THE IMPORTANCE OF LOCAL PERCEPTIONS OF FISHERIES RESOURCES IN CATALAN FISHERIES

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ABSTRACT

The aim of this paper is to show the importance of fisheries resources perception for the approaching fisheries management, and to show how Social Sciences perspective, like Anthropology and Social Psychology, can analyse local communities management of resources in a way other sciences cannot.

This paper wants to show the way in which the variety of points of view is present in the Catalan fishing system. To that end, we analyze this diversity of approaches from the psychosocial perspective and including all types of actors involved in relationship in the fisher system as fishermen, biologists, ecologists, politics, economists, administrators of the fishing sector, and fishmongers.

On the one hand we will analyze the views of biologists, economists and ecologists who construct their perceptions from a scientific approach, and use scientific language in their discourse. On the other hand, there is the fishermen's approach, which is basically constructed from a perspective based on their own experience and daily activity.

In this way, we will be able to show to what extent the diversity of approaches on behalf of the different actors can influence negatively the necessary communication between them, and specifically in the implementation of resource management policies, in which the agreement of points of view between scientists and fishermen is taken for granted, with the resulting problems which such an attitude implies.

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I. INTRODUCTION

In this paper we present the perceptions which the actors in the fishing system have concerning fishing resources. Under the umbrella of the term “actors in the fishing system”, we include fishermen, marine biologists, economists (those who work in the area of fishing), politicians dealing with this sector, ecologists, fishmongers and administrators of the fishing sector (Secretaries of the Confréries).

We present the images and the perceptions of the resources as well as the judgements made with regard to specific interventions in the sector. In this manner, the different ideas about the resources: what they are like, whose they are, and, therefore, who has the right of access to them, offer us explanations to be borne in mind when we contemplate making any further intervention in the system.

In this research some of the contributions and estimates of Social Psychology and of the Interpretative Social Sciences have been taken as points of reference (Geertz, 1983; Clifford and Marcus, 1986...), in regard to the study of discourse and everyday speech. We take as a starting point perspectives which concede an important role to language in the formation of “social reality”, not representing it, but constructing it.

In the presentation of the results of the analysis, we have included the explanations which all the actors give in each of the sub-sections where we present the perceptions of fishing resources. However, we have not stated which affirmations come from which of the actors. That is, in the different constructions of "Fishing Resources" all the different groups of actors involved are taken into account, but without separating the constructions into their respective groups. Different constructions may be made by one person, or the same construction may be made by different people (Banister et al., 1994). We include a chapter in which we analyse the points where certain divergences may occur due to the different characteristics of the groups.

II. METHODOLOGY OF THE PROJECT AND THE SAMPLE

From this perspective, the discourses are not understood as something pronounced by a specific actor and with direct correspondence to opinions or perceptions, but as the reproduction and transmission of varying ideas with respect to these, which make possible different positions, and which have varying effects. Thus, the discourse of politicians, scientists, etc., is inserted into the social fabric giving rise to diverse lines of argument which are configured at the side of other, “real life” experiences and workaday discourses.
Qualitative methodology is the one which best suits our objectives. The technique used is that of the individual semi-structured interview. Subsequently two kinds of analysis are made; one, of the interview content, and also an interpretative analysis.

The semi-structured interview is carried out face to face, and is based upon certain pre-defined thematic axes, which function as guidelines, marking clearly the common aspects to be dealt with in each interview. This methodology will allow us to obtain the maximum diversity of significations generated with respect to a specific object. Representativity is not the most important factor; rather, it is the existence of different, and minoritory, points of view, thus achieving the maximum possible amplitude in argumentation and diversity of perspective. Through this technique and this methodology, therefore, we give priority to diversity and argumentation, rather than to representativity and coincidence.

INTERVIEW SCRIPTS

For the semi-structured interview, a basic guiding script, containing the four basic topic areas to be dealt with during the interview, was composed. We wanted to know each actor's thoughts on:

a) his or her individual activity in relation to general fishing activity.
b) the current situation in fishing,
c) how he/she sees, and what judgements he/she makes of, the other actors who intervene in the fishing system.
d) certain interventions which have been made in his/her specific medium: the installation of artificial reefs, the creation of protected marine areas, and the formation, by the European Union, of a common fishing legislation in the Mediterranean.

The references to resources and to the medium during the interviews logically, constituted an aspect of great importance, and one to which continual allusion was made, although it was not a subject introduced directly. That is why we deal with them here as a specific topic.

PROCESS OF ANALYSIS

The analysis of the data is directed towards the in-depth comprehension of the situations or persons under analysis. Throughout qualitative analysis processes, one tries to obtain a deeper understanding of what has been studied, and there is continuous refinement of the interpretations made. This methodology for analysis comprises two principal phases (Taylor and Bogdan, 1992):
- In the first phase, a progressive uncovering is carried out. Themes are
identified, and concepts and propositions are developed.
- The second phase consists of the de-codification of data, the constant refining
of the comprehension of the subject of study, and the drafting of results.

