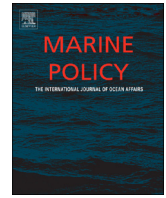




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Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol

Perceptions and preferences of commercial fishers for dedicated access privilege framework in a multispecies fishery

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ARTICLE INFO

Article history:

Received 16 September 2013

Received in revised form

6 November 2013

Accepted 8 November 2013

Available online 7 December 2013

Keywords:

Dedicated access privileges (DAP)

Individual fishery quotas (IFQ)

Individual transferable quotas (ITQ)

ABSTRACT

The decline of the world's fisheries and the inability of traditional management frameworks to maintain them, has led managers to adopt alternative management frameworks. The use of dedicated access privileges have often been shown to have varying popularity among factions within the commercial fishing industry and managers. Here, we examine commercial fishers' preference for alternative management frameworks in the context of a unique multispecies fisheries of the Florida Keys. By surveying commercial fishers, we find that that the size of operation plays no role in affecting fisher perception regarding dedicated access privileges. Furthermore, fishers who are organized are less likely to support dedicated access privilege frameworks. Overall, we do not find enough support in the fishing industry for the implementation of dedicated access privileges in the Florida Keys. These findings can provide inputs in developing effective management plans in the region.

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1. Introduction

The United Nations Food and Agriculture Organization (UNFAO) reports that 25% of all fish stocks are overexploited, depleted, or recovering from depletion [1,2]. Overfishing can alter the marine environment in a number of ways, from removing entire trophic levels to reducing grazing pressure on algae that is essential to maintain coral reef recruitment and growth [3]. Techniques and strategies used to mitigate anthropogenic pressures on marine fisheries include a number of approaches such as marine protected areas (MPA), controlling the amount of effort fishers put into a fishery by the use of total allowable catch (TAC), and ecosystem based management (EBM) which focuses on the combination of multiple techniques [4,5]. The total allowable catch (TAC) system may lead to the phenomenon what is known as a 'race for fish'. Fisheries can be impacted under a TAC system due to overcapitalization within the industry [6]. Overcapitalization of the fishing industry is seen as one of the biggest deterrents to achieving sustainable fisheries [5].

Fisheries under a TAC framework that is overcapitalized can lead to compromised seasons leading to an overall diminished situation for the industry as a whole [7]. The goal for managers

then turns to reducing the overcapitalization within the industry and reducing the fishing effort. The effort put on fishing which is a major driver causing pressure on fisheries, is not addressed by the MPA framework [5]. Though fishing effort within MPAs is reduced, and often eliminated, surrounding areas could see an increase in effort putting strain on stocks outside of MPA boundaries [8]. Therefore it might be plausible to consider an alternative to a command and control framework that gives incentives to fishers to fish less and also give efficient vessels the ability to fish more than inefficient ones [9].

One alternative management framework could be using dedicated access privileges (DAP) which give fishers the privilege to catch a certain percentage of the total allowable catch (TAC) [10,11]. By setting a cap on the total amount that can be harvested and giving a quota of that cap to individual fishers, fishing effort can be reduced, thus easing the pressure on the stocks [9]. The dedicated access privileges (DAP) framework is receiving increasing attention over command and control style of MPAs and TAC. The recent popularity of using an incentive-based approach to fisheries stems from relative dissatisfaction with traditional fishery management frameworks to ensure sustainable fisheries [12,13]. It is argued that DAP systems could be a better way to organize fishing activities as it provides more flexibility and fishers do not have to be concerned about competing in a derby style fishery [7,14].

Incentive-based systems can come in many different forms, with the common, underlying theme being that fishers are given freedom and flexibility to choose what individual level of effort

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they want to put into fishing. Individual fishery quotas (IFQ), and individual transferable quotas (ITQ) are forms of dedicated access privileges. It is argued that by assigning *de facto* “property rights”, more control can be given to the managers to operate on a more efficient level. By “privatizing the commons” a slew of problems (transferability, open access, and derby-style fishing) can be brought under control. Under this framework fishers have reason to conserve the resource as the allocation of permits allows fishers the privilege to harvest a specified portion of the total harvest [4,15]. According to the Magnuson–Stevens Act, the state owns the fish but can allocate rights (privileges) to harvest the fish, similar to giving property rights [16,17]. Dedicated access privileges are designed to reduce effort, increase safety, allow fishers to take a larger stake in the management of the fishery, and have been shown to reduce the probability of collapse [10,5,11,12]. Depending on factors such as size of the fleet, species targeted, and area fished, DAPs can be allocated in different ways with different stipulations. One form of DAPs are individual fishing quotas (IFQ) commonly known as “catch shares” (hereafter IFQs and catch share will be considered non-transferable), which are designed to slow the ‘race for fish’.

