

THE PROBLEMS OF FISHERIES MANAGEMENT IN THE MEDITERRANEAN. CATALONIA AS A CASE STUDY

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ABSTRACT

The management of fisheries, as a particular case of common property renewable resource, is a problem still not solved, as it can be seen in the recent worldwide fishing crises and collapses. Although fishing in the Mediterranean has not undergone any dramatic event, some overfishing symptoms are evident for the most important commercial species. The management procedure usually employed in the Mediterranean fisheries is based on rules theoretically devoted to limiting the fishing effort. However, there are other rules also applied, such as the fuel tax exemption, that have a reverse effect. This management system is not based on periodic assessments and it is not systematically reviewed in order to be adapted to the evolution of the stocks. Such a non-adaptive management procedure is not able to avoid a progressive overexploitation driving to the collapse of the fishing system.

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This probable crisis could be prevented with a fishing project for an adaptive management, based on the precautionary approach, with the participation of all the agents involved in a fishery: administration, fishing sector and scientists (biologists, economists, sociologists, etc). This project has to assign a very specific place to the bottom trawl which is the most problematic gear. Due to its size, Catalonia can become a pilot model for the rational and adaptive management of the Mediterranean fisheries.

KEYWORDS

Mediterranean fisheries, fisheries management

INTRODUCTION

Fishing resources are belonging to a biological system, which is influenced not only by man, but also by its environment and its own nature. The animals that make up the fishing resources are wild and free, man neither feeds them nor does he control their genetic selection. In spite of the fact that man degrades the environment, he does not control it, as may be the case on a farm. In fact, the fishing activity is one of the few remaining hunter-gatherer activities left over from the Palaeolithic Age and in this field, it is by far, the most important.

Fishing is an economic activity. It is difficult to put an economic value on a renewable natural resource (Martínez Alier⁵) and this raises difficulties for its efficient management, especially when the resource does not have an assigned property. Clark¹ showed that a renewable resource which has a growth rate that is lower than the bank interest rate will

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become exhausted if it is managed exclusively by economic criteria. A large number of fishing grounds have uncontrolled access, although there are administrative control mechanisms or those of the fishermen's own methods. One of the consequences of the competition for the resources at a world level, but which has also made itself felt in the Mediterranean area, has been the over-capitalisation of the fishing fleets which has led to much greater capacities than the resource's potential.

There are few possible solutions to the conflict of open access to a natural resource: public and private management and selfmanagement by fishers communities. Except the last one, mainly applicable to the small scale coastal fisheries, the other systems have failed everywhere due to the requirements of the industries to get quick revenues, driving almost all world fisheries to the overexploitation. A privatisation method, the so-called ITQ (Individual Transferable Quotas), has been tested with doubtful results (OCDE⁷, Martínez i Prat⁶) in different fisheries in America and Pacific.

ADAPTIVE MANAGEMENT

From the technical point of view there are two main methods to manage a fishery: to limit the catch (TACs and quotas) and to limit the effort (limiting licenses, time fishing, power, etc.). In both cases a process of monitoring and assessing the fishery is required.

Adaptive management involves a continual learning process that cannot conveniently be separated into roles like "research" and "ongoing regulatory activities" (Hilborn & Walters⁴). This consists of a cyclic annual process made up of the following steps: (i) the evaluation of the resource under different hypotheses (in order to model uncertainty), (ii) the risk analysis under different management procedures. (It is necessary to have a set of alternative hypotheses available and a set of management plans to examine the behaviour of

different plans under different hypotheses). (iii) recommendations of the measures to take according to the preceding analysis, (iv) up-dating the regulations and control, and (v) up-dating the data which are necessary for the evaluation.

The adaptive management requires the co-operation of three protagonists: the administrator, the fisherman and the scientist, each one has a specific role to play and all three are necessary to achieve the correct regulation of the resource. The mission of the scientist is to understand how the fishery is functioning, both from the resource point of view and from that of the fisherman and to provide the administrator and the fisherman with his results and recommendations. The role of the fishermen in management is more obvious in the Mediterranean than in those exploited by the large fishing fleet companies.

