



The Moral and Ethical Baseline of Marine Socio-Ecological Values: the Case of Recreational and Artisanal Fishing in NW Mediterranean Coastal Waters (Catalonia, Spain)

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Abstract

Scant attention has been paid to values not expressed in monetary terms, due in part to the difficulty of assessing them. Moreover, the notion and understanding of “value” differs depending on the discipline and academic approaches. This ethnographic study focused on three marine spaces from the Catalonia region in Spain (Natural Park of Cap de Creus, Medes Islands protected area, and Natura 2000 Network area) addresses the competing values of maritime activities, small-scale fishing and recreational fishing, that make value judgements based on moral and ethical standards with which to legitimize activities and use of marine resources. The results highlight the co-existing market and non-market values involved in carrying out these activities, and the need to identify values as drivers of socioecological systems in order to evaluate sustainability. Through the lens of social theory mainly stemming from social anthropology, the study discusses on the moral and ethical issues at play.

Keywords Marine values · Socio-ecological systems · Artisanal fishing · Recreational fishing · Marine protected areas · Costa Brava · Catalonia · Spain

Introduction

In governance, values are highlighted as a driving force, and “legal tool” with which to suitably manage the environment. From this perspective, socio-economic activities should be understood as part of the ecosystem in both economic production, and well-being. In this context, to reconcile the (often diverging) interests of the various activities taking place at sea, the balance between economic, socio-cultural, and ecological values must be maintained to ensure an equitable and sustainable access to, and use of, resources. The way to reconcile competing uses of marine resources is to integrate marine socio-ecological systems into policies (Gómez et al., 2021). Therefore, achieving this implies tackling competing values of maritime activities that make value judgments based on moral and ethical standards with which to legitimize activities and use of marine resources.

This ethnography reveals the interplay between the market and non-market values that underlie the maritime activities of artisanal and recreational fishing in marine protected and conservation areas. It does so in the light of evolving social theory stemming mainly from economic, environmental, and legal anthropology that discusses values and their ethical and moral implications. The three contiguous areas under study lie along the Costa Brava coast in Catalonia, North-western Spain, specifically the marine protected area of Cap de Creus, the Medes Islands protected area and an area included within Sites of Community Importance and Special Protection Areas under the Natura 2000 European network. By disentangling the interacting market and non-market values involved in carrying out these activities, I aim to highlight the need to identify the drivers of socio-ecological systems (the values) in order to evaluate sustainability.

For this, narratives of fishers’ perceptions that are behind values are analysed underpinning claims to access rights to marine goods and resources. The ethical and moral principles of values are stressed, bearing in mind the social, cultural, and economic contexts in which they are enmeshed, and how they might serve as a basis for sound decision-making in management plans under sustainable criteria.

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Some recommendations are put forward for integrating values aimed at ensuring sustainability within marine management plans.

Theoretical Background

“Values” and “Value”. Is there a Theory of Value?

When talking about values, the first difficulty is to define them (Hirons et al., 2016). Ecosystem-based management approaches have revealed the quantitative value of biodiversity (Constanza et al., 1997). However, scant attention has been paid to values not expressed in monetary terms, due in part to the difficulty of assessing them (Cabana et al., 2020). Moreover, the notion and understanding of “value” differs depending on the discipline. Value is often confused with price, which is only a fraction of value linked to transactions in a market-based system, and in turn only one of many transaction possibilities (Polanyi, 1944). This paradox leads us to the controversial understanding between economic anthropology and economics, which has given rise to convergences and divergences between the two disciplines throughout history (García del Hoyo & Jiménez de Badariaga, 2016) when approaching market and non-market values. In reality, it is more a question of methodology (García del Hoyo & Jiménez de Badariaga, 2016) or forms of enquiry. When social anthropologists focus on subjectivity, they address the symbolic dimension of value, whereas economists (who are more interested in objectivity) focus on the price resulting from a negotiation between parties (García del Hoyo & Jiménez de Badariaga, 2016). Differing criteria and bargaining systems are what differentiate societies and cultures, as values are culturally embedded (Moreno, 1991).

In social anthropology, value can be understood as either an objective phenomenon embedded in cultural structures or as a social and cultural construction continuously produced by human activity (Robbins & Sommerschuh, 2016). Although the two options differ in their approach to values (one as a supra-objective entity within the culture; the other constructed according to social agency), both highlight “needs” equally as being the main driver of values, as do other disciplines (Robbins & Sommerschuh, 2016). Beyond the classical needs such as physiological, psychological and practical, and/or material ends of the first anthropological studies, other needs that nowadays should also be considered are well-being, pleasure, taste, desire, and recreation, along with other subjective needs (García del Hoyo & Jiménez de Badariaga, 2016). However, in the vein of Kluckhohn (1951), if the value is a “conception of the desirable”, this means it is culturally contextualised, and therefore dependent on the social systems that sustain the notions of

desirability projected in success, vanity, prestige, cooperation, and harmony, etc.

Therefore, the availability of material and non-material elements which satisfy needs can influence the level of valuation, and the ability to fulfil these needs makes valuation an ethical and moral issue that is underpinned by rights of access and restriction. According to Etzioni (1988: 101), value has two sources, pleasure and morality: “When values are internalised, they become part of the individual's perception, and when they are external, they act as constraints on the decision-making process”.

Values Through a Moral and Ethical Lens

Despite the recent call for an ethical turn in social anthropology, ethics and morality have received little attention (Klenk, 2019). Existing interest mostly stems from recent environmental studies debating exploitation and conservation as a paradigm that involves values, moral and ethical reasoning, and that legitimises human-nature interactions. This lack of attention has been further reinforced by the constructivist postmodernist approach taken by anthropologists, which focuses on social constructions of nature and natural spaces. This approach advocates cultural relativism but ignores environmental issues and fails to address questions of values and rights (Kopnina, 2012).

Traditionally, morality attracted little attention within social anthropology as it was understood as being embedded within social systems, and its main focus was notions of law. In social anthropology, morality has been circumscribed within the normative order as the social constraints individuals exert on social institutions at the expense of cultural systems, which satisfy material and symbolic needs (Radcliffe-Brown, 1952; Mauss, 1971; Malinowsky, 1982; Durkheim, 1985). Societies develop a set of cultural complexities that attempt to respond to the fundamental imperatives of social life. These complexities are embodied in institutions (kinship, economic systems, government), and go beyond individual behaviour in order to serve the social structure, which involves the process of institutionalising social life. This approach placed the idea of morality at the core of the dichotomy between conflict and harmony in an attempt to explain norms and deviations with regard to social order (Bohannan, 1957).

Defining law and what law responded to in universal terms was encompassed in ethics and moral values. Implicitly, it entailed defining cross-cultural morality, and this drew the attention of social anthropologists during the first half of the twentieth century. The formulation of absolute universal moral principles was partly influenced by the philosophical approach that embraced deontological and utilitarian

perspectives (Klenk, 2019). This was criticised for being poorly grounded in empirical assumptions and lacking contact with actual social practices.

Morality is understood as a social process of reasoning that interacts in a culturally embedded social fabric determined by rights and duties according to social positions. The important debate within legal anthropology centred on the question of whether the object of study should be on norms or on processes. Throughout the 1980s and 1990s, interest in processes of contestation followed a concern for the way in which history and power shape legal systems, and the relationship between them, which constrains value systems and moralities to contexts of power and domination. Just (2001), who has analysed conflict resolution and dispute resolution among the Donggo people of Indonesia, argues that conflict resolution must be understood in its broader context; in terms of what he calls the "moral economy" of society. This concept was first proposed by Thompson (1971) to explain the logic of food riots in England in the eighteenth century. It described a set of reciprocal obligations and responsibilities embedded in a "paternalistic" economy that could conflict with the effects of increasingly open markets and free trade on local subsistence. However, in "The Moral Economy Reviewed" (1991), Thompson (1991) admitted that the concept now encompassed a wider range of issues. A moral economy is based on underlying cultural assumptions about the nature of human existence, the individual, social behaviour, and social order, all of which a moral valence. In short, we can say that dispute processes cannot be understood as a consequence of specified social conditions, but rather as a reflection of the cultural construction of values that respond to demands resulting from class struggles or class interests or socio-economic activities.

In social anthropology law, as a field of study, was displaced by the notion of justice, and the focus of interest shifted towards the morality of conflict (Gómez, 2006, 2010) with the aim of revealing the value of human life and its struggle in relation to peoples, social groups and communities. Values emerge from processes of contestation based on the experience of justice, grounded in the socially contextualised moral spheres that define ethical principles. As Strang (2016) notes, "justice is based on the idea that maintaining a proper order in the world involves "cherishing": recognising and upholding the value of others". This takes existing unequal power relations into account, as well as the hierarchical and patriarchal governance systems that produce economic and social disadvantages among social groups and jeopardise rights to equitable access to resources (Strang, 2016). Moral engagement has been assigned to contemporary applied anthropology, which is concerned with the rights to nature for the most disadvantaged (e.g., indigenous rights), although the environmental ethics school of thought has criticised this for its human-centred approach (Kopnina, 2012).

