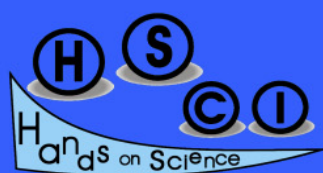


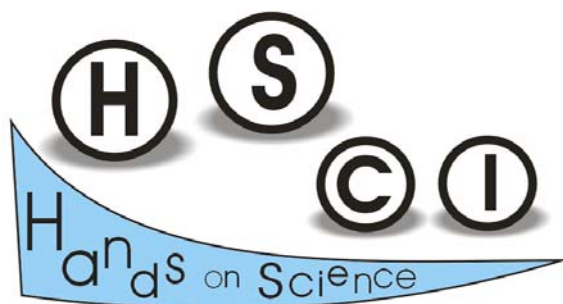
Hands-on Science

Brightening our Future

Edited by
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ERRATUM:

Page 79 in affiliation where is *Universidade de Coimbra* should be *MARE - Marine and Environmental Sciences Centre*

Recreational Angler Management in Marine Protect Area: a Case Study of Top-bottom Management

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Abstract. This study is done in a natural park (Southwest Alentejo and Vicentina Coast Natural Park - PNSACV) a marine area with an extension of two km offshore all along its coastline (Marine Protected Area - MPA).

The “recreational fishing” it is part of the tradition of the people living in these near municipalities, having inherited a taste for rock fishing and shell fishing of their ancestors.

They are deprived of a moment's notice based on a law without being heard, without anyone to defend the tradition inculcated in each. In this park, since 2006, with the first law (868/2006) several fishing management measures have been implemented like, limitations and prohibitions without studies and licenses based on dissuasive law.

In practice, the process was reversed. What should be awareness and public participation became a force against the will of the people.

The another law (Portaria 143/2009) for de PNSACV area it's even more restrictive, separating the principle of equality between nationals and resident people in PNSACV, compared to the law (Portaria 144/2009) for the entire national territory.

These restrictions were not accepted by the population who express their discontent in Sagres, Odemira, Vila Nova de Milfontes and the Assembly of the Republic in Lisbon. A working group was created and a law was changed revoked.

Currently, the most relevant restrictive measures are the “false” temporal limitation to catch white seabream, because it's only effective for rock angler; established minimum sizes and weight maximums for marine organisms like, crustaceans, bivalves, gastropods, mollusks and fish; angler fishing licenses are required.

Populations and commissions were heard and the scientific community begin working with the anglers in some studies. All should have been started here.

Keywords. Marine protect area, recreational fishing, angler, marine organisms, restrictive measures, rock fishing, Southwest Alentejo and Vicentina Coast Natural Park, top-bottom approach.

1. Introduction

1.1. Approaches to MPAs

Marine protected area – “any area of land between tides (tidal) or subtidal, in conjunction with the water it overlying and the fauna, the flora, and the characteristics and historical cultural associated with it, which has been reserved by law to protect all or part of the environment included” in IUCN, 17th General Assembly (1988) [1]. Marine Protect Areas (MPAs) are tools for ecosystem based fisheries management [2].

The ways to implement and govern MPAs have different approaches [3]:

- Top-bottom
- Bottom-up
- Marked-based

Top-bottom approach consist in states taken decisions and implement it through laws and regulations. The decisions are taken by expert advice and politics.

Bottom-up approach involve all the different players of community. The decisions are incorporate several opinions and points of views. There were examples of this approach, with success, in Portugal [4] and in Chile [5].

Marked-based approach is though markets using economic and properties rights.

As statement Gaymer *et al.* (2014) between bottom-up and top-down approaches, diverse variations or combinations of participation and governance exist [6].

1.2. Study area

This study is done in a natural park - Southwest Alentejo and Vicentina

Coast Natural Park (PNSACV) located in Southwest of Portugal (Fig. 1). It covers a land area of 60 567 ha and a maritime zone with 28 858 ha.

The PNSACV has a marine area with an extension of two km offshore all along its coastline (Marine Protected Area - MPA).

The coast is composed of oceanic sandy beaches, extensive rocky shores, small estuaries and coastal bays. The PNSACV has an extension of 130 km including in the municipalities of Sines, Odemira, Aljezur and Vila do Bispo.