A non-adaptive management is that where the management steps are not regularly updated. The management of Mediterranean fisheries is non-adaptive, it is based in rules more or less permanent not regularly reviewed, not always established on a scientific basis and not always enforced. The fishermen themselves through fishermen's associations and based on gentlemen's agreements play a significant role in the management. In any case, the code of conduct has to be promoted and watched over by higher authorities since the fishermen have ways of not complying with the regulations. Technological progress is a key factor as far as it depends almost exclusively on the fisherman himself and allows him to increase the catch independent of effort (hours and days of fishing), since it is now controlled.

THE MANAGEMENT TOOLS

Fishing resources possess demographic inertia and require a certain time to react to the management measures. This is even more accentuated in the cases of over-exploitation

because the resources behaviour in the short and long term are opposite. For instance, an increase in the work effort or a reduction in the size of the fishing net mesh will produce an increase in the catch in the short term, but in the long term will produce a reduction. The opposite is also true, if the work effort is reduced or the catch selection of an over-exploited fishing ground is improved, then in the long term there will be a gain, while in the short term there will be a loss. This has an economic importance on capital since the positive effects of a technical measure are not immediate. It is precisely this behaviour that causes fishing grounds to become over-exploited when they are not managed (and even when they are managed). This is of particular importance when attempting to recover an over-exploited fishing ground and it is made extremely difficult because of the harsh social and economic repercussions.

Knowledge of the current situation of the Mediterranean fisheries is far below what it ought to be. In spite of the fact that the situation is improving, due more to the investigation centres than to any administration, there is still a great lack of up-to-date information.

The management tools of a technical character can control three aspects:

1. The overall fishing mortality. Includes: limiting the work effort or limiting the catch. Currently, the work effort is limited in the Mediterranean, not the catch.
2. The fishing mortality, by age or size (selectivity). Includes the banning of some gears and the establishment of technical characteristics (size of mesh) as well as area or time close-seasons.
3. The preservation of the resource's environment, in particular the zones (for example, sea-grass) or the more-sensitive species (mammals, turtles) within the ecosystem.

Within the context of an over-exploited resource, as are most of the world's seas, and in particular the Mediterranean, the management must be directed towards reducing the

fishing effort. This is more or less, what happens with technical measures, but not with economic ones.

The economic tools available to the administration are subsidies for reducing effort (reducing the number of ships or temporary close seasons). Subsidies can play an important role in helping to survive the economic slump during the transition when attempting to recover an over-exploited fishing ground. However, the subsidies should only be temporary measures for recovering a resource. They should never be a permanent injection of money, like tax exemption on fuel which acts as subsidy for over-fishing.

AN EXAMPLE: THE "PLA CASTELLÓ"

Under the name "Experimental Plan for Trawling" or simply the 'Pla Castelló' a unique exemplary fishing regulation experiment was developed between 1961 and 1966 which affected the trawler fleets of the ports in the area of Castelló (Suau⁸). The power and yield data of the fishery from 1943 to 1961 showed a constant increase in power (500%) together with a reduction in yield (10%). The fishermen themselves requested the search for a solution to the problem, and once all the bodies involved reached an agreement, the plan was put into operation in 1961.

The plan consisted of putting into effect a reduction of hours, an increase in fishing net mesh size, a complete halt in fishing during three months of the year and a close area along a coastal strip. The results can be summed up with the following data, when the plan finalised in 1966, the landed catch had increased by 21%, the capture of the principal species per unit of effort increased by 47% and the average economic yield, once the prices had been corrected, was 67% higher.

Unfortunately, once the experiment had ended, the necessary measures to maintain the

regulation were not adopted, the follow-up was interrupted and the control was relaxed. As a result, effort was increased, the close season disappeared and the mesh size was reduced.

SELECTING A FISHING MODEL. SUSTAINABLE DEVELOPMENT AND THE PRECAUTIONARY PRINCIPLE.