In this regard, conservation anthropology is seen as being more concerned with environmental justice and socio-economic equity than the environment per se. It seeks to achieve conservation alongside social justice, with the main goal of securing the rights of local (and/or disadvantaged) people to nature and socio-economic development (Kopnina, 2012). Moral engagement is considered from the point of view of human beings and focuses on measuring loss of human life and well-being. As Strang (2016) has pointed out, although the "cultural practices" of both Western and non-Western societies have been underpinned by patterns of global consumerism, environmentalism is a universal approach, as it is already embedded in many "traditional societies" and runs through all social groups. Social justice and economic justice are implicit in environmental justice, as Kopnina (2014: 8) has stressed "we cannot have justice for people before justice for the environment, because separating the two leads to neither". According to Kopnina, the notion of justice must be expanded to include non-human species.

More recently, the "rights of nature movement" has called for the recognition of the moral scope contained in the intrinsic value of nature (as a subject of rights, not just an object of rights) embodied in the "rights of being alive", i.e., the legal rights of nature. Rights of nature are a blend of Western rights, concepts, and indigenous conceptions of the human-nature relations that make up indigenous cosmologies (Chapron et al., 2019; Harden-Davis et al., 2020). Harden-Davis et al. (2020) maintain that four principles need to be engaged for us to speak of rights of nature: rights (as intrinsic values), connectivity and primacy of life (fulfilment of ecological functions), reciprocity (human-nature feedback relationship), representation and implementation (entities charged with executing human responsibility). In short, recognising ecological limits would not be enough to curb economic expansion by attempting to reconcile growth and conserve biodiversity or human needs. Recognising nature as heritage, regardless of its utility for humans and the services it brings them, implies that the social and natural sciences need to change their approach (Gudynas, 2011). This context has given rise to an emerging field of research that takes a post-human (or post-anthropocentric) approach, calling for a more holistic anthropology, subsuming environmental humanities by conceiving reality as a human-nature negotiation (Engert & Schürkmann, 2021); and the ethical and moral turn in anthropology, taking on environmental and economic issues in contemporary society with broad social implications linked to notions of justice and equity.

The Values of the "Blue Economy": Socioecological Relationships at the Core of the Economy

Current socio-ecological and economic crises have highlighted the extent to which humans are not only

interdependent, but also eco-dependent, giving rise to a shift in needs that must be urgently met. Humans are dependent on the environment for both basic resources (e.g., food and water), and a wide range and diversity of desires for their lives and livelihoods (Hirons et al., 2016). The effects of climate change, the decline in living marine resources and the erosion of marine ecosystems have led us to reconsider our relationship with the marine environment and altered our perspective of human-nature relationships. In light of this, the economy is placed within and as part of nature, and its conceptual framework shifted towards human well-being and quality of life (Pascual et al., 2017; Díaz et al., 2018; Molony et al., 2022). By considering human dimensions as intertwined with ecosystems and interdependent with biodiversity, the economy is placed at the centre of socio-ecological relations. This implies seeing the economy as being rooted in social institutions and cultural values, both of which interact with the ecology as an integrated whole. Thus, market and non-market values go hand in hand, bringing anthropological and economic perceptions closer together.

Since the concept "ecosystem services" first became popular in 2005 in the Millennium Ecosystem Assessment (MEA), the main question arising from the relationship between humans and nature is how to evaluate non-market values in socio-ecological assessment in order to incorporate it into policy decision-making (Hirons et al., 2016). The concept of 'natural capital', based on the economic rationality of conservation, has not produced the expected results as it remains anchored in the post-World War II idea of progress, which is linked to the economic growth paradigm. This was underpinned by the notion of the "good life" (Muradian & Pascual, 2020) institutionalised in the Fordist-Keynesian model. The collapse of the Fordist society and the recent economic and socio-ecological crises has shifted attention to "quality, rather than quantity, of growth", and calls into question the materialist conception of well-being, as the environment becomes the pillar around which change and the search for nature-based solutions pivot.

However, in this context, reconciliation between economic growth and ecology is paradoxical, as the market-based economic system cohabits with western cultural values of security and comfort that depend on the consumption of our planetary resources; and guaranteeing "access to resources", in order to cope with contemporary living standards, is difficult to balance with resource exploitation. The "blue economy" in marine protected areas that can become an overcrowded spaces has to cope with divergent, often conflicting interests from a number of socio-economic activities. Balanced economic, socio-cultural and ecological trade-offs become contentious when an attempt is made to integrate market and non-market values into managerial systems at the same time as meeting environmental sustainability goals aligned to employment objectives, ensuring

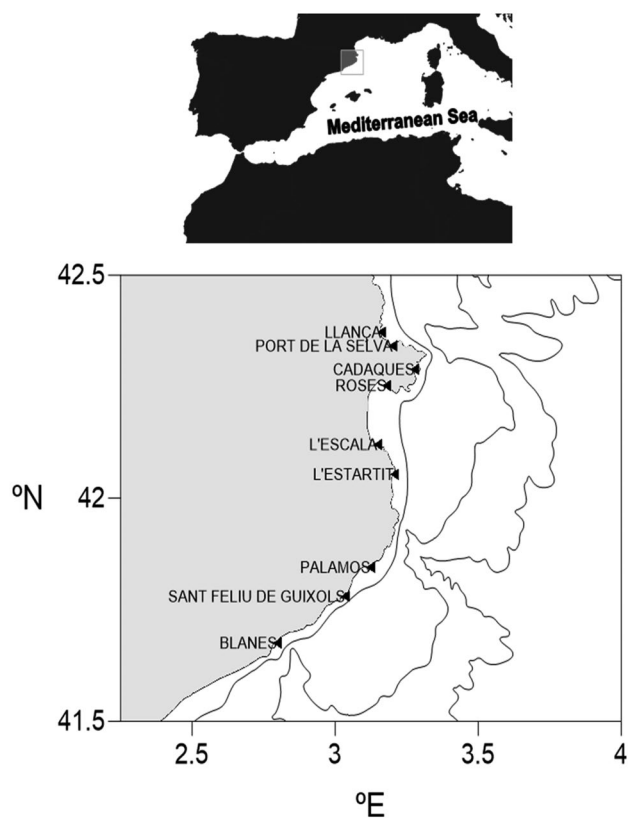


Fig. 1 Costa Brava

fairness and equity in access to resources and/or in meeting the needs of particular lifestyles.

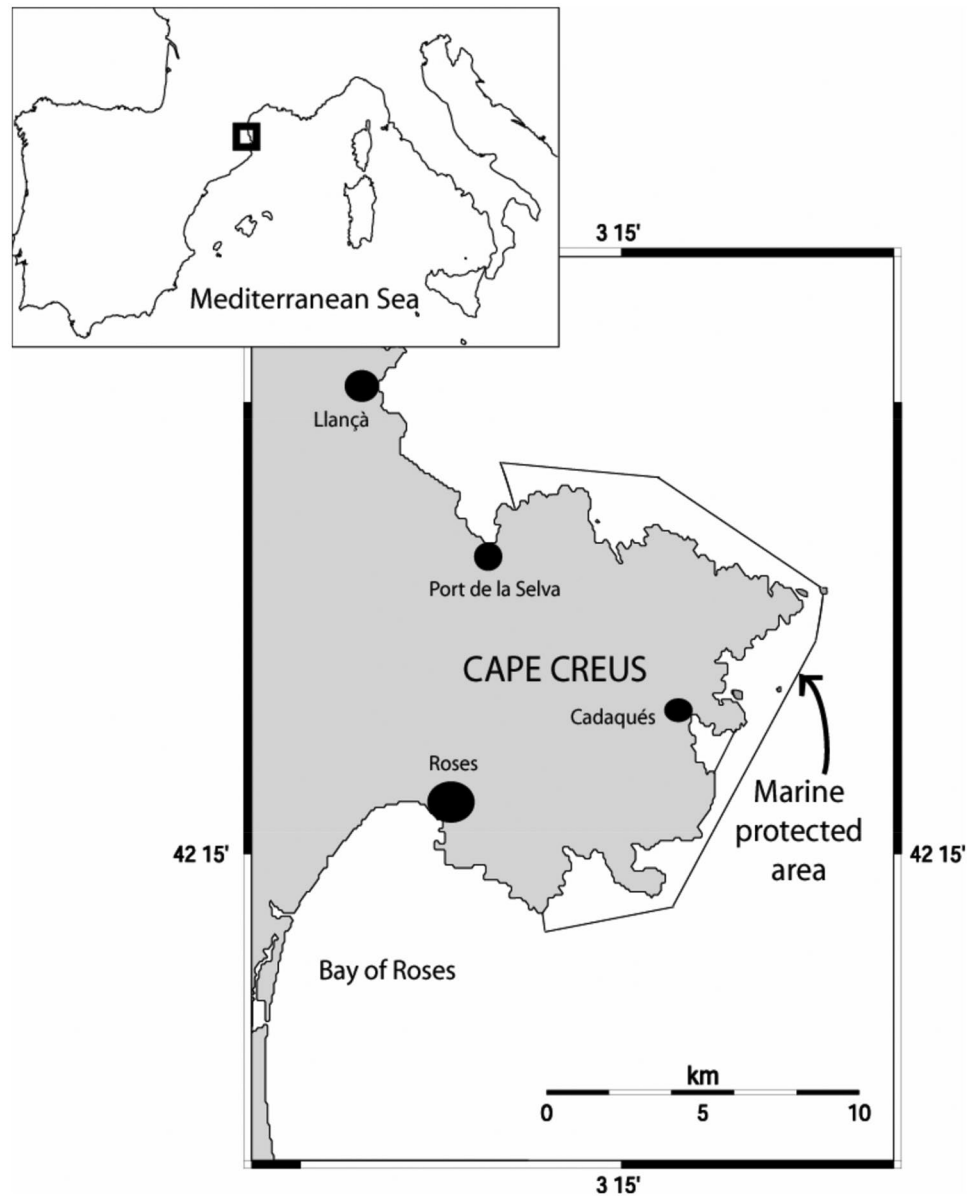
Materials and Methods

Study Area

The study focuses on the Costa Brava (Fig. 1), an emblematic tourist destination on the northern coast of Catalonia, Spain. The study area includes the Natural Park of Cap de Creus (Fig. 2), with a marine protected area covering 3,000 ha of maritime surface; the marine protected area of the Medes Islands (21,5 ha) (Fig. 3); and a conservation area that forms part of a Natura 2000 network (1,795.74 ha) (Fig. 4).