From this process of re-codification of the material and its posterior
reconstruction for presentation has emerged the scheme which we present,
with extracts from the interviews which make it possible to follow the
interpretation we have made of this material, and the conclusions we have
drawn from this interpretation.

THE SAMPLE

We considered it necessary to take a sample which included all the different
actors involved in the fishing system; specifically, seven types of actor:
fishermen, marine biologists, economists, politicians, ecologists, fishmongers
and administrators of the fishing sector.
A total sample of 25 people were interviewed, which breaks down thus: 12
fishermen, 3 marine biologists, 1 economist, 2 politicians dealing with this
sector, 3 ecologists, 2 fishmongers and 2 administrators of the fishing sector.

a) Fishermen: due to the diversity which characterizes the fishing sector in
Catalonia, the following criteria have been taken into account: the diversity of
fleets operating off this coast (trawlers, purse-seiners, and "craft" fishermen);
the different places which the subject may occupy in the productive process
(skipper, engineer, sailor); the port to which the individuals belong (northern,
central, or southern Catalonia); and the years of experience in fishing of each
individual.

b) Biologists: We considered it necessary that the biologists chosen worked in
different research centres

c) Economists: Only one individual from this group of intervening actors was
interviewed, due to the lack of tradition of Economics applied to fishing in this
country.

d) Politicians: we opted for interviewing one representative of each of the
administrations with competence for fishing matters in Catalonia (Spanish State
Administration and Autonomous Catalan Administration).

e) Ecologists: the selection criteria for ecologists was that they must belong to
different organizations.

f) Administrators of the fishing sector: these were chosen from different ports.

g) Fishmongers: the choosing of fishmongers was also carried out in regard to
the ports where they work.
III. PRESENTATION OF THE ANALYSIS OF THE INTERVIEWS: IDEAS ON FISHING RESOURCES, AND IMPLICATIONS FOR FISHING ACTIVITY AND FOR MANAGEMENT OF THE FISHING SECTOR

The corpus of the material has filled 312 typed pages. In order to carry out the analysis we have taken into account the direct or indirect references which emerged in the speech of the actors being interviewed concerning resources at any time during the interview and not merely in reply to the questions specifically about this subject.

Diagram no. 1:

PART ONE: HOW THE RESOURCES, AND THEIR CHARACTERISTICS ARE PERCEIVED

From the reading of the material emerge different ideas regarding the fishing resources, which, in order to simplify their presentation, have been divided into two thematic blocks.

The first thematic block includes the constructions regarding the ideas about resources, to whom they belong, and who may have access to them. Specifically, with respect to the first block: conceptions of or beliefs about resources are found expressed in terms of their constant availability (whether or not the stocks can be exhausted), the abundance (if these stocks exist in quantity or not), and also in their state (Deterioration and quality). These ideas logically combine among themselves in different ways and the implications regarding how to act upon them are given in greater detail in the explanations made of the causes or the reasons for exhaustion or spoiling of resources, together with the suggestions which were made to solve these problems, and/or explanation of, and the reasoning given for, specific actions.

The second block collects together the ideas which are constructed in the texts concerning the ownership of resources, who, in fact, they belong to.
In regard to the ideas of ownership of resources several concepts are constructed in the discourses: as goods which belong to the public, or to the community, or to corporations, which implies different positions with regard to the use which should be made of them, and also to how they should be managed.

BLOCK 1: VIEWS OF FISHING RESOURCES

The conceptions concerning fishing resources revolve around three thematic axes: one which has to do with the constant availability of a given resource, another with abundance, and the third, with the condition (state) in which these resources are found. Here we present the variability of constructions which these three pivot-points have in the discourse, but we will develop the aspects which in the interviews have been argued in greatest detail in the second and
third parts, where we discuss which causes, explanations, and suggestions have been put forward.

The explanations and ideas associated with each of these three axes are presented in each section in order to facilitate their exposition, although in fact the three aspects are inter-related.

a). Permanent Availability Of Fishing Resources. Inexhaustibility Vs Exhaustibility

We speak of permanent availability of fishing resources when these are considered inexhaustible or exhaustible. The references to the subjects of inexhaustibility/exhaustibility are two aspects of the idea of permanent availability which we find in the discourse of the actors. Although this discourse concentrates mainly on the idea of exhaustibility, the idea of inexhaustibility is constructed directly or indirectly, as may be observed in the following extract, where it is stated the the fish stocks will never run out:

"lots of fish breed here, it's... it's wonderful. It doesn't matter how many fleets come to fish here, the fish has never run out, (...) and it never will"

Or, even that resources are increasing, as seen in the next extract:

"(...) there's more and more fish (here) all the time"

This idea of inexhaustibility may be based on a confrontation of popular knowledge and scientific knowledge, as seen in the following extract, where the fishermen, speaking from experience contradicted some biologists who maintained that the fish was running out, with the final triumph being for the fishermen, who sent the biologists away:

"some biologists came, (...) and because they said that we had to stop fishing for sardines and anchovies ("blue fish") for a time and all that, because they said that the fish was running out. And the owners of the boats, the skippers, those of us who own boats and make our living from the sea, we were sure that the anchovy wasn't running out, it was just the opposite, they were reproducing, and so we showed the biologists the door."