Figure 1. Southwest Alentejo and Vicentina Coast Natural Park – PNSACV (green area), in Portugal

There are two types of protection schemes: the total protection (areas of total protection Article 63. ° RCM no. ° 11-B/ 2011) and the partial protection I (areas of partial protection I Article 65. ° RCM no. ° 11-B/ 2011).

The areas of total protection correspond to spaces where predominate systems and natural values of recognized value and interest, with a high degree of naturalness, which are, on the whole, a unique and exceptional

character, as well as high ecological sensitivity, corresponding to important areas of marine production, besides being places of refuge and motherhood for many species.

These areas comprise the reefs and rocky outcrops and a surrounding marine area with a width of 100 m, counted from the minimum level of the low tide of equinoctial waters.

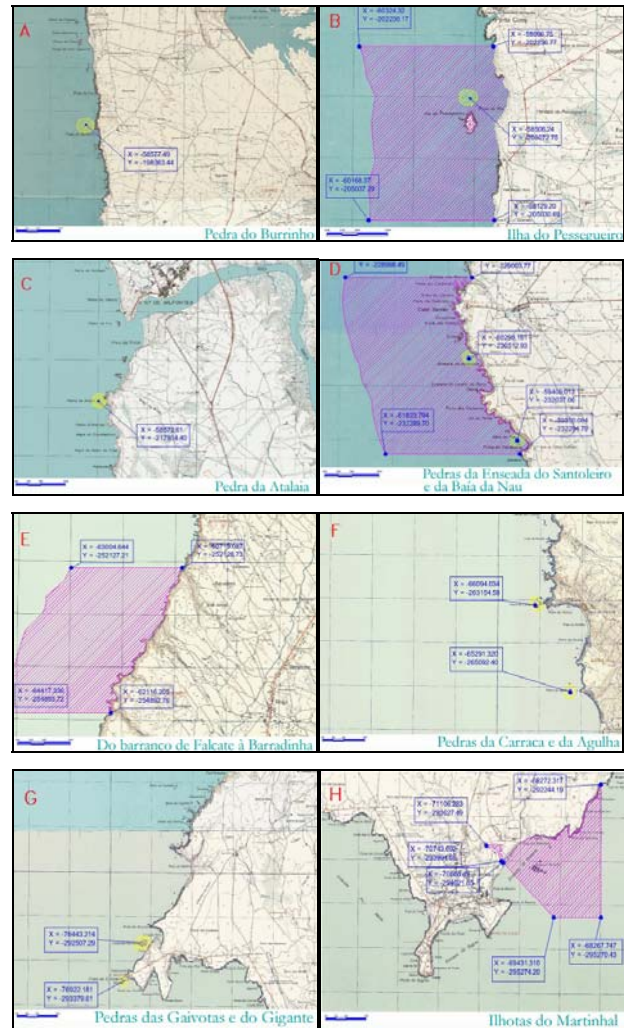


Figure 2. Arrangements for Marine protection (POPMSACV/ICNB). In yellow areas of total protection and in purple areas of partial protection. From:

<http://www.icnf.pt/portal/ap/resource/ap/pnsacv/pnsacv-maritim-interdit-pesca>

The reefs and rocky outcrops are Pedra do Burrinho, Pedra da Atalaia, the adjacent rocks to the Ilha do Pessegueiro, Pedra da Enseada do Santoleiro, Pedra da Baía da Nau, Pedra da Carraça, Pedra da Agulha, Pedra das Gaivotas and Pedra do Gigante (Fig. 2).

The priority goals of these areas is create a reserve of marine biodiversity and refuge for

some species; ensure the maintenance of values and natural processes tend undisturbed state; preserve ecologically representative examples in a dynamic and evolutionary form.



Figure 3. 22 February 2009 manifestation was organized in Sagres

1.3. Recreational Angler

The populations of sea areas always had as a tradition the following activities: fishing, sea food picking and bivalve molluscs harvesting. These activities are mainly practiced for subsistence or socialization. In the regions of Alentejo and Vicentina Coast, where the population is older and has a lower salary, the fishing ends up being an indispensable supplement to the family income.

Harvest by recreational fisheries has been estimated at about 12% of take worldwide for all fish (Cooke & Cowx 2004 *in* [7])

Veiga et al. (2010) in a study done between August 2006 and July 2007 estimated value of 147 t of fishes were harvested with an overall catch per unit effort (CPUE) of 0.21 kg.h⁻¹ per angler in PNSACV [8].