Different preservation legal provisions have been used to declare these marine protected areas, sparking controversy among maritime activities. Hence the difficulty in organising the various socio-economic activities aimed at conservation, while also respecting the various viewpoints and values placing moral judgments on the legitimisation of social and economic practices. Currently, under the paradigm of the "blue economy", and within the framework of the green transition agreement for seas and oceans, the

Fig. 2 Cap de Creus Marine Protected Area



Catalan Maritime Strategy of the Government of Catalonia has begun to implement measures which will lead to co-managing the entire Catalan coast and marine protected areas, including the northern coastal zone.¹ One of the

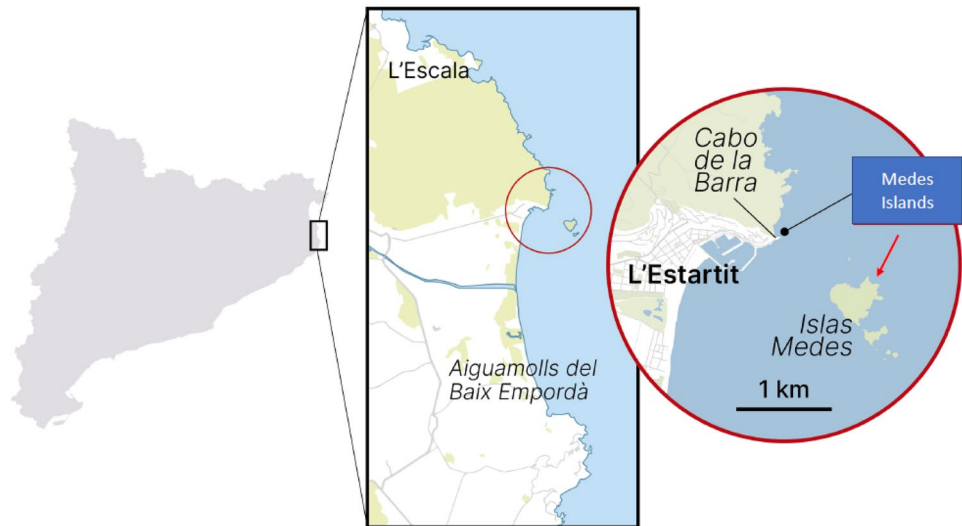
¹ Since 2017 co-management is legally regulated in Catalonia. “This is part of one of the key points set out in the 2030 Maritime Strategy of Catalonia, through Decree 118/2018 of 19 June on the governance model for professional fishing in Catalonia published at the Official Journal of the Generalitat de Catalunya (DOGC-A-18170141–2018). Moreover, the decree, which sets out the guidelines for the co-management decision making body (the co-management committee), has recently (January 2021) been enforced by the co-management of the MPA Cap de Creus. In 2019, Medes Islands MPA was incorporated within the co-management of a larger area (Natura 2000 network)” (Gómez et al., 2021: 8).

co-managerial aims is to include social and cultural issues in management plans.

The marine protected area of Cap de Creus established in 1998 enables fishing in the area of Natural Park and partial reserve. Recreational fishing in partial reserve is only allowed from onshore.² In the integral reserve, fishing is totally banned (Fig. 5). Since 2010 Medes Islands is part of the Natural Park of Montgrí and Baix Ter. It comprises a partial reserve and integral reserve where fishing is banned, and a peripheric zone of the partial reserve where only artisanal

² Law 4/1998, of 12 March 1998, on the Protection of Cap de Creus.

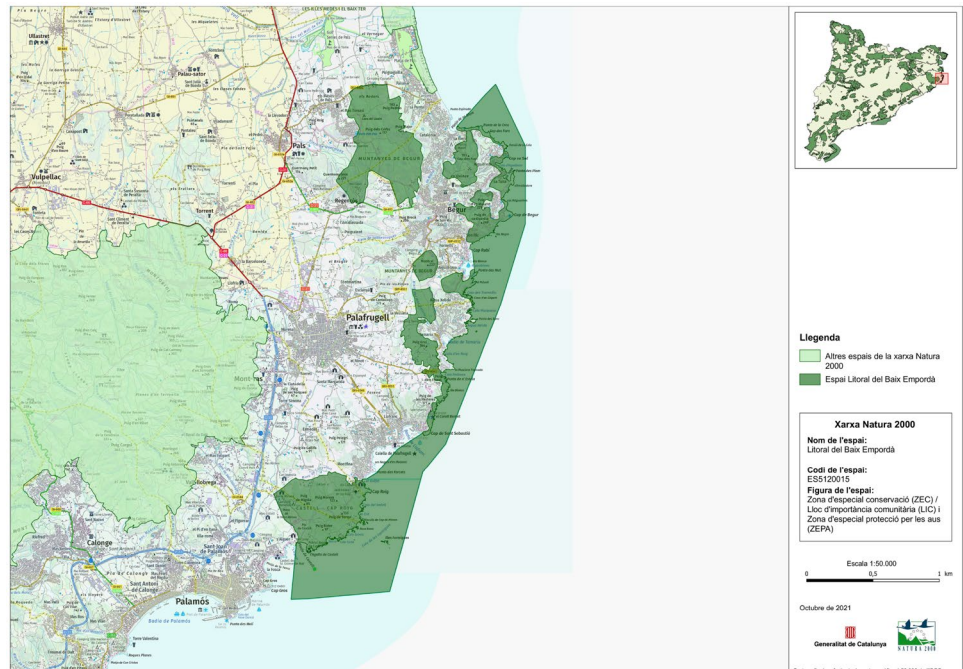
Fig. 3 Medes Islands. Own elaboration based on the figure published in El Periódico, 18/07/2021



fishing is permitted³ (Fig. 6). The Natura 2000 network of this area (Baix Empordà) established in 2019 is regulated under the SCI and SAC. Sites of Community Importance (SCI) are sites hosting some type of natural habitat or species of special value at EU level. These are designated under the Habitats Directive and become Special Areas of Conservation (SAC) once they are officially declared by EU Member States. Fishing is permitted and not regulated (Fig. 4).

A total of 113 artisanal fishers' vessels can currently fish in the adjacent areas of Medes, the Natura 2000 network area, and the Cap de Creus marine protected area. Data show us that since 2003 artisanal fishing fleet has decreased by more than 50%.⁴ Conversely, according to the Catalan Government, there are 54.000 registered recreational fishers in Catalonia (ICATMAR, 2020). No data is available for each specific area and available data only refers to those

Fig. 4 Nature 2000 Network area



³ Law 15/2010, of 28 May, on the declaration of the Montgrí, Medes Islands and Baix Ter Natural Park, two partial nature reserves and an integral nature reserve.

⁴ http://agricultura.gencat.cat/ca/ambits/pesca/dar_flota_pesquera/dar_estadistiques/dar_detall_flota_pesquera_per_ports/anys-anteriors/

Fig. 5 Cap de Creus zoning. Zones in blue light and blue dark, fishing is permitted. The zone in orange, fishing activities are banned



recreational fishers with licenses. Furthermore, it is estimated that there are quite a few unlicensed fishers (Gómez et al., 2019). Artisanal fishers are polyvalent (using different combinations of fisheries: GTR (Trammel Nets), GTN (combined Gillnets-Trammel Nets), FPO (Pots), LLS (Set longlines)).

Data Collection and Analysis

The data corresponds to a database generated through extensive ethnographic fieldwork carried out in a number of studies spanning 2003, 2015, 2017, and 2018.⁵ These studies were mainly aimed at gathering data on the transformation of fisheries over time, and conflicts arising from activities in marine spaces. Therefore, questions on values were part of a larger questionnaire. Ethnographic data was collected through face-to-face semi-structured and in-depth interviews (59 interviews in total) consisting of open and ended questions. As for the artisanal fishers, apart from socio-demographic data, technical characteristics of the production unit, and biological data referring to target species and seasonality, they were asked to define themselves as artisanal fishers and in relation to other

fleet segments. Values issued from this process in which the fishers expressed how they recognize and perceive themselves as fishers, and in relation to others. Questions related to the information to be collected were formulated differently each time and adapted to each interview scenario. Similarly, recreational fishers were also asked to define themselves as fishers. Conflicts and perceptions about MPA regulations and management were asked of both artisanal and recreational fishers.