The second belief, that the resources are exhaustible, and which, in fact, is a very well-developed idea in the conversations, is based on certain causes which explain and give rise to a series of proposed actions which we will explain later.

Thus, this idea that fishing resources may run out is present in many different forms. One of these is to state that these resources are finite or limited:

"(...) the sea has got limited resources...finite, I mean, they're not unlimited" Or "our material is finite, isn't it?”
In the following extract this idea of limit is explained by making reference to the general vision of the sea as something big, and contrasting this with its depth, which is not so immense.

"Sometimes we ought to go down a bit, take a vertical section of the sea, and see what's happening underwater. Of course, we see it like this and we something immense, and, well, it is immense, what we see, but it isn't immensely deep. Underwater, it's all very limited."

We also find the idea of exhaustibility expressed where there is the idea of not being able to fish for anything:

"We'll get to the point where... if we go on like this we could get to the stage where we won't be able to fish for a single thing."

Or when it is said that not only will the resources run out, but also the water:

"(...) a day'll come when, when... (laughter), there won't even be any water left in the sea"

Or, referring to real-life experience, of having seen fish disappear:

"And me, I've seen lots of fish disappear. For example, here in Tarragona, the mackerel have all disappeared."

The idea that the sea is exhaustible, that fish stocks do run out, receives different levels of value or importance in relation to the fishermen's economic resources. In the following extract reference is made to the idea that if, in the zones with less economic power the fish runs out, they will not be able to go to other zones:

"We've also got to look at a question of possibilities. If you're from one community, you can't go..., of course, let's see: imagine a stock of king prawn in an African country, right? What happens is, for those people living there, is that if their king prawns run out, or their fish or whatever, they haven't got anything else, but your European shipowner, or Japanese, or Korean, well, if something runs out on him, he just goes somewhere else..."

b.) Perceptions On The Quantity Of Fishing Resources

Another idea which emerges from the reading of the interview transcriptions, is that of the richness of the marine medium. This idea of abundance or non-abundance of fishing resources emerges either in the form of a comparison; the abundance which can characterize other areas of the Mediterranean in comparison to an actor's local zone, or it emerges in the context of real-life experience at a local level.

The idea that the sea is rich in resources is defended by the abundance of the catches taken in a certain place, like the one referred to in the following extract:
“and it’s rich, y’know, the delta, it’s rich, rich. You won’t find many places that are overfished as much as this one, and they take... you’ve seen it, the load of fish that they catch here every day, every day, every day...”

Direct reference is made to the poverty of the Mediterranean:
“(…) our Mediterranean is poor, well, the continental platform is. That means it’s poor as regards resources.”

Or this idea is expressed by comparing different Mediterranean zones:
“(…) France or Italy (…) have got seas that, as I understand it, are a lot richer than ours (…).”

Or by describing its characteristics: there is the idea that it is closed, and that men have been harming it for a long time:
“(…) the Mediterranean, due to the fact that it’s a closed sea, (…) has characteristics which define it as a poor sea, and then there have been the actions of man on it for thousands of years.”

c.) Perceptions On The State Of Fishing Resources

Together with the permanent availability of resources, which refers to their survival as stocks, and to the richness of the medium, referring to quantities of a given resource in a certain area, the conceptualization of the resources refers to the “state" of fishing resources. By the discursive references made we understand the resources in relation to whether the medium or the resources themselves are in a state of deterioration. All the ideas referring to the quality of the medium and of fishing resources have been included.
“(…) it’s very, very bad. (…) the sea isn’t regenerating as it used to, or, I don’t know, but it’s really bad.”

“and the sea’s really burned out (…)”.

The poor state of the sea is found explained in medical terminology, and “surgery" is needed, it is claimed, in order to cure it.
“(…) the sea is ill, and something has got to be done to cure it (…)”.

There are comments which speak of a certain, very specific zone, that which the actor knows:
“But this part, this area here, it’s in a bad way, really bad -ooh, it’s about on its last legs, it is”.

But there are also references on a world level:
“Terrible. All over the world, it’s in an awful state. Awful".
Block 2: THE CONCEPT OF OWNERSHIP OF FISHING RESOURCES

Existing in parallel to the conceptualization of resources, is the idea of appropriation of fishing resources. If so far we have seen “how” the actors perceive the fishing resources, now we will see how they perceive the ownership and appropriation of resources. In this sense, in the discourses of the different actors, several different perceptions become apparent. Fishing resources can be seen as public (belonging to everyone or to no one), as belonging to the (local) community, or as belonging to the fishermen (in this case it is called corporate appropriation).

a.) Resources A Public Property.