2. Legislation

In *Portaria* 868/2006, of 29 August, was implemented the follow measures:

- It was only allowed capture with hands, feet and with helped of an animal, so is not permitted to collect seafood with any instruments;
- It is not allowed to use bait;
- Maximum weight of 10 kg of fish/day;
- Maximum weight of 0,5 kg of barnacles;
- Night fishing was not allowed.

This also establish the closed period of barnacles (*Pollicipes pollicipes*), in winter which is strange because the barnacle reproduces during spring. Another thing that is amazing is the permission of captures barnacles with the help of an animal, something never done and completely senseless.

In *Portaria* 143/2009 law, is even more restrict in some points:

- The days for recreational fishing were reduced (Thursday - Sunday and Holidays);
- New interdiction zones were created;
- The maximum total weight of fish/day was reduce;
- It was created a closed period for *Diplodus sargus* (white seabream) and *Diplodus vulgaris* (commom two-banded seabream) from 1st January to 31st March and *Labrus bergyllta* (ballan wrasse), 1st March to 31st May;
- The collect of barnacles until 1 kg, was allowed only to recreational angler license holders who are natural or residents of the municipalities PNSACV;
- Night fishing was allowed only with life jacket use in PNSACV.

3. Public contestation

With the release of *Portaria* 143/2009 from the 5th of February, that defines the specific constraints in the recreational fishing activity at the SW Alentejo Natural Park and Vicentina

coast (PNSACV), the public contestation started. This discontent was widespread, and in the area of the Algarve emerged a movement of fishermen who joined in the protest and their spokesman Antonio Neves has organised the 1st demonstration of the history of leisure fishing 22 February 2009, in Sagres (Fig. 3).

At that time the new restriction measures for leisure fishing were already in force at the Natural Park from Sudoeste Alentejano and Costa Vicentina (PNSACV).

This event was attended by around 3,000 fishermen, coming from all the points of the Algarve and Alentejo, next to the Sagres Fortress. They demonstrated against the decline in the number of fishing days, new zones of inhibition, reduction of the maximum weight of fish and the creation of a closed season for white seabream, common two-banded seabream and Ballan wrasse.

After an idle car, between Lagos and Sagres, organised by a civic movement that "sea of people" met in the village, to protest against the Portaria 143/2009, published in the daily of the republic on the 5th February.

"I am against all restrictions", stated Joseph Gregory, one of the fishermen that goes up to the Vicentina coast to "entertain a little".

The opinion was general, because nobody understood the reason why they banned "fishing, between Monday and Wednesday, and during the night, and have created many zones of inhibition", added the practitioner, pointing to the various posters that showed the indignation of the demonstrators.

Private Sea? No, thanks! This was the slogan created by David Rosa another spokesman of the Commissions of Fishermen and Population of the Alentejo and Vicentina Coast that fought until the date for which the changes were made, in the fight of the fishermen and seafood catchers against Government guidelines which put into question the leisure fishing law. The symbol of this campaign can be seen in Fig. 4.

Another movement was created in the Alentejo coast, consisting of three dozens of committees of leisure fishermen from Sudoeste Alentejano and Vicentina coast to represent the interests of the fishermen of coastal strip from

Sines to Sagres.



Figure 4. Symbol of the campaign *Private Sea? No, thanks!*

Were it not for the social consequences, one could laugh, according to Carlos Carvalho, spokesman of the Commissions of Fishermen and Population of the Alentejo and Vicentina Coast, "nobody moves toward the coast to catch half a kilo of dished, still on top, without tools manufactured for this purpose, but only with the hands or the feet". "The fines imposed on seafood catchers, since almost two years ago, by nabbing seafood with utensils already amounted to 25 thousand euros." In addition, "the areas of harvesting are difficult to access," he stresses.

But the contestation also arrives to shellfish picking, which is an old fight. With the new measures, the people that live outside of the Natural Park cannot catch any kind of specie. It is argued that this restriction violates the principle of equality of the Portuguese Constitution.

What is certain is that the measures would damage the economy of the three municipalities integrated in the Natural Park (Aljezur, Vila do Bispo and Odemira), because it is the leisure fishing that maintains the small trade in months of low season tourism.