Data is significant rather than representative following the qualitative data analysis approach in social anthropology. Through a snow-ball sample, artisanal fishers were selected as informants, ensuring at least two fishers per fisheries per each port from the 8 fishing ports of Costa Brava (Roses, Cadaqués, El Port de la Selva, L'Escala, L'Estartit, Palamós, St. Feliu de Guixols and Blanes) (See Fig. 1). Interviews were collected from the same fishers throughout the different waves of data collection (2003, 2015, 2017, and 2018). Although in some cases it was not possible, and a similar profile of artisanal fisher was selected to complete the information. Note that throughout the years the decline of artisanal fishing has implied fewer active fishers working. As for recreational fishers, the interviews were collected in one wave (2018), and the informants belonged to recreational fisheries organizations (IFSUA, GEN).⁶ The interviews were recorded and lasted between 1 and 3 h.

⁵ Partial financial support was received from The Natural Park of Cap de Creus (assignment n° 019,903 and PDR 46/2015) for the years 2003 and 2015, the Catalan Government, Observatory of the Ethnological and Intangible heritage (OPEI) funding programme (reference n° CLT051/17/00020) in 2017, and Pharos4MPA Interreg Mediterranean, grant number 3MED17-3.2-M3-066, in 2018.

⁶ <https://ifsua.net/index.php/es/> and <http://www.genroses.cat/>.

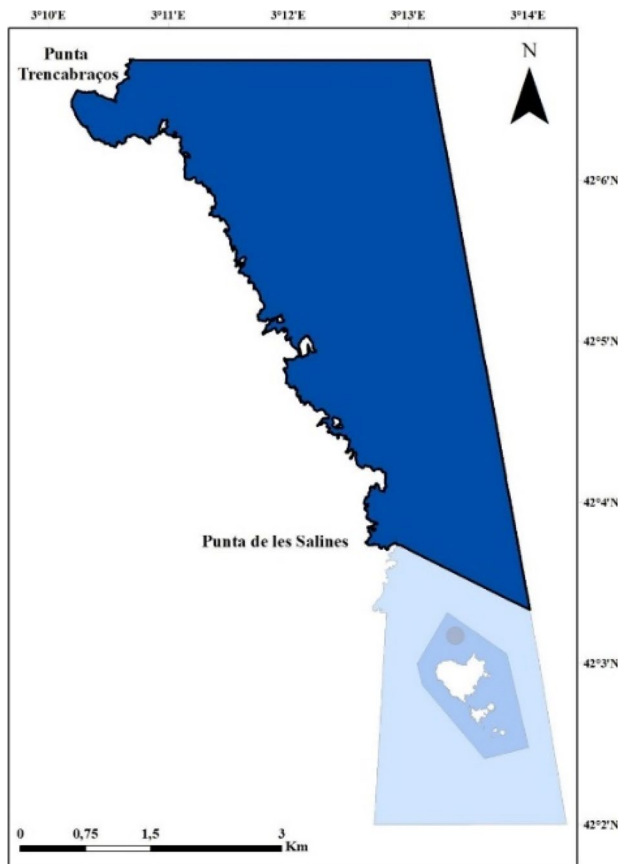


Fig. 6 Zoning of Natural Park of Montgrí, Medes Islands, and Baix Ter. In blue dark, the Natural Park area is without regulations. In blue light surrounding Medes Islands, the partial reserve, fishing is forbidden. The external blue light is the peripheric zone of the partial reserve, only artisanal fishing is permitted. In the integral reserve in grey, fishing activities are banned

The interviews gathered qualitative data on first-hand perceptions and values were identified by analyzing the narratives (see Satterfield, 2001) while taking the contextual meanings into account. Statements and information extracted from the statements were compared, in order to properly interpret the meaning and sense of each statement uttered. Some literature-based economic data is provided to better understand the valuation framework in which statements operate in the results section. Results are derived from the process of abstracting the analyzed data by following this process. In accordance with the object of study, and in line with Satterfield (2001) the qualitative approach is particularly suited to the task of eliciting moral resonances, and the narratives allow informants to provide a wider range of assessments. Interpretations are contextualized according to data provided by literature and discussed in light of other studies and the theory.

Results

Between Bequest and Market: The Artisanal Fishing in the Cap de Creus MPA

Artisanal fishing in Cap de Creus MPA has existed since “time immemorial”, according to artisanal fishers. In this area, trammel nets are used in combination with gill nets, although a few specialise in bottom long-line. Seasonally, some bonito is still caught using a traditional fishing net (“bonitolera”) in one particular area of Cap de Creus, where fishing for specific species (bonito) is still organised and regulated in the traditional way (Rahola y Tremols, 1904; Costa, 1915). This involves restraining access to the fishing grounds during the season (from January to March) by using a draw system. Fishers in Cap de Creus have a number of different strategies for season fishing. Those with other family businesses usually stop fishing for between two and three months per year. This is typical in this area, where since the 1960s and 70s, tourist businesses have replaced the cultivation of horticultural crops as part of a wider diversified livelihood strategy (Pi-Sunyer, 1977). During the tourist season, the sharp increase in recreational and tourist activities at sea disturb the fishing activities. This is a common pattern throughout the Mediterranean (Guyader et al., 2013; Maynou et al., 2011), and another reason fishers give for stopping fishing during this season (Gómez, 2006, 2018; Gómez & Lloret, 2017). Another constraint that regulates fishing days is the winter weather, which is especially inclement in this area. Fishers feel that artisanal fishing in Cap de Creus is culturally defined as a limited fishing implying a low level of technology and a small length of the boat with characteristics specific to local environmental conditions, and this is also pointed out in several publications (Gómez & Lloret, 2017; Gómez, 2018). Boat length (less than 9 m) is tailored to suit the rocky coast, thus limiting loading capacity to between 12 and 60 units of nets at most, and two crew maximum. This, together with motor power (also limited to boat size) seemingly limits fishing capacity. Despite some minor technological upgrades, fishers describe artisanal fishing as a “manual technique” or using “simple technology”. This implies having to invest in knowledge regarding the selection of the fishing gear chosen, constant interaction with the environment, and carefully selecting the resource they aim to capture. This process involves knowledge of weather, sea currents, fishing grounds, and the seasonality of fish species.

The fishers state that only those who have the knowledge passed down through the generations can go fishing in this area, and not all fishers from the areas adjacent to Cap de Creus know how to fish it.

“Only poor and crazy people go beyond Falconera.⁷ From Falconera onwards it's bad country” “Cap de Creus is a place of “rom i rac”,⁸ that is to say, a place where the net holds and breaks” [...] “moreover this type of fishing is expensive to do, there is a lot of expense and if you go fishing around Cap de Creus, it is more difficult and riskier. They have to work much harder” (Fisher, Roses).

The difficulties, which are exacerbated by strong meteorological conditions (it is a very windy area), the rocky bottom, and special orography circumstances require good knowledge of the fishing grounds. This knowledge can even differ from family to family, depending on their specific expertise in Cap de Creus fisheries.

Artisanal fishing is an economic activity involving a social organization that is embedded in the natural environment and local landscape through knowledge. The fishers express this culture-nature symbiosis through their understanding of artisanal fishing in Cap de Creus, which they refer to it as a behavior answering to a culturally inherited way of relating to the environment, which they are responsible for maintaining under a criterion of reciprocity that sustains optimal socio-ecological feedback.

In a way, this legacy defines artisanal fishing and shapes the rights of fishing in Cap de Creus. Providing food is connected to the social relationships that make up the social organisation of work; not an activity carried out in leisure time, but a livelihood understood as a social and cultural activity that experiences beauty and intersubjective relationships interacting with nature.

This is the cultural value of sustainability that fishers refer to when they demand their fishing rights in the face of other extractive activities (e.g., large-scale fishing, recreational fishing and spearfishing) and the effects of pollution and environmental degradation (mostly caused by the impact of tourism activities). On the basis of these socio-ecological interactions, a claim for legal linkage to inclusion and exclusion from access to resources is made. Simultaneously, they legitimate moral and social rights to subsistence and well-being that are defined by this historically defined human-nature interaction that refer to a supposedly integrated, reciprocal, and balanced relationship between humans, the environment, and non-humans. Notwithstanding, in recent years, fishing as a livelihood has undergone transformations. The unit of production is not based on the family anymore, becoming more and more market relations dependent, and increasing costs that are difficult to compensate with the income generated from decreasing commercial fish stocks.

This leads to an increasing specialisation in species that are more highly valued, and have market demand, which exacerbates the pressure on highly marketable species.

“Before, it [fishing] was a world in which men worked and women were left making nets, now that doesn't exist. You have to mend it yourself because paying to have it mended is very expensive” (Fisher, Roses) “(considering) the price of the net and what it costs to mend it, if you don't know how to do it yourself.... this is all lost!” (Fisher, Roses) “to make a living only from fishing you need a lot of dedication. Here in Port de la Selva there are people who only live from fishing, but of course, they have grandparents who are still mending nets.” (Fisher, El Port de la Selva).

A fishers' average income was approximately €15,000 gross in 2018 (for 10 months' work), not counting investment costs or net repairs etc. Over the last 15 years (counting from 2022), fishing in the area has declined and fishers have increasingly specialised in species such as octopus (*Octopus vulgaris*)⁹ that were traditionally unpopular with locals but demanded by tourists. Another specialised target species traditionally sought after is the common Mediterranean lobster (*Palinurus elephas*). Some species, however, are not popular target species because of their cheap price (e.g., Horse mackerel (*Trachurus trachurus*), Bogue (Boops boops), Thicklip grey mullet (*Chelon labrosus*). As expressed by the informants, the loss of food biodiversity goes hand in hand with the loss of knowledge about fish consumption as well as potential local consumers (the older generation), while the increase in specialised consumption linked to more globalised standard consumption patterns can paradoxically be seen in restaurants and hotels, even at the local level.