One of the constructions of ownership of resources contains the idea that the resources belong to nobody, or, alternatively, to everybody (resources seen as something public). However, distinction is made, when expressing this idea, between ownership of the means for exploitation and ownership of the sea’s resources.

“I think that the fisherman is a usufructuary of public property, that’s the way I understand it. The fisherman hasn’t bought anything at all, the fisherman has only bought a killing machine. But he hasn’t bought what he kills.”

Also, a comparison is established with other sectors, such as the agricultural sector, where farmers can buy the land they exploit, whereas the fishermen cannot do this:

“The sea doesn’t belong to the fishermen, does it? No, the sea belongs to everyone. We’re not like the farmers, who have bought their land, and look after it, and it’s theirs for ever, to do whatever they want with it, are we? I haven’t bought any part of the sea, to go and fish in it, I mean, the sea is just as much yours as mine, or anybody’s”.

The idea that these resources belong to everyone, that they are public property, allows for the adoption of different positions with regard to the legitimacy of the fishermen’s exploitation of this public property. It may be that, because it is public property, they consider that they have no special right to it, as is observed in the following extract:

“I mean anybody can go there to fish for anything he wants, I can’t go and say..., like, you know, sometimes we get all angry because (anglers) go after tuna, or after swordfish, it’s a hobby for them, or they sell them, too, and that is queering my pitch, ‘course it is, because I earn my living from this, me, but they’ve got a right to earn their living from doing that too, haven’t they? Or to do whatever they want. There are lots of fishermen who think it’s our sea, and it isn’t, the sea belongs to everybody, doesn’t it?”
"I understand that they feel like the owners of the resources, but I can't agree with this attitude"

Or even though it belongs to everyone, the legitimacy or privilege of the fishermen over others can be argued, since they make their living from exploiting these resources:

"For me, what is vital is that we think that the resources belong to everyone, that they are common to all, but that the fishermen in any case have priority when it comes to exploiting them (...)"

This idea of public property also creates a demand for more regulation and control:

"I think that it should all be absolutely regulated. When a person makes his living from public property, he's got to be tightly controlled."

b.) Resources Seen As Community Property:

The resources are also perceived as goods for local appropriation, communal appropriation, in which the idea of belonging to a territory or the idea of identity play an essential role.

In this case we find discursive constructions referring to the community through the use of the term "us":

"We don't want people from other places coming and doing us the favour of stealing our fish when their own supplies have run out".

c.) Resources Seen As Corporative Property:

The perceptions relative to corporative appropriation of resources are also present in the discourse of the actors:

"The fishermen, especially those who work on trawlers, are not used to anybody sticking their oar into what they consider to be theirs, are they? They think they have the right, that it's their territory (...)"

PART 2. CAUSES OF EXHAUSTION AND SPOILING OF FISHING RESOURCES.

The actors perceive the exhaustion of fishing resources in different ways. For some, this exhaustion is due to natural factors, whereas for others it is because of human activity (not only fishing activity, but also industrial activity and pollution).
One part of the perceptions concerning the exhaustion of the medium are supported by the fact that there are species which have disappeared because of environmental changes produced strictly by natural causes:

"Specifically, in the Alborán sea, a zone where all the craft fisheries fished for the anchovy, stocks of this fish have been in a state of total collapse since '83-'84(...) in this case it cannot be attributed to the actions of man, because it is one of those (...) cases where environmental circumstances are the reason why a species has...has greatly diminished in number."

However, the most general perception is that which sees in human action the principal cause of the exhaustion of resources. In this case, the fundamental distinction is between causes deriving from extractive fishing activity, and causes deriving from the pollution produced by other kinds of activity.

In the case of extractive activity the problem is rooted in over-exploitation. Over-exploitation is perceived, either as a result of excessive fishing:

"There are... there is over-fishing (...)"

"It's non-stop, every day, tons and tons of fish every day."

Or it is perceived as incorrect fishing, as in the case of the capture of reproducing individuals, the capture of pregnant females:

"You see, they go there, where the females are"

"(...) they catch a lot, a lot, a lot, ... now then, if it's exploited too much, a day'll come when they'll say: "Hey! There aren't any tuna(...)" they kill all the mothers, you see, I mean, they kill...they're all pregnant at that time, and of course, they don't let them re-populate, and, of course, then what happens? Now they catch a lot of fish, but in four or five years' time, they'll be saying:"There aren't any tuna-fish in the Mediterranean."

The other part of the explanations give the idea of exhaustion produced by fishing activity in opposition to the idea that exhaustion or spoiling of the medium is caused in a more indirect way, such as through pollution.

Alongside fishing activity, the actors believe that the contamination to which the marine medium is at present subjected plays an important part in the process of exhaustion of resources:

"(...) the sea is becoming exhausted because people are using too many insecticides on their crops (...)"

"the present situation of fishing is very bad, (...) because people are over-exploiting. In every sense. (...) there is (...) a lot of pollution (...)"