On the 27th February 2009, it took place the public deed of the National Association of Recreational and Sport Anglers (ANPLED), which was founded to defend the recreational angler's legitimate rights (Fig. 5).

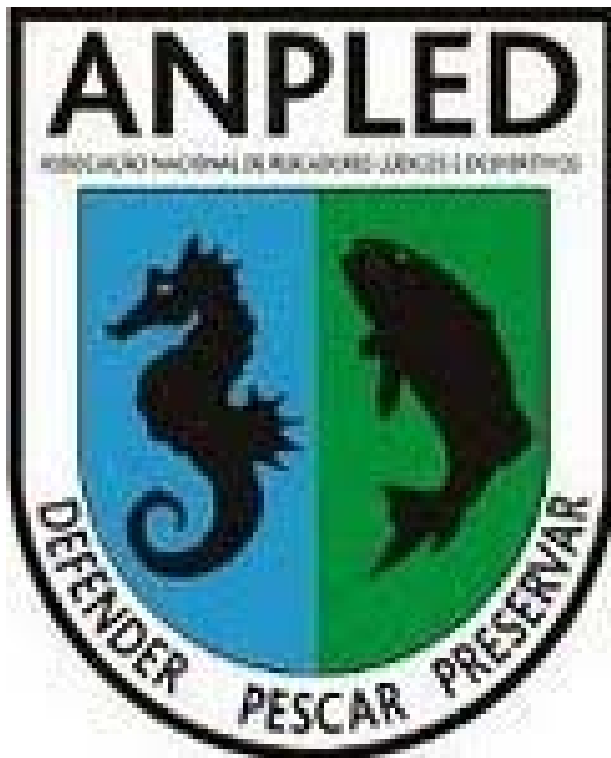


Figure 5. National Association of Recreational and Sport Anglers logo- ANPLED

Contacts and meetings with the Secretary of the Environment Ministry were made, with the objective to review the recreational fishing regulation in the PNSACV area. In its follow-up, ANPLED, wrote and sent a modification proposal of the Portaria 143/2009 from the 5th of February, to the mentioned entity.

On the 16 March 2009 a new manifestation was organized in Odemira to challenge the law, having counted with about three thousand people (Fig. 6).

Posteriorly the Portaria 143/2009 from the 5th of February, was modified by the Portaria 458-A/2009 from the 4th of May, the major changes are:

- In shore/boat fishing, live baits and chumming is allowed;
- Recreational fishing is allowed during all days except on Wednesday and on holidays;
- Between the 15th January and the 15th March fishing for *Diplodus sargus* and *Diplodus vulgaris*, is forbidden.

Were also organized protest actions, with meetings in various locations, which have culminated in a meeting in Vila Nova de Milfontes, on the 30th May 2009.

After these events, the fishermen were received by the secretary of State for the Environment, "there are indications that the law is in a process of change," adding, however, that "the fishermen are not satisfied with some of the proposals for change", in particular the desire to open up an exception for the residents of the Natural Park from Sudoeste Alentejano and Vicentina coast- those who have mobilised -, leaving out large populations of counties outside of PNSACV.



Figure 6. 16 March 2009 manifestation was organized in Odemira

Afterwards in the second modification to the Portaria 143/2009, the Portaria 115-A/2011 from the 24th of March, the major changes are:

- Recreational fishing (all modalities) is totally forbidden, in the total protection areas and in the partial protection areas – type I, (defined in the development plan of PNSACV);
- At PNSACV, Recreational fishing is totally forbidden on Wednesdays, except on national holidays;
- Recreational fishing during the sunset and sunrise only can be practiced if a life and reflective jacket is used, regardless where

- the fishing activity takes place;
- Between the 1st February and the 15th of March, fishing for *Diplodus sargus* and *Diplodus vulgaris* is forbidden
 - Authorization to use traditional adapted tools, namely 'arrilhada', 'puxeiro' ou 'bicheiro'.

4. Actual legislation

The government creates a working group with entities, associations, committees of fishermen, log several working meetings and together draw up a new law.

Government capitulates in leisure fishing by extending the quantity of fish and seafood and authorizes the use of traditional tools, changing the regulation of the sector.

In the new legislation, two stand out: the changes introduced in the Natural Park of Sudoeste Alentejano and Vicentina coast (PNSACV).

