus of fisheries management. Measures introduced by the governing system, whether in the form of technical measures [13], regulations [16] or efficacy of surveillance [17], have a direct impact on discard levels. Consequently, the properties of the system-to-be-governed demand an appropriate and adequate response from the governing system [5].

The countries with the most progressive discard governing system are arguably the Faroe Islands, Iceland and Norway, where measures have been introduced to reduce discards in fisheries managed on the basis of quotas and fishing effort [18–24]. These measures, which include a discard ban, have worked relatively well in these countries [16], leading to a reduction in discard rates [23,25–27]. According to the Icelandic Government [28], this reduction is associated more with the combination of technical measures than with the discard ban itself. In the countries we are referring to, however, discard management is less complex than it is in the European Union [29]. Furthermore, the European fishing industry is extremely diverse, with significant differences between the North Atlantic and Mediterranean regions [30], and thus in the ways they are managed.

The Mediterranean Sea has a number of special features. Its continental shelf gives rise to a high diversity of species in coastal areas, favouring a multi-species fishing activity that takes place mainly in such areas [31]. The great majority of such fisheries are managed by controlling fishing effort, and fishing tends to be a small-scale activity carried out by local fishermen making daily trips and using a variety of fishing gear [7,32].

Given that every region has its own characteristics and peculiarities [30], measures that have proved effective in Northern countries are not necessarily appropriate for all the fisheries in the European Union. This does not rule out, however, the possibility of studying Nordic experiences of developing ways of managing discards and identifying the specific needs of each fisheries region [8].

1.2. The implementation of a discard ban in the Mediterranean

The Green Paper on the CFP identified the high level of discards in Europe as one of the structural deficiencies of this policy [33]. The European Union has introduced a compulsory landing of discards, according to a pre-defined progressive schedule [34]. Once the regulation comes into force, all catches of species managed on a catch quota system will have to be landed. In the Mediterranean, and according to Article 15 of the proposal [34], this obligation will only apply to catches of species subject to minimum sizes as specified in Annex III of Council Regulation (EC) 1967/2006 [35], with the exception of those used as live bait. However, undersized fish of species regulated by national minimum landing size but not included in European Regulation should be returned to the sea, which means that not all species with a regulated minimum size are to be landed. The undersized fish that are landed can only be used for purposes other than human consumption (e.g. fish meal, fish oil, animal feed, pharmaceuticals, cosmetics or food additives). Certain exceptions to compulsory landing are also contemplated [34]. *De minimis* exemptions of up to 5% of total annual catches of all species subject to the landing obligation shall apply when an increase in selectivity is very difficult to achieve, or in order to avoid disproportionate handling costs [34].

This discard management approach suffers from some degree of uncertainty regarding the proper application of the rules. It needs to consider an effective monitoring system, new infrastructures for collecting, processing and storing discards, or a programme to compensate fishermen for their storage [36]. Analysis of the consequences of applying the CFP approach in the light of the specific features of the Mediterranean Sea raises a number of questions: is discard management viable as proposed under the new CFP? Will it serve to reduce discard rates? Which problems will it solve and which new problems will it create? What will be the net balance of the consequences of this regulation?

By responding to such questions before the measures come into force we can better identify its strong and weak points, thereby making it possible to improve discard governance in the Mediterranean. The overall purpose of this study is to provide an answer to these questions, to which end two specific objectives were defined:

1. To characterise discards (system-to-be-governed) in a representative Mediterranean fishing port.
2. To subsequently evaluate the implications of putting the new policy on fisheries discards (governing system) into practice.

To this end, discards were first quantitatively characterised on the basis of on-board observations carried out by the Instituto Español de Oceanografía (IEO). This evaluation was followed by a qualitative SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis [37] of the measure, with input from fishermen, scientists, entrepreneurs, ecologists and inspectors. This made it possible to evaluate the positive and negative points of the regulation in terms of its rationale, operability and costs.

2. Material and methods

2.1. Santa Pola fishing port

The reference port chosen for this purpose was Santa Pola (S-E Spain) (Fig. 1), home to the largest trawler fleet on the Spanish Mediterranean coast, with 31 trawlers recorded on its register [38]. Furthermore, in 2012 a total of 48 trawlers registered in other ports also sold their catch through this port [39]. The rest of the Santa Pola fishing fleet consists of 61 vessels, most of them dedicated to small-scale fishing. Total annual landings of the Santa Pola fishing fleet ranged from 2420 to 2770 t during the years 2008–2012 [40].

2.2. Discards data analysis

Discards were characterised on the basis of the samples taken by the IEO. The data were collected between January 2009 and December 2012 by observers on board commercial fishing vessels landing their catches at Santa Pola (12 trawlers and 11 trammel netters). In the case of the trawlers, each haul was considered as a separate sample, whilst in that of the trammel netters the sample was taken to be the total catch obtained from the nets hung on a complete fishing trip. The trawl gear used up to May 2010 was equipped with a 40 mm diamond mesh netting in the codend, whilst from July 2010 onwards this was replaced by either 40 mm square mesh netting or 50 mm diamond mesh netting. The trammel gear had 28 mm mesh inner netting throughout the whole of the study period [39]. The heterogeneity of the fishery complicates assessment,