"(...) because it's not only the fisherman who's a predator! Industry is a predator, swimmers are predators, anybody who owns a boat is a predator, those who own yachts are predators, the things we throw away, the garbage, that's a predator, I mean, in this sense, we're all
predators! We all affect the environment. Not just the fisherman, the fisherman isn't the only one, not by a long chalk! We're all predators, to a greater or lesser extent."

"And...and all those predators and all those external elements affect the sea, and the fish. It could be the fisherman who fishes badly, it could be industry, that doesn't dump its waste correctly, it could be a city that doesn't have proper sewage treating facilities, it could be a river that is contaminated, it could be a beach, it could be anything, or these oil-tankers that go by here that clean out the bilges, it could be absolutely anything, it's all affecting the environment."

PART 3: EXPLANATIONS OF THE CAUSES OF EXHAUSTION OF FISHING RESOURCES DUE TO HUMAN FISHING ACTIVITY

The references to over-exploitation are based upon explanations of the causes which lead to this situation. The explanations make reference to four main aspects, which are inter-related, although they are not present at the same level within the discourses. These are: industrialization, market economy, non-professional fishing activity, and competition between the fishermen themselves.

Industrialization in the fishing sector is perceived as an important aspect in the discourse regarding the exhaustion of resources. One the one hand, the fisherman who acts as a businessman, is forced to re-coup the money he has invested in means of production, which leads him to put pressure on the resource in a different way from the fisherman who does not have this mentality.

On the other hand, the modernization of means of production as a result of industrialization/modernization also implies a greater pressure upon the resources and an increase in fishing effort:

"(...) we are seeing how industrialization is destroying much more than just craft fishing, which can be, all right, let's say, very selective, but we must not think of craft fishing in an idealistic way either, but what is certain is that there are some resources to which everyone has had access up to now, and if they've had access up to now, it hasn't been by chance, it's been because the communities which depended on the resource, or which depend on the resource, have had, if you like, traditional systems of management. A system of...how can I put it? of (...) common regulation of patrimony. A system of regulation which has worked over a long period of time."

Economic differences, as well as the limitation of fishing effort itself, also determine the possibility of exploring and exploiting new fishing grounds. In this way, the kind of productive unit from the economic/company point of view, will determine the dependence upon, and the level of exploitation of, local
resources, making it possible or not to change places in order to go and look for resources in another zone:

"We've also got to look at a question of possibilities. If you're from one community, you can't go..., of course, let's see: imagine a stock of king prawn in an African country, right? What happens is, for those people living there, is that if their king prawns run out, or their fish or whatever, they haven't got anything else, but your European shipowner, or Japanese, or Korean, well, if something runs out on him, he just goes somewhere else..."

The transformation of markets, above all with regard to integration into Europe, with massive importation of fish, also leads to an increase in the pressure placed upon fishing resources, due to an increase in the size of catches in order to compensate for the reduction in prices:

"(...) these systems are now under a terrible strain, first on account of the fleets which come from other places; secondly, because of our entry into a market economy, because, of course, this generates new needs which you have to cater for, and if you want to cater for them with only the resources that you had before, which are limited, of course, if you make the needs unlimited and your resources aren't unlimited, then what you end up doing is causing an exhaustion of these, isn't it?"

Other explanations refer to the increase in pressure on fishing resources due to non-professional fishing as a factor which also contributes to the exhaustion of resources. The activity of fishing as a hobby is criticized:

"(...) the people who do underwater fishing and who take all kinds of things, things from the rocks (...) And these people have done a lot of damage".

Also the activity of "poachers":

"(...) and what those hobby fishermen blokes do (...) is, without any kind of permit or licence, they get mussels, they take sea-urchins, wearing breathing gear, oxygen, they...they do lots of things that they mustn't do."

Another kind of explanation regarding over-exploitation and the exhaustion of resources makes reference to the competition between the fishermen themselves, which manifests itself in terms of selfish behaviour, a lack of vision for the future, and, in conclusion, in the changing from a form of collective, communitary or group behaviour to a type of behaviour determined by economic rationality and individualism. In this section a whole series of characteristics is included which, according to the actors, within the system also leads to an increase in pressure on fishing resources:

"I mean, if I throw a little fish back, a little octopus (...) and you're passing by, you'll catch it, and instead of throwing it back, you'll take it with you, and you'll take it to the auction. (...) the fishermen are at fault here, I'm a fisherman myself, and we're too, ... (...) we think If I don't take it, you will"
"(...) this fish is a migrant fish, isn't it? It comes here to lay its eggs and then it probably goes off to die or something, I don't know. But of course, you've caught it, haven't you? So what happens? (...) perhaps we ought to ...(throw it back) but we've got to take it, 'cause if we don't take it here, they'll catch it at Almería, or they'll catch it at Málaga won't they? (...)"

These factors, which trigger off the process of over-exploitation of fishing resources, also influence other factors such as the non-adherence to fishing norms:

"(...) (the laws) are still the same, or they're even stricter, but...people don't really respect them. (...)"