When considering implementing a DAP framework, managers have to be mindful of the implications, both positive and negative. Dedicated access privileges have seemed to replace command and control frameworks as the new alternative to the more traditional total allowable catch regimes [18]. The change from TAC to alternative management practices led to an important shift in fisheries management, when it was noticed that input-based management approaches could not effectively control the ‘race for fish’ [7,19].

It is expected that more efficient operations will end up with majority of quotas (when the quotas are transferable) [5,15]. A firm or firms may be able to buy up most quotas and exercise market power. When used alone, ITQs have been criticized for not addressing some of the main concerns of fishery management, including the limitation of focusing on one fishery at a time. Critics have referred to ITQs as narrowly focused policy instruments that ignore the crucial element of ecosystem based fishery management (EBFM) [20]. For an ITQ system to work as an effective component of EBFM, several criteria have to be met. First, the total allowable catch (TAC) has to be set below the maximum sustainable yield (MSY). Setting the TAC below the MSY will in turn allow the targeted population to rebound in subsequent harvest seasons and is less likely to have major trophic level impacts. Also by setting the TAC below the MSY, the fishery will produce larger harvest in the future. Secondly, the allocations of permits have to reflect market price. Signals from the market should be considered when allocating permits as to keep the industry relatively stable and finally, the industry has to take deliberate action to reduce fishing efforts [21].

Fishers have concerns about DAPs including the initial allocation, stratification within the industry, and fees that are tagged to the permits [9]. Fisheries that have implemented DAP frameworks have also seen reductions in the size of the fishing fleet [22–24]. However, the effects of DAPs may not be felt for several years [22]. The New Zealand squid fishery saw an initial spike in the number of vessels in the fishery. The same thing happened in Iceland where a fishery did not see a reduction in vessels, however did notice a reduction in overall effort [25].

Though the use of a DAP system can be beneficial for a fishery stock as well as, in certain cases, for the industry, DAP frameworks including ITQs can be met with skepticism and hostility from the industry. The basic premise of a transferable quota system is that there will be an aggregate gain for the industry with limited adverse distributional effects. One key concern is that fishers’ positions within the industry, including the economic power, can

be negatively affected in addition to losing bargaining power and loss of employment as the number of fleet is reduced [26,27]. Larger fishing operations have been shown to support DAP implementation than smaller ones [28].

In June of 2009, NOAA created a task force with the purpose of developing a plan to impellent DAPs throughout the individual fishery regions in the United States. The plan went into effect in 2010 and “encourage[s] the voluntary use of well-designed catch share programs in appropriate fisheries to help rebuild and sustain fisheries” [33]. Currently the studied region (South Atlantic) has only one species (wreckfish) under the NOAA catch share program [30].

Fishers who are likely to benefit from the implementation of dedicated access privileges may be more supportive of such a framework. Furthermore, individual sectors of a fishery can vary quite significantly in their support for alternative management frameworks such as DAP [28,29]. Support for DAPs can be influenced by fishers’ socio-demographic and economic characteristics (e.g. age, length of career, and number of crews and vessel size, which could be an indication of the size of operation). Against this backdrop, this study aims to identify relevant fishers’ characteristics and how these characteristics relate to their support for alternative management frameworks. Identifying these characteristics can be useful for drafting more detailed management plans in the future. For instance, some specific factors such as the size of the operation, if a fisher is a member of any association, length of experience in the vocation, and how many species are targeted etc. may lead to varying degrees of support for current and future management frameworks. The Florida Keys provides a unique opportunity to study an industry that has a very large MPA as well as other active management frameworks.

1.1. Florida Keys fishing industry

The multispecies fisheries of the Florida Keys supports 1200 families and boasts the largest commercial fleet from Texas to North Carolina. This port is considered one of the most valuable in the United States with the dockside value of product caught, excluding shrimp, being \$54 million [31]. However, the industry in the last 20 years has seen a reduction in poundage caught as well as a drastic reduction (about 53%) in the number of saltwater products licenses (SPLs). Currently, there are approximately 1200 SPL holders in Monroe County [31]. The data from 2010 show that nearly five million pounds of finfish and six million pounds of invertebrates (excluding shrimp) were landed, making the Monroe County port the most productive in the state [32].

2. Data collection

Data were collected through a survey during April 13, 2011 through Aug 1, 2011. All holders of Florida Saltwater Products Licenses (SPL) were contacted and given the opportunity to participate in the study. The database, obtained from the Florida Fish and Wildlife Conservation Commission (FWC), contained names, addresses, and emails of 948 SPL holders at the time (December 2010).

In order to collect information about fishers’ preferences about different management practices, a structured survey was designed.¹ Earlier studies related to this issue were extensively reviewed in designing the survey instrument [28,34,35]. Dedicated

¹ The survey was reviewed by a number of organizations and stakeholders including, the Environmental Defense Fund, NOAA, CapLog Group, the Florida Keys Commercial Fishermen’s Association, and a diverse pool of commercial fishers in the Florida Keys. The survey is available upon request.

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