“Every time an old man from the village passes away, a customer dies, and it is true that people used to know many more fish species” (Representative of Cadaqués fishers' guild).

Changes in eating patterns have led to a drop in demand for fish locally, where it is no longer part of the daily diet for local consumers. This directly affects its price. The most frequently consumed fish tends to be the best known and the most expensive, which has led to more specialised fishing centred on the most highly prized species. Only families with higher purchasing power can afford to consume these species, which is another factor lowering demand. Since the economic crisis in 2008, as pointed out by the informants, being able to purchase cheap non-EU and frozen fish has

⁷ Falconera is the name of the geographic point on the coast where Cap de Creus begins.

⁸ “Rom i rac” is a popular Catalan expression and is transcribed literally in the quote.

⁹ *Octopus vulgaris* was popularized in Cap de Creus (particularly El Port de la Selva village) through tourist demand in the 1960s and 70s. Fishers mention that this species was usually thrown away at sea as it was not valued by locals.

been a more affordable and simpler choice. Nevertheless, most consumers eat fish less often as they prefer other foods such as meat.

The main large-scale fishing customers tend to be local fishmongers, large food chain wholesalers, and local family businesses distributing fish. Artisanal fishers, on the other hand, mainly sell to local fishmongers and local restaurants specialising in “quality fish”. The most direct effect of this distribution of buyers by type of fish is purchasing power. Obviously, wholesalers and distribution companies have a much higher purchasing power than that of fishmongers and restaurateurs. When these large and medium-sized companies purchase large volumes of fish caught on an industrial scale at a price that is in some cases more or less stipulated by the fishers’ guild, this lowers the auction price of the fishers’ other products. However, it should be borne in mind that fish from artisanal fishing usually fetches a better price (2 or 3 euros more) as it is considered high quality.

Therefore, the lack of a “fish culture” leads to the elitisation of fish consumption by restricting consumers and preventing fish from being sold at a democratic price, which is increasingly affected by the demand for high-priced market products. Fisheries are therefore transforming their socio-ecological system by responding to new fishing criteria and behaviours, while using the same ideological discourse that defines sustainable artisanal fisheries and claims the legitimacy of fishing rights as a matter of social justice.

Since the early 2000s, having to compete with other maritime activities has been undermining Cap de Creus fishers’ perception of fairness and equity in fishing rights. Declining artisanal fishing is observed with impotence and fear of its disappearance. Changes affecting the fisher's daily access to fishing grounds or their right to benefit from the goods and services of the sea are contested, and taken as a blow to their culture, their family and their “reason for being”.

Fishing tenure rights are revealed in the socio-ecological interrelationship, which integrates economic and legal relationships to form a broad set of social relations with nature, and the conflict surrounding rights to access resources that new actors in the maritime space (recreational fishing, artisanal fishing, underwater fishing) have to confront. Artisanal fishers claim their historically legitimated fishing rights vis-à-vis other activities.

Inalienable Relationships: The Artisanal Fishing in Medes Islands and Natura 2000 Network Area

Both the material aspect of fishing (boat and fishing gear) and the fishers’ labour relations signify and transmit the ideological aspect (knowledge), which interacts with the natural environment. This relationship is perceived through the degree of alienation expressed regarding the product obtained from fishing as economic activity. This is an

important point especially expressed by fishers from the adjacent areas to Medes Islands and Natura 2000 network area. The historical background that defines artisanal fishing (as opposed to industrial fishing) on the Costa Brava shapes the fishers’ self-identification and collective awareness. Artisanal fishing involves constant interaction with the environment without sophisticated technologies. This tests their knowledge and challenges them, and in a way, it is a “game” in which the fishers compete with fishery resources for income and livelihood, while at the same time testing and challenging themselves as they rely on their knowledge to interact with nature.

This creates uncertainty and a situation where sometimes the fishers win and sometimes, they lose. However, far from generating a process of alienation, it creates bonds and emotions that make them feel alive. Artisanal fishing responds to the rhythms of daily life, time, and nature. It establishes a relationship between the fishers and the resource, putting their capturing skills to the test.

“No two days are the same, there is no routine and... apart from the fact that you are in contact with nature...it may be very cold but you have the sun that is ...I don't know, you are in contact with nature even if you are going to kill nature, but it's...I don't know, you are very alive, you feel very alive, it's something that ...it gives you a huge charge of euphoria"! I... very few things provoke this state of mind. I think there are a lot of jobs, but in most jobs you don't have this euphoria. You have a routine, so you know exactly what you will earn at the end of the month, you practically know what it will be, you always go out for breakfast at the same time...not here, here you're living... you are living... you don't have a finishing time, there are usually schedules, but sometimes you finish earlier and sometimes later...there are days that you work a lot and you don't get paid, there are days that are really dreadful, and there are days that are fantastic, it's the whole accumulation of circumstances that makes you feel alive, makes you feel that you are alive, it's very exciting, very exciting in both senses, good and bad” (Fisher, Blanes).

Artisanal fishing also emphasises freedom, independence and self-reliance. In fact, artisanal fishing is equated with the most essential and “primary” economic relationships, which one interviewee describes as “ancestral”, and where the “survival” spirit is linked to constant unpredictability, which continually tests their skills without the help and intermediation of advanced technology. Therefore, the material aspect (boat and fishing gear) is a vehicle for the ideological aspect, which means that the human-nature relationship is shaped by the ecological, socio-economic and cultural interaction expressed in artisanal fishing. This is what determines whether these fishers see it as artisanal fishing or not (how they understand it, feel and live it). This relationship is finally perceived through the expression of the

degree of alienation from the product derived from fishing as an economic activity. Happiness, satisfaction, a life worth living is expressed through this human-nature relationship that is produced by fishing in this way, and is an issue that goes beyond money:

"I've earned a lot of money all my life,¹⁰ and more than earning money, I've been happy, you don't know how happy I've been fishing... you can't even imagine! ...it's more than just a job, it's a way of life" (Fisher, Blanes). "But when I get up in the morning and I don't know if I'll earn five euros, or I'll earn 500, I don't know which key I'll play but... I have several options and I don't know if the weather will be good or bad, and even though all the days are the same, they touch each other, and there are no two days the same, that's what makes me go out (fishing), it's this spirit of survival, isn't it? (...) it makes me feel alive". "It's living from the natural resource, isn't it? It's a way of life. It's living from natural resources in the ancestral way, isn't it? Let's say, no advanced technologies, no big... it is simply the challenge that lies between your mind, your ability with your hands, and your purpose, right? (Fisher, L'Escala).

Artisanal fishing represents 16.95% of the fishing industry, and it employs 170 fishers.¹¹ However, the poor state of commercial fish stocks, coupled with low economic returns from fishing has led to overfishing (Maynou, 2020), and the need for specific fisheries and species to be regulated. Some of these are under co-management committees organised by fisheries and fleet segments that indicate a trend towards specialisation, or in other cases, towards changing fisheries and/or tactics. This transformation is limiting the flexibility fishers can exercise in making fishing decisions.

On the other hand, as expressed by fishers of Sand eel a specie that is under a co-management plan, stocks are recovering as a result of quota setting and/or restricting the catch of a few sought-after species, and this has increased the value of these catches. Fishers report a change in their relationship with nature and feel that industrialisation is distancing them from the product whose only incentive is the good price of the catch.

"Right now I see myself as a factory". "When it's time to go to work ...mine is an artisanal fishery. It's artisanal fishing, minor...not minority, but sustainable. It is not industrial fishing. When I talk about the factory, I mean that right now, of course, we go out, we catch what we have to catch, and we go back to the dock. There is no incentive. The only incentive we have now is the price, or to get there before others ..., who are also there. There is still that in a way. It used to be more fun, because you went for fish, you went to wait for

another type of fish, you went for squid, Now It's become like a factory". (...) Now when I get up it's just to go fishing, when I used to get up with enthusiasm". "I liked it a lot more before, because that's what there was—uncertainty! Now I don't have the uncertainty, now I know that either I catch Sand eel or I don't catch anything. The uncertainty over whether you'll break (the net) or whether you'll catch them (the catch) here or there, or whether you will sell at €10 or €5...". "Now you get back (to port), of course, yes, you have a salary, and when you go out you catch a haul. At first, they are all small, and then you see that they fetch up to €24 and that you have made €1,500 with a bucketful, and you say to yourself "Well done!" Before, maybe you earned €500, but you enjoyed it more. Now I don't enjoy it so much (Fisher, Blanes).

Under the co-management scheme, specialising is an attempt to control the impact of fishing on the environment and secure the availability of stocks, while at the same time securing livelihoods. However, this makes fishing more predictable, and means that fishers' skills and abilities are not tested on a daily basis on the job. Thus, the "fishing game" is restricted, and the thrill of the challenge to catch more diverse species and quantities than other fishers is lost. Ultimately, this has changed the way fishers experience the socio-ecological embeddedness of fishing, which is expressed as feeling less in touch with the environment in their daily work, thus generating product alienation when market value outweighs non-market values.

Recreational Fishing: Reconnecting with Nature or Competing for Resources?