PART 4: PROPOSALS MADE IN ORDER TO AVOID THE EXHAUSTION OF FISHING RESOURCES

When they speak of the exhaustion of resources, the actors also perceive the solutions which ought to be applied. Analysing these suggestions, we see that they can be organized into two large groups: those which refer to raising the level of awareness in the fishing sector and in the general public with respect to the state of resources and their possible exhaustion; and the proposals which point towards improvement in the management of fishing activity.

The perception of the sector concerning the exhaustion of resources leads directly to the necessary making people aware of this problem and of the factors which contribute towards it. This refers to "waking up" both the people in the fishing sector and the general public. That is, it is a case of a global lack of information:

"You have to supplement it with education (...) explain that really the resources are in a terrible state, that the Mediterranean is being over-fished..."

"I mean, I think that (protected marine areas) could be used in order to teach people. Look, when man doesn't intervene, what do we have; and look what we get when he does intervene. I think that it's about, creating a collective conscience, and in general, creating a collective culture, with regard to the environment."

Or, if the information already exists, greater importance must be given to it in the fishing sector, and people must act in consequence with it:

"We've reached the point where we must say "listen, the sea can't stand this amount of effort. We've got to give it a bit of a rest. We've got to limit ourselves."

The improvement of management is a proposal directed fundamentally towards an improvement in politics. a proposal which the public administration would have to bring about:
"not only the Catalan fishing grounds, but what have been called the
"national fishing grounds", are badly managed."

"one of the things that we think is that now is the time to create a new
system of management, a new management methodology."

"We've reached the point where we must say "listen, the sea can't stand
this amount of effort. We've got to give it a bit of a rest. We've got to limit
ourselves".

"And we've got to allow rational exploitation, but with rational
maintenance of the environment"

The improvement in management is also dealt with by the actors in a broader
sense, also implying a series of measures which would result in the progressive
recovery of resources. These measures are basically the following: reduction in
fishing effort, limitation of access to certain fishing zones, increase in the
participation of the fishing sector in management, stricter enforcement of
existing fishing regulations, and the prohibition of certain kinds of fishing gear.

Reduction in fishing effort is proposed in two ways: by limiting the size of fleets:

"(...) there's over-exploitation. In every sense. There are lots of people,
lots of fishermen, (...) lots of boats (...)"

and by reducing the time spent on fishing activity:

"If here we earn so much by working less, working fewer days, and the
sea, there are two days when the sea can rest, What used to happen
when the sea rested? On the Monday, you used to find there were more
fish (...) Now we could all reach an agreement, we could say: On
Wednesdays, no fishing. Go out Mondays and Tuesdays, and on
Wednesdays not go out. (...) it wouldn't have to be just l'Ametlla, though;
it would have to be l'Ametlla, Sant Carlos (...) Cambrils, Tarragona.
Because, of course, if for example the l'Ametlla fleet doesn't go out, but
the others do, the fishermen will say "This is stupid, 'cause if we don't go
out to fish, the others will go, and they'll take all the fish (...) Now then,
this is an agreement, it's awareness of...and of course, what happens?
That it's very difficult to get everybody together, and for them all to agree
to something like this, it's very difficult."

In both cases the reduction in effort would entail a reduction in the catch taken.

The prohibition of fishing in certain places is also mooted as a way of obtaining
a reduction in the size of the catch. This limitation would be brought about
through the creation of protected marine areas (natural parks), through the
territorialization of certain fishing zones, whether by impeding access by
placing artificial barriers around them, or by assigning certain zones to certain
groups for their exclusive use. All this is considered necessary, both to bring
about the recovery of the resources:
"reserved areas, let's call them that, reserved zones, so that the fish can reproduce".

and so that the process of exhaustion will cease:
"I think it's a good thing. I mean, at least the Medes islands, (...) I think that... it's a place which has recovered, it is totally recovered."

This positive judgement of the limitation of access to certain fishing zones also argues the idea that putting this into effect in a specific zone has positive repercussions in the surrounding zones:
"(protected marine areas) This is the only way of repopulating the sea. (...) A place where fish could breed, and then spread out everywhere from there."

However, there is the contrary argument, which states that to create a protected zone in the midst of over-exploited or deteriorated zones is useless:
"the truth is that this isn't really my subject, but (...) I don't really see the point of creating a mini-protected zone all surrounded by areas which have been massacred, do you?"

Also as an indirect limiting measure, the imposing of close seasons, something which is considered very positive for the recuperation of stocks, has been suggested.
"we want a close season, a programmed break, of two months, so that the fish can reproduce. (...) That really would be an improvement."

Another of the solutions proposed was that the professional fishing sector should have a more active role in the management of fisheries. It is a case of demanding an increase in the competence of the sector, which would therefore mean an authentic system of co-management. In this sense, it has been suggested that the Patrons Majors (Heads of the Confreries) should have more powers, such as the right of sanction:
"(...) The administration perhaps ought to give more power to the Patron Major, because he is the foremost representative of the confrerie, so that he could sanction things one way or another."