A reasonable fishing plan implies the definition of how one would like the fishing system of the future to be: what products can be exploited, in what quantities, who is to do it and how? This objective could be described as a fishing model. Several alternatives could be given, but it is important that they are ecologically realistic with respect to the potential of the fishing ground. This is not always the case. Frequently, when confronted by a fishing crisis, the administrators take a leap forward and promote the investigation of new fishing grounds, or the increase of fishing capacity, instead of facing reality. The idea which is proposed here, includes a good number of more definite possible objectives which cannot be maximised (or optimised) at the same time:

Maximise: profits (in the short, medium or long term), jobs

Maintain: investments, social balance, catch regulation, jobs

Minimise: environmental impact, risk of collapse, catch variations.

The exploitation of natural resources will not allow an indefinite growth. These growth limits in the exploitation of resources appear to be in contradiction with what some economists recommend, which is precisely growth. The sustainability of fishing resources is, then an economic and not biological problem. Biologically, a sustainable exploitation is a goal which can be assumed, the problem is if it is economically acceptable to plan a growth level of zero in fish production. Recent history has shown that it has not been possible to

obtain sustainable fisheries. The causes can be attributed to the limitations and uncertainty of the evaluation techniques and to the economic pressure on the fishing world. This is why talk has begun on the need to apply the precautionary approach to the fisheries.

The precautionary principle can be described as the adoption of very sound security measures in uncertain situations, or when a potential risk exists, even when there is no indisputable proof of any threat.

The precautionary approach is developed, among others, in the following points (FAO²):(i) the needs of future generations, (ii) avoiding potentially irreversible changes, (iii) the previous identification of undesirable effects and the measures which will avoid or correct them, (iv) the corrective measures have to quickly achieve their objectives on a medium time-scale (not exceeding 20 or 30 years), (v) if the impact on the resource is uncertain, then its own productive capacity must be given priority.

One clear concept in the application of the precautionary approach is the need to invert the burden of proof. This means that who is promoting an action will have to show that it does not have any harmful effects, assuming that human actions are harmful unless the opposite is proven. The resources must be systematically given the benefit of the doubt.

A PROPOSAL FOR A MEDITERRANIAN FISHERY

Since 1974, until now, the landed catch in Catalonia has not shown any marked trend and has maintained itself around 55,000 tons annually without any variations above 20%. Occasionally, these data have been used to state that all is well because there is a stable catch, but it must be taken into account that this has been produced because of a non-evaluated fishing mortality increase due to technological progress. Actual cases of the important Catalan fisheries, such as that of hake, have shown the existence of over-

exploitation and that another type of fishing would achieve improved catches, with less discards and with better quality (as far as size).

It is not possible to predict whether the total catch would be greater than that currently obtained if adequately managed. However, it can be affirmed that the fishery would be more sustainable, therefore more stable and the product would be of better quality.

To be able to implement the Code of Conduct for Responsible Fishing (FAO³) in Catalonia, it is first necessary to carry out a very accurate evaluation of the current state of the Catalan fishery. This would then be known as the zero point and would allow future changes to be quantified. This evaluation must include the biological, economic, social, technological and anthropological aspects of the fishing industry, as well as the establishment of a follow-up protocol and up dating of this evaluation.

The central point is the design of a fishing model which answers the following questions: how must the Catalan fishery develop in the medium and long term (for instance, 20 years)? How will the structural policy affect this, particularly the fishing fleets? What is expected from the ecological, economic and social points of view? What are the possible paths for achieving this objective? What will the cost be and who will pay it? This project must consider the establishment of an adaptive management system and the application of the precautionary approach.

Finally, this project has to be developed and set in motion with all the legal, technical, administrative, economic and even political mechanisms necessary to guarantee its continuity and efficiency.

The relatively small size of Catalonia and the characteristics of its fishing industry, without the presence of large companies or fleets, places it in an optimum position for the development of a fishing regulation plan, today non-existent. This could serve as a pilot

model for the other zones in the Mediterranean and even the rest of the world.

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