Since 2003, artisanal fishing has experienced a decline of almost the 50% of the fleet in various parts of the Mediterranean (Guillou & Crespi, 1999; Colloca et al., 2004; Gómez et al., 2006). Recreational fishing, on the other hand, has increased over the years. Currently, MPAs cover 7.14% of the Mediterranean area, and are among the most attractive destinations for recreational fishers (Gómez et al., 2019). In Catalonia, this type of fishing generates 90 million euros of indirect income per year, a third of which goes to local economies in the form of direct income. Recreational fishing coexists with artisanal fishing, both share the same target species and often the same fishing grounds (ICATMAR, 2020), and in some areas, the fishing pressure it exerts is similar to that of artisanal fisheries (Gómez et al., 2019). Therefore, its potential for extracting fish cannot be ignored. Recreational fisheries embrace different fishing modalities whether these are coastal, offshore or underwater fishing (boat fishing, shore fishing, shellfish gathering, spearfishing, competitive fishing) (Font et al., 2012). Unlike professional fishers, who over the years have organised themselves through long-standing social

¹⁰ Note that this fisher fishes for highly priced Sand eel (*Gymnamodytes cicerelus*).

¹¹ http://agricultura.gencat.cat/ca/ambits/pesca/dar_estadistiques_pesca_subhastada/dar_captures_modalitats/

institutions representing the fishing communities; recreational fishers build a community through social media such as YouTube, Facebook or Instagram (Maya-Jariego et al., 2021). These far-reaching social networks, which can also provide training, have enabled an increasingly large number of people with no previous experience of fishing to easily become fishers.

Recreational fishers claim that recreational fishing is a centuries-old practice, and that it has less environmental impact than professional fishing. They say that it is not looking to profit from common resources in any way that would deprive others of the public and moral right to the resources, or the health benefits reaped from contact with nature. Artisanal commercial fishing uses the same selective criteria as recreational fishing in that it follows a market value criterion as it values species with a high market value, even though the fishers themselves do not consume the fish in many cases. The target species for both artisanal fishing and recreational fishing usually coincide. These are mainly *Dentex dentex*, *Diplodus sargus sargus*, and *Scorpaenascrofa*, *Phycisphycis*, *Mullus surmuletus*, *Coris julis*, and *Conger conger* (Lloret & Font, 2013). These species are also on the IUCN Red List, and 30% of all species captured by recreational fishers in the Mediterranean marine protected areas are vulnerable (Lloret et al., 2020). This is a significant amount, especially if we take into account that recreational fishing catches make up almost 50% of the total fishing catches in some areas, one example of which is Cap de Creus (Font et al., 2012; Font & Lloret, 2014).

This highlights how the market value substantiated in some species interacts with non-market values such as the thrill of fishing for these species. Paradoxically, recreational fisher allege that the main objective of this type of fishing is not so much to kill fish (as is the main goal of professional fishers), but rather the challenge of understanding the dynamics of fishing in order to "control nature" in some way. This is expressed as a competition, a challenge, or a fighting game, and understood as a process of socio-ecological interaction where there is a recognised winner or loser (the catch being the reward).

"The aim of spearfishing is not simply to kill, it is the whole process, from the moment you put your head in the water until you try to catch a fish. Spearfishing is a process, sometimes you catch fish and sometimes you don't, but you always have a reward, and it is the interaction with the environment that moves you. I always say the same thing, you take a spearfisherman and you put him in a jail full of farmed sea bass or sea bream and he won't like it at all". It's no longer a competition, or a challenge, it's interacting with the environment, and trying to understand it, I'm here...I'm going to try to understand what's going on around me, to see where I think the fish might be, how I think they will behave, such and such" (Recreational fisher).

Recreational fishers also highlight the socialisation involved in fishing, which as a leisure activity involves "competition with nature" as well as a way of relating to nature and socialising by spending time with friends, sharing a meal, cooking the catch whenever possible after the physical effort of fishing, and experiencing the beauty of nature. The social value of fishing is the main driving force behind recreational fishing.

"And then comes the social aspect... I have been a recreational fisher for many years, nowadays I don't go fishing for the sake of fishing, I go fishing to be with my friends, to share a day out with them. Having a laugh, and if we catch two fish and eat them, that's great. If we don't catch anything, then we go to have lunch, having done some sport, after seeing some dolphins and filming them...you know? This social value, this interaction, do you know? That's what gives me value and that's what makes me go fishing and not just for the sake of catching fish. It's a tremendously important social and cultural activity" (Recreational fisher).

Discussion

The narrative based on sustainable and/or harmless socio-ecological rootedness appeals to non-material values, which morally circumscribe resource access rights. This, however, draws the emphasis away from the principles of biodiversity. Despite the sustainable narratives, which on one hand legitimise artisanal fishing rights, and on the other, license non-commercial, recreational fishing, emphasising its low environmental impact, biologists have been warning about the critical state of coastal resources for decades. The type of relationship set up around "commons" has to do with the way both modes of fishing negotiate the meaning of "public resources", which Boucquey (2017) refers to in her study of recreational and commercial fishing in North Carolina (USA). Through the lens of "moral economy", Boucquey explores the way in which "individuals and social groups express a particular notion of resource use influenced by how they are situated within particular histories, spaces and political-economic processes" (Boucquey, 2017:140). The common pool resource theory, often used to claim rights to resources, still refers to "jurisdictional spaces" and the rights of users, whereas "rights of nature" as a value in its own right continues to be ignored.

Nevertheless, neither the "tragedy of the commons", motivated by the rationalization of economic ends has changed commercial fishing, nor the neoliberal ethos of open common pool resources for the social entertainment in nature claimed by recreational fishers shed light on how socio-ecological interactions are established. In both cases, socio-cultural values embedded in complex socio-ecological feedback, underpinned by the historically

defined ontological human-nature relationship, are at stake in claiming moral rights of access to resources. As Sholte et al. (2015) points out, desirables (values not retained by the market), identified as identity, freedom, socialization, skills and knowledge, are not independent of market values (assigned market values) associated with the object of an individual or social group in a specific context.

This is especially clear in recreational fishing where the target species have a market value. These species are the best known, they are valued for consumption, often offered in restaurants, and highly priced in fishmongers. This reconnecting with nature by competing with it, and more specifically, fishing for “non-consumptive” species with a high market value, and then sharing it on social media, denotes a culture amongst recreational fishers akin to “market consumerism”. In the same way as conspicuous consumption, the non-market social and cultural values of socialisation and exchange that satisfy hedonic expectations encapsulate a post-Fordist-Keynesian ‘moral value’ system. The progressive hegemony of neoliberal ideologies in the last quarter of the twentieth century, which took hold of think tanks and policy makers, and spread through the media to the entire population, left the guarantees of wealth and social distinction in the hands of the growth of market value through the consumption of goods valued at their exchange value. Thus, by determining “values”, the market system was able to classify the masses into distinct groups. For these value groups, an individual “lifestyle” involving motivations and desires could be sold in an environment of freedom of choice in the pursuit of well-being. Leisure activities, including recreational fishing, are part of this value system. Recreational fishing has social and cultural aspects but involves an interaction with nature that is valued in keeping with prices, consumption patterns (including the aesthetic landscape Walker and Fortman (2003) point out), and welfare preferences based on a market-state-society supported model. As Boucquey (2017) highlights, the post-World War II economic boom became the starting point for an activity that has continued to grow. Although social aspects are highlighted as the main objective of the practice of the activity, as something linked to fishing, showcasing the catch and/or other aspects of fishing, often through social media channels (Facebook, WhatsApp, or Instagram), posting what Boucquey (2017) has labelled “trophy photos”. However, depending on the recreational anglers’ social profile, new variables in motivations and purposes could be added, incorporating new aspects of market and immaterial values at the crossroads of social divisions, ethnic groups and, ultimately, socio-cultural differences that have not been explored in this study. Moreover, the fishers’ profile has not been taken into account through distinguishing between those who have a family tradition and can be repositories of knowledge (Pita, 2020),

and the “newer” ones who use much more social media but have no previous knowledge or experience of fishing.

Paradoxically, the high selectivity of artisanal fishing gear may be responsible for poor selection practices which are induced by market forces attempting to match catches with demand. By eliminating the top predators of the more valued species, selectivity can cause significant damage to ecosystems by altering biodiversity (Lloret et al., 2018). Loss of knowledge about fish induced by standardisation of consumption patterns influences the production processes impacting ecosystems. Therefore, the loss of knowledge surrounding fish consumption affects specialization in a few specific species valued in the market, which in turn influences prices, and differentiates between those consumers who can afford to pay high prices for fish and those who cannot. These factors indirectly affect socio-ecological interactions, jeopardizing the cultural legacy and accumulated knowledge of artisanal fishing. In a study, García Rodrigues and Villasante (2016) already start to point out that by tracing the value chains fisheries are entangled in, the underlying socio-ecological systems are uncovered to reveal the paradoxes of fishing’s ecologically embedded cultural values, which are undermined by market-based decisions stemming from socio-economic drivers (García Rodrigues & Villasante, 2016). Socio-ecological system values need to be assessed throughout the value chain, as social aspects also involve land-based fisheries-related activities that make up the social organisation (production relations, post-production activities, consumption) and ecological aspects (production embodied in fishing decisions according to the condition of the resource and other aspects affecting species and ecosystems). Food system values should therefore be included in conservation management plans.