It has also been suggested that craft fishermen should intervene in the design of a protected marine area:
"(...) for me it would be very important that the craft fishermen (...) I'd make them participate in the design of the (natural) park, and I'd exclude the other kinds of fleet."

One of the reasons given to explain the exhaustion of fishing resources is the non-adherence to the norms governing fishing activity. Thus, the regulations of fishing are seen as something positive, but adherence to these are demanded in order to guarantee the survival of the resources.
"(...) Well, by applying the norms that we already have, for example"
As a measure for recovery of resources the prohibition of certain kinds of fishing gear, those which are considered non-selective has been proposed. Being non-selective, these gears capture immature individuals, which contributes towards the exhaustion of resources. Thus, this may be approached from the point of view of reduction in fishing effort:

"if what we want is to prevent the destruction of the sea bed because of the use of trawling methods, of whatever kind, ...In my opinion, the logical thing would be to re-think drastically the regulations on trawling, and make a reduction in fishing effort."

Or even by the total elimination of certain gears:

"So The solution to the question of the destruction of posidonia and other species lies in eliminating fleets , that's all. (...) there are people who think (and, I believe, rightly), that according to the types of fleet, if they can't reconvert to other systems of fishing, (for example, those little trawlers, that have to operate close in to the coast), those are fleets which have to be eliminated."

As occurs with other proposals, the necessity for making people aware, and the necessity for improvement in management do not come up in isolated fashion; rather, they are inter-related, although they occur at differing levels, using different arguments, and with different emphasis.

DIFFERENT PERCEPTIONS OF THE RESOURCES ACCORDING TO THE DIFFERENT GROUPS OF ACTORS

So far we have made a presentation of different interpretations in regard to fishing resources. To do this we have taken into account all the actors involved in the fishing system. Now we present some of the divergences in the perceptions, or antithetical perceptions, which occur between the different groups of actors. By this, our aim is to underscore the influence which one's own experience and the particularities of each collective can have on these more corporative perceptions.

In order to do this we analyse briefly two specific aspects of the perceptions studied which show very clearly the corporative sense of the lines of argument used. These are, first, the group of arguments which use the contrast between "popular knowledge" and "scientific knowledge" (and which are used as arguments of knowledge), and, secondly, the lines of argument which contrast "experience" with "science" (and which are used as arguments of truth).
a.) Contrasting Of "Popular Knowledge" And "Scientific Knowledge"

In the perception which the actors have of the characteristics of the resources, analysed earlier, reference was made to the permanent availability of resources.

Although we can find the ideas of exhaustibility and inexhaustibility presented simultaneously in certain discourses within a given collective, it is the group itself which determines, to a great extent, these perceptions.

Thus we find that the idea that the resources are not being exhausted, and that, on the contrary, they are increasing, is put forward by a fisherman:

"lots of fish breed here, it's... it's wonderful. It doesn't matter how many fleets come to fish here, the fish has never run out, (...) and it never will"

The idea of inexhaustibility is based, in this affirmation, on the fact that the catches, obtained daily, by a fleet of some considerable size, are abundant. It is an affirmation which is founded on the actor's own experience: his daily activity has proved to him the existence of the resource. It is a case of direct experience which is contrasted with a perception attributed to a group of different actors: the biologists. For this reason the opinion of the biologists does not have validity, for this actor.

"some biologists came, (...) and because they said that we had to stop fishing for sardines and anchovies ("blue fish") for a time and all that, because they said that the fish was running out. And the owners of the boats, the skippers, those of us who own boats and make our living from the sea, we were sure that the anchovy wasn't running out, it was just the opposite, they were reproducing, and so we showed the biologists the door."

A similar situation may occur in relation to the perception of the richness of the medium. In the analysis of this aspect we presented the existence of two contrary perceptions: the sea is conceived as rich in resources, while at the same time there exist visions which consider it to be poor.

If we take into account the actor who makes each of these affirmations, we realize that in this case, the opposition of popular knowledge-scientific knowledge is repeated. The fisherman affirms the richness of marine resources basing his arguments on the fact that every day large catches are obtained.

(speaking of the sea): "and it's rich, you know, the sea, it's rich, rich.

The argumentation of the richness of the medium is made based upon the abundance of the catches taken, despite the over-exploitation to which the area is exposed:

"You won't find many places that are overfished as much as this one, and they take... you've seen it, the load of fish that they catch here every day, every day, every day..."
The biologist, on the other hand, bases his affirmation of the poverty of the sea on scientific knowledge:

"(...) the Mediterranean, due to the fact that it's a closed sea, (...) has characteristics which define it as a poor sea, and then there have been the actions of man on it for thousands of years."

b.) Experience Versus Science As Arguments Of Truth.

Knowledge concerning the resources, in the case of the biologists, is knowledge which is endorsed by both the official discourse and the scientific knowledge itself which supports this official discourse:

"the FAO started to recognize it in '93, (...) that the fishing-grounds were in a poor state. Now, in 1995, it's published a report (...) where they recognize openly that the majority of fishing-grounds are over-exploited, or that they are subjected to plans for recovery, or fully exploited, etc., etc."