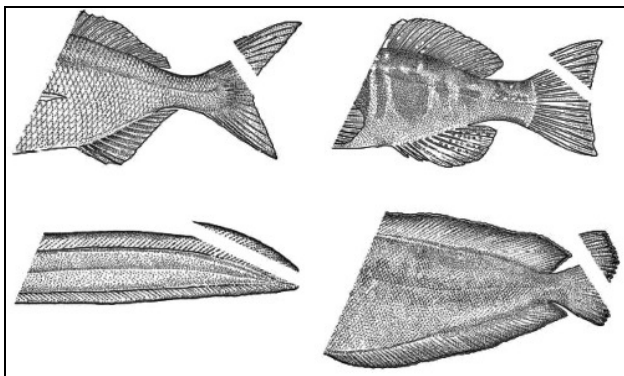


Figure 7. Mandatory marking all the specimens.
From *Portaria* 14/2014, of 23 January

Currently there is a legislation fairer and less restrictive (*Portaria* 14/2014, of 23 January), with a national character, thus there is no longer the constraint of a proper law for the PNSACV. However there may be some constraints, in particular areas of partial and total protection, imposed by POPNSACV - Development Plan of the Natural Park of Sudoeste Alentejano and Vicentina coast.

- Fishing from shore/boat, the limit goes from 7.5 kg to 10 kg, plus the largest specimen;
- In spearfishing, limit changes from 7.5 kg to 15 kg, plus the largest specimen;

- For marine organisms, excluding fish and cephalopods, limit is 2 kg;
- It is authorized to capture 3 kg of mussels (*Mytilus spp*), 5 kg of oysters (*Crassostrea spp.*) and 5 kg of Japanese clams (*Ruditapes philippinarum*);
- The capture limit per day for annelids is 0.5 liters per person;
- In boat fishing with more than three 3 practitioners, the total limit of the catches cannot exceed 25 kg, plus the largest specimen;
- Every time that these limits are reached it is prohibited continue fishing;
- The fish can only be transported by the leisure fishing practicing who has made the captures;
- Between the 1st February and the 15th of March, fishing for *Diplodus sargus* and *Diplodus vulgaris* is forbidden;
- It is mandatory marking all the specimens, before leaving the fishing spot (cross-sectional cut in the fish's tail) (Fig. 7).

5. Discussion

The *Portaria* 143/2009 intended to regulate the leisure fishing in Natural Park from Sudoeste Alentejano and Vicentina coast, alleging excessive practicing and danger in depletion of marine resources.

The measures outlined, particularly a closed season of 3 months for sea bream fishing and the prohibition of fishing from Monday to Wednesday, are absurd and unfair, because they don't apply to the rest of the national territory, nor the commercial fishing, placing the conservation responsibility of white seabream only in leisure fishing, in the area of PNSACV.

Against all the principles of fairness, these measures that come in the wake of other, worsen the conditions of life of those who live in PNSACV, and harm all the most disadvantaged, who have in the leisure fishing a traditional food supplement of first importance.

The law came thus deepen further the social and economic crisis in PNSACV, and acerbate

the just uprising of its population against the autistic and arrogant tutelage from the ICNF (Institute for Nature Conservation and Forests, the old name was *Nature and Biodiversity Conservation Institute*). Transforming ancestral life styles in illegal practices and turning increasingly unsustainable the existence of people who lives in the Natural Park it isn't an effective method for the natural resources conservation actions.

This approach of bot-down unleashed a serial of public manifestations done by recreational fishers.

This also occur in Florida with fishers felt highly alienated from the process of what they considered to be an attempt to exclude their group from the harvest [9].

The human dimension and socio-economic and sociocultural aspects is very important when is stablishing MPAs (e.g. [9], [10], [11], [12]) and in this case was not considered in the beginning.

Only after several actions showed the discounted the official services start to work with recreational fishers to design new legislation.

Recreational Fishers is an interested part in the process. A study in Cap de Creus (MPA) also statement that recreational fishing has a large economic effect on the local economy [13].

In different parts of world, of engaging recreational fishers in management and conservation concluded that recreational fishers can be instrumental in successful fisheries conservation ([7], [14], [15]).

Measures are needed for the planning and management of fisheries (applicable to leisure and commercial fishing). They should be implemented in an integrated and consistent way, based on scientific and credible studies.

6. Acknowledgements

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