The poor state of commercial fish stocks has led to regulation systems being set up, most of them under co-management, including quotas, day limits and restrictive polyvalence systems. In other cases, consumer demand has pushed fishers to tailor fishing strategies to a few specific overpriced species. According to the fishers’ perceptions, this specialization implies transforming fishing in response to a process of market-driven economic rationalisation, akin to industrialisation, and which does not correspond to the artisanal fishing values they profess. While sustainability is apparently assured, cultural and social values with moral and ethical principles regarding the environment are increasingly lacking. Specialising has changed the way fishers experience the socio-ecological embeddedness of fishing and is expressed as a feeling of being less interactive with the environment in their daily activity. This limits their flexibility in fishing decisions, as well as the skills and knowledge tested in the daily fishing tactics used by a “good fisher”, and which make them feel alive. The concept of “metabolism of labour” is taken from Marx, and refers to material aspects (environmental conditions), as well as the intentionality

of human interactions with the environment, which is currently not alien to the structuring effect of political economy and capitalist value relations. Howard (2018: 68) already observed this in Scottish fishing trawlers, and states that “the key disruption in human–environment relations in capitalism is the alienation of human labor, which is at the same time the alienation of human labor from its environment and the metabolisms that sustain it”. While fishing regulations may produce short-term results of viability of fishing enterprises and recovery of stocks, the loss of the values of “fishing culture” and “fish culture” that participate in the same socio-economic-ecological cycle may produce the opposite effects in the long-term. Several studies warn that specialization and/or dependence on specific resources may lead to attachments to a specific demand whose oscillation could result in market failure or considerable changes affecting the fishers’ vulnerability (Boonstra et al., 2019).

The socio-ecological-embeddedness does not simply refer to fishing as an activity at the interplay of ecology, socio-economics and culture, it implies that it must also be integrated with a “fish culture” that provides knowledge about species and supports consumption decisions, thus closing the production-consumption cycle in a sustainable way. The political economy that promotes lifestyles on the basis of exchange value supposedly ensures freedom of choice, although the loss of knowledge and the right to be informed does not allow for a broadening of the spectrum of consumer choice. “Fishing rights” must be aligned with “food rights” and cultural knowledge as a way of ensuring environmental protection and conservation by considering the rights of nature and its intrinsic values, within which social and cultural rights are ensured.

Conclusions

Socio-ecological relationships are established through activities that interact with biodiversity in the flow of ecosystem goods and services, and which meet the needs and well-being of humans, enabling them to sustain life and pursue particular lifestyles. However, structural barriers can make it difficult to align wants and needs in a way that they can be met by laying economic, ecological and socio-cultural foundations in a sustainable way, as intended. Biodiversity protection needs to be integrated into the economy, ensuring livelihoods, well-being and health, as well as providing equity between activities, and an ethical basis for environmental protection (Costanza, 2020). Market and non-market values can emerge as paradoxes encompassing environmental, social and economic issues that should be considered alongside a thorough analysis of the socio-ecological systems of fisheries as shown in this study. This requires unveiling the values undermining systems, which in the particular

case of commercial fisheries, can be done by examining the whole “value chain” and unravelling the political-economic processes that structure welfare in recreational fisheries.

Harden-Davies et al. (2020) pointed out that reciprocity, one of the pillars needed to guarantee the rights of nature, must be operationalised in each case by unveiling these values of socio-ecological systems. In this case study, reciprocity can be understood as a sustainable socio-ecological feedback loop under ethical and moral principles that must be integrated into management decision-making. To do so, as this study has shown, it is critical that the cultural knowledge of fishing and fish is recovered. As a recommendation for management, this would mean seeking innovation and transmitting knowledge through educational programmes, which can be implemented by environmental managers, as well as creating information systems for recreational fishers, taking into account their local knowledge of ecology. For example, in the vein of Ocean Literacy (OL) activities which are defined as “fundamental means to enhance Ocean knowledge, build connections in people’s lives and support and encourage citizens and stakeholders to act in a positive way for our Ocean”.¹²

More weight should be given to wildlife watching (e.g., dolphin-watching or whale-watching) as a trade-off for management regulations, and to highlight the well-being effects of reconnecting with nature through recreational fishing. This is to ensure that the social and cultural aspects of recreational fishing associated with well-being are maintained.

Regulations must guarantee values without endangering the environment and be adapted to the characteristics of each activity. Instead of regarding recreational fishing as a tourist (non-consumptive) activity, it should be considered on a par with professional fishing in terms of its extractive capacity. Therefore, the same restrictions face ecosystem erosion should be applied to both, especially in marine protected areas. Values must be translated into rights, and also into duties, as they set the moral standards for judging whether practices involving public goods are “bad” or “good”. All stakeholders working in cooperation need to be involved in the identification of those values that under the ethical and moral prism ensure socio-cultural and economic needs are met in tandem with nature conservation. In addition, the changing needs and values that may or may not be accepted according to the economic, social and political realities valued by each social group need to be identified to ensure that the rights of nature and society are respected. The effects of climate change, for example, should be incorporated in future value assessments.

¹² <https://ioc.unesco.org/our-work/ocean-literacy>

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Data Availability The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Informed Consent Not applicable.

Conflict of Interest The author has no conflicts of interest to declare.

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References

- Bohannon, P. (1989). *1957*. London, Oxford University Press.
- Boonstra, W. J., Valman, M., & Bjørkvik, E. (2019). A sea of many colours – how relevant is Blue Growth for capture fisheries in the Global North, and vice versa? *Marine Policy*, *87*, 340–347. <https://doi.org/10.1016/j.marpol.2017.09.007>
- Boucquey, N. (2017). ‘That’s my livelihood, it’s your fun’: The conflicting moral economies of commercial and recreational fishing. *J Rural Stud.*, *54*, 138e150.
- Cabana, D., Ryfield, F., Crowe, T. P., & Brannigan, J. (2020). Evaluating and communicating cultural ecosystem services. *Ecosystem Services*, *42*, 101085.
- Chapron, G., Epstein, Y., & López-Bao, J. V. (2019). A rights revolution for nature. *Science*, *363*(6434), 1392–1393. <https://doi.org/10.1126/science.aav5601>
- Colloca, F., Crespi, V., Cerasi, S., & Coppola, S. R. (2004). Structure and evolution of the artisanal fishery in a Southern Italian coastal area. *Fisheries Research*, *69*, 359–369.
- Costa, J. (1915). Colectivismo agrario en España. Madrid. “Biblioteca Costa”, 579–582.
- Costanza, R. (2020). Valuing natural capital and ecosystem services toward the goals of efficiency, fairness, and sustainability. *Ecosystem Services*, *43*, 101096. <https://doi.org/10.1016/j.ecoser.2020.101096>
- Costanza, R., Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., Oneill, R. V., Paruelo, J., Raskin, R. G., Sutton, P., & van den Belt, M. (1997). The value of the world’s ecosystem services and natural capital. *Nature*, *387*, 253–260.
- Díaz, S., et al. (2018). Assessing nature’s contributions to people. Recognizing culture, and diverse sources of knowledge, can improve assessments. *Science*, *359*(6373). <https://doi.org/10.1126/science.aap8826>.
- Durkheim, E. (1985). De la division del trabajo social. Planeta-Agostini.
- Engert, K., & Schürkmann, C. (2021). Posthuman? Nature and Culture in Renegotiation. *Nature and Culture*, *16*(1). <https://doi.org/10.3167/nc.2020.16010>
- Etzioni, A. (1988). *The Moral Dimension: Towards a New Economics*. The Free Press.
- Font, T., & Lloret, J. (2014). Biological and Ecological Impacts Derived from Recreational Fishing in Mediterranean Coastal Areas. *Reviews in Fisheries Science & Aquaculture*, *22*(1), 73–85.
- Font, T., Lloret, J., & Piante, C. (2012). Recreational Fishing Within Marine Protected Areas. In the Mediterranean Marine Protected Areas in the Mediterranean. Technical Report, MedPAN North Project, WWF France, France.
- García del Hoyo, J., & Jimenez de Badariaga, C. (2016). The Debate on the Concept of Value: Interpretations from the Perspective of Economics and Social Anthropology. *Mediterranean Journal of Social Sciences*, *7*(2), 11–20. <https://doi.org/10.5901/mjss.2016.v7n2p11>
- García Rodrigues, J., & Villasante, S. (2016). Disentangling seafood value chains: Tourism and the local market driving artisanal fisheries. *Marine Policy*, *74*, 33–42. <https://doi.org/10.1016/j.marpol.2016.09.006>
- Gómez, S. (2006). Los procesos de arreglo en los Pirineos Orientales: Antropología e Historia. *Initium*, *11*, 485–508.
- Gómez, S. (2010). La justicia viscuda i la cultura legal: Els ciutadans i la pràctica de la mediació penal a Montpeller (Francia). *Revista D’etnologia De Catalunya*, *35*, 58–69.
- Gómez, S. (2018). El patrimonio de la pesca artesanal y la gestión sostenible de los recursos en las áreas marinas protegidas: el caso de Cap de Creus. In B. Santamarina, A. Coca, O. Beltran (Eds.), *Antropología ambiental. Conocimientos y prácticas locales a las puertas del Antropoceno*. (pp. 201–217). Icaria.
- Gómez, S., Carreño, A., & Lloret, J. (2021). Cultural heritage and environmental ethical values in governance models: Conflicts between recreational fisheries and other maritime activities in Mediterranean marine protected areas. *Marine Policy*, *129*, 104529. <https://doi.org/10.1016/j.marpol.2021.104529>
- Gómez, S., Carreño, A., Sánchez, E., Martínez, E., & Lloret, J. (2019). Safeguarding marine protected areas in the growing Mediterranean blue economy. Recommendations for recreational fisheries. Pharos4MPAs project.
- Gómez, S., & Lloret, J. (2017). The artisanal fisheries guidelines as a tool for marine stewardship: the case of Cap de Creus Marine protected area. In S. Jentoft, R. Chuenpagdee, M.J., Barragán-Paladines, N. Franz (Eds.), *The Artisanal Fisheries Guidelines. Global Implementation*. (pp. 401–423). Springer international publishing. <https://doi.org/10.1007/978-3-319-55074-9>
- Gómez, S., Lloret, J., Demestre, M., & Riera, V. (2006). The decline of the artisanal fisheries in Mediterranean coastal areas: The case of Cap de Creus (Cape Creus). *Coastal Management*, *34*, 217–232.
- Gudynas, E. (2011). Desarrollo, derechos de la naturaleza y Buen Vivir después de Montecristi. In W. Gabriela (Eds.), *Debates sobre cooperación y modelos de desarrollo. Perspectivas desde la sociedad civil en el Ecuador*. (pp. 83–102). Centro de Investigaciones Ciudad y Observatorio de la Cooperación al Desarrollo.
- Guillou, A., & Crespi, V. (1999). Enquête-cadre concernant la répartition, la composition et l’activité des petits métiers dans le Golf de Lion. Rapport IFREMER DRV/RH/RST/99- 14. 106 pp.