Whereas, in the case of the fishermen, the references to daily experience and to the immediacy of their activity in contact with the resources, are the means of support for their knowledge. The idea is that the biologists have little contact with the medium:

"But what those people do, trawling in that way here, it's a crime. If... these people, biologists, had to put on a wetsuit, and go underwater, and have a look at the destruction they cause, perhaps then they'd realise what they're doing."

On the other hand, these ideas relative to the the distance between fishermen and biologists and that scientific knowledge is produced out of touch with the medium itself, in laboratories, etc., influence the communication between biologists and fishermen, as is argued by a biologist speaking about his work:

"(...) if a biologist appears, seated at a desk, or inside a laboratory, and says: you can't fish at this time of year; although he shows them the reasons for saying this, and says why, the people he is talking to won't....listen very closely to those reasons.

IV. CONCLUSIONS

Throughout this paper we have been able to see different aspects which form the perceptions which the actors in the fishing system construct concerning marine resources.

We have spoken at the beginning of the perceptions relative to the characteristics of the resources, as defined basically by three ideas: the idea of permanent availability (in relation to the inexhaustibility or exhaustibility of the
resources), the idea of quantity (richness or poorness of resources), and the idea of the state of the resources (deterioration and quality). Alongside these perceptions we have also collected the perceptions relative to the ownership of fishing resources (public, communal or corporative ownership).

In the actors' discourses, the perceptions of the resources are accompanied by reasoning or explanations, on the one hand concerning the possible causes of the exhaustion/spoiling of resources, and, on the other, concerning the reasons behind these causes. The diversity of perceptions, in this sense, is important. The actors speak of over-use of (both referring to an excess in the size of catches and to the capture of breeders), but also of pollution, and of natural causes which can bring about the phenomenon of spoiling, or which could lead, according to the actors, to exhaustion of resources.

At another level we have gathered together the perceptions which the actors have regarding the causes which have led to the current state of the resources. In this section the situation of competitiveness between the fishermen themselves is indicated as a factor which results in the non-adherence to laws, and in incorrect forms of fishing. On the other hand, responsibility is also attributed to non-professional fishing and illegal fishing. Moreover, one of the causes which is perceived as a fundamental cause of the exhaustion of resources is the very process of industrialization which the fishing sector is undergoing. Another cause is the changes in the market.

In the fourth part of the paper, we have collected together the perceptions which the actors have concerning the solutions to the problem of spoiling and exhaustion of resources. The series of proposals which appear in this section take two principal forms, which may frequently appear together and which are, in fact, inter-related. On one hand, the need for raising levels of awareness with regard to the subject of fishing resources, and on the other hand, the necessity for improvement in the management of fisheries.

The differences which arise between the perceptions which different actors have when dealing with the same question are often to be explained by the contrasting of "scientific knowledge" and "popular knowledge" or everyday knowledge, which are used as arguments of authority by the respective groups of actors.

Up to here we have recapitulated the perceptions which are constructed around the concept of fishing resources. As we have seen, a great diversity of arguments appears, but we can also see which are the arguments which have not emerged from the discourses of the actors.

Basically there are two questions whose absence we consider to be important. They are, first, within the framework of the proposals made in order to avoid the exhaustion/spoiling of resources, the subject of professional training for fishermen. Although the actors speak of educating the general public, and of the necessary process of "making aware", they do not mention at any time the
advantages of better training schemes for the sector as a possible way to achieve a better exploitation of resources.

On the other hand, in this same context of proposals for the recovery of resources, none of the actors make reference to the limiting of the catch, although this is one of the most widely-used solutions in several countries, and one of which some actors might well be aware.

This fact -that certain themes do not appear in the actors' discourses-, causes us to concentrate our attention on the importance of the perceptions existing at the present time in the Catalan fishing sector and on the implications which these perceptions may have regarding the maintaining of fishing resources, as well as for the management of fisheries in general.

In the first place, it is necessary to point out the sensation of "feeling unprotected" which, as we have seen, exists in the sector. Even though a positive opinion is held of the current regulations governing fishing (and this is more so when the actors compare this legislation to the legislations governing fishing in other countries), the actors denounce the fact that it is not being complied with. Secondly, the fishermen do not feel that they are being encouraged to respect the norms, or to have respect for a resource which may be exhausted, due to the competition which occurs at different levels in fishing activity and which leads to over-fishing and to the exhaustion of resources.

Finally, the perception of inexhaustibility present in certain sections of the sphere of fishing must be remarked. Although the perception of spoiling or of abuse is also present, the perception of inexhaustibility of resources (despite the fact that this perception of inexhaustibility may only exist at a local level), can make more difficult, or can have a very negative effect on the efforts to halt the process of exhaustion of resources.

With these three examples, we believe that the need to bear in mind the perceptions currently held in the fishing sector is clear, in order to ensure the success of future interventions directed towards the conservation of fishing resources.