- Guyader, O., Berthou, P., Koutsikopoulos, F., Alban, F., Demanèche, S., Gaspar, M. B., Eschbaum, R., Fahy, E., Tully, O., Reynal, L., Curtil, O., Frangoudes, K., & Maynou, F. (2013). Small scale fisheries in Europe: A comparative analysis based on a selection of case studies. *Fisheries Research*, *140*, 1–13. <https://doi.org/10.1016/j.fishres.2012.11.008>
- Harden-Davies, H., Humphries, F., Maloney, M., & Wright, G. (2020). Rights of Nature: Perspectives for Global Ocean Stewardship. *Marine Policy*, *122*, 104059.
- Hirons, M., Comberti, C., & Dunford, R. (2016). Valuing cultural ecosystem services. *Annual Review of Environment and Resources*, *41*(5), 1–5.1–5.30. <https://doi.org/10.1146/annurev-environ-110615-085831>
- Howard, Mc. C. (2018). The anthropology of human-environment relations Materialism with and without Marxism. *Focaal. Journal of Global and Historical Anthropology*, *82*, 64–79. <https://doi.org/10.3167/fcl.2018.820105>
- ICATMAR. (2020). Diagnosi de la pesca marítima recreativa a Catalunya. Direcció General de Pesca i Afers Marítics. Generalitat de Catalunya.
- Just, P. (2001). *Dou Donggo Justice: Conflict and Morality in an Indonesian Society*. Rowman & Littlefield Publishers.
- Klenck, M. (2019). Moral Philosophy and the ‘Ethical Turn’ in Anthropology. *ZEMO*, *2*, 331–353. <https://doi.org/10.1007/s42048-019-00040-9>
- Kluckhohn, C. (1951). Values and value-orientation in the theory of action: an exploration in definition and classification. In T. Parsons, E.A. Shils (Eds.), *Toward a general theory of action*. Harvard University Press.
- Kopnina, H. (2012). Re-Examining Culture/Conservation Conflict: The view of anthropology of conservation through the lens of environmental ethics. *Journal of Integrative Environmental Sciences*, *9*(1), 9–25. <https://doi.org/10.1080/1943815X.2011.625951>
- Kopnina, H. (2014). Environmental justice and biospheric egalitarianism: reflecting on a normative-philosophical view of human-nature relationship. *Earth Perspectives*, *1*(8). <http://www.earth-perspectives.com/content/1/1/8>
- Lloret, J., Biton-Porsmoguer, S. Carreño, A. Di Franco, A., Sahyoun, R., Melià, P., Claudet, J., Sève, C., Ligas, A., Belharet, M., Calò, A., Carbonara, P., Coll, M., Corrales, X., Lembo, G., Sartor, P., Bitetto, I., Vilas, D., Piroddi, C., Prato, G., Charbonnel, E., Bretton, O., Hartmann, V., Prats, L., & Font, T. (2020). Recreational and artisanal fisheries threaten vulnerable species in coastal and off-shore Mediterranean waters. *ICES Journal of Marine Science*.
- Lloret, J., Cowx, I. G., Cabral, H., Castro, M., Font, T., Gonçalves, J. M., Gordo, A., Hoefnagel, E., Matić-Skoko, S., Mikkelsen, E., Morales-Nin, B., Moutopoulos, D. K., Muñoz, M., Neves dos Santos, M., Pintassilgo, P., Pita, C., Stergiou, K. I., Ünal, V., Veiga, P., & Erzini, K. (2018). Artisanal coastal fisheries in European Seas are not what they were: Ecological, social and economic changes. *Marine Policy*, *98*, 176–186. <https://doi.org/10.1016/j.marpol.2016.11.007>
- Lloret, J., & Font, T. (2013). A comparative analysis between recreational and artisanal fisheries in a Mediterranean coastal area. *Fisheries Management and Ecology*, *20*, 148–160. <https://doi.org/10.1111/j.1365-2400.2012.00868.x>
- Malinowsky, B. (1982). *Crimen y costumbre en la sociedad salvaje*. Ed. Ariel.
- Mauss, M. (1971). “Ensayo sobre los dones. Motivo y forma del cambio en las sociedades primitivas”. *Sociología y Antropología*. Tecnos.
- Maya-Jariego, I., Martínez-Alba, I., & Alieva, D. (2021). “Plenty of black money”: Netnography of illegal recreational underwater fishing in southern Spain. *Marine Policy*, *126*, 104411. <https://doi.org/10.1016/j.marpol.2021.104411>
- Maynou, F. (2020). Evolution of fishing capacity in a Mediterranean fishery in the first two decades of the 21st c. *Ocean & Coastal Management*, *192*, 105190. <https://doi.org/10.1016/j.ocecoaman.2020.105190>
- Maynou, F., Recasens, L., & Lombarte, A. (2011). Fishing tactics dynamics of a Mediterranean artisanal coastal fishery. *Aquatic Living Resources*, *24*(2), 149–159.
- Molony, et al. (2022). Editorial: Sustainable Development Goal 14 - Life Below Water: Towards a Sustainable Ocean. *Frontiers in Marine Science*, *8*, 829610. <https://doi.org/10.3389/fmars.2021.829610>
- Moreno, F. (1991). ¿El dinero? Cuadernos de Antropología 11. Anthropos
- Murandian, R., & Pascual, U. (2020). Ecological economics in the age of fear. *Ecological Economics*, *169*, 106498.
- Pascual, U., et al. (2017). Valuing nature’s contributions to people: the IPBES approach. *Current Opinion in Environmental Sustainability*, *26–27*(7–16), S1877343517300040. <https://doi.org/10.1016/j.cosust.2016.12.006>
- Pi-Sunyer, O. (1977). Two stage of technological change in a catalan fishing community. In M. Estellie Smith, M. (Ed.), *Those who live from the sea. A study in maritime anthropology*. West Publishing Co.
- Pita, P., Antelo, M., Hyder, K., Vingada, J., & Villasante, S. (2020). The use of recreational fishers’ ecological knowledge to assess the conservation status of marine ecosystems. *Frontiers in Marine Science*, *7*, 7242. <https://doi.org/10.3389/fmars.2020.00242>
- Polanyi, K. (1944). *La gran transformación: Los orígenes políticos y económicos de nuestro tiempo*. Fondo de Cultura Económica.
- Radcliffe-Brown, A. R. (1985). *Estructura y función en la sociedad primitiva*. Planeta-Agostini.
- Rahola y Tremols, F. D. (1904). *Algunas noticias acerca de las antigua comunidades de pescadores en el Cabo de Creus*. Imprenta de la Casa Provincial de la Caridad.
- Robbins, J., & Sommerschuh, J. (2016). Values. In F. Stein, S. Lazar, M. Candea, H. Diemberger, J. Robbins, A. Sanchez, R. Stasch (Eds.), *The Cambridge Encyclopedia of Anthropology*. <https://doi.org/10.29164/16values>
- Satterfield, T. (2001). In search of value literacy: Suggestions for the elicitation of environmental values. *Environmental Values*, *10*, 331–359.
- Scholte, S. S. K., van Teeffelen, A. J. A., & Verburg, P. H. (2015). Integrating socio-cultural perspectives into ecosystem service valuation: A review of concepts and methods. *Ecological Economics*, *114*, 67–78. <https://doi.org/10.1016/j.ecolecon.2015.03.007>
- Strang, V. (2016). Justice for All Inconvenient truths and reconciliation in human nonhuman relations. In H. Kopnina, E. Shoreman-Ouimet (Eds.), *Routledge Handbook of Environmental Anthropology*. Routledge, Abingdon and New York.
- Thompson, E. P. (1971). The Moral Economy of the English Crowd in the Eighteenth Century. *Past Present*, *50*, 76e136.
- Thompson, E. P. (1991). The Moral Economy Reviewed. In E.P. Thompson. *Customs in Common*. (pp.259 351) Pontypool: Merlin.
- Walker, P., & Fortmann, L. (2003). “Whose Landscape? A Political Ecology of the ‘Exurban’ Sierra.”. *Cultural Geographies*, *10*(4), 469–91.

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