CONTRIBUTION OF SPORT AND RECREATIONAL FISHING AS A DIFFERENTIATED TOURIST PRODUCT TO THE ATTRACTION OF THE SERRA DA ESTRELA: ANGLERS’ POTENTIAL AND PERCEPTION.
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ABSTRACT

Recreational and sport fishing has traditionally been seen and managed as a secondary and even residual activity in tourism, without effective concerted strategies for valuing this tourism development asset or integrating it into product promotion. The research developed in the mountain territory of Serra da Estrela in Portugal aims to explore the importance of recreational and sport fishing as a differentiated product for rural territories and its contributions to the enlargement of the tourist offer of this destination. The attraction of the surface waters of this mountain territory for sport fishing, in particular salmonidae, represents a tourist and recreational resource for the region with concrete effects on local commerce, hotels, and restaurants, given the practitioners involved and the natural and cultural contexts. The environmental value associated with its mountain geography and the existing ecosystems project the Serra da Estrela as a fishing destination that is increasingly valued, whether as the main motivation or as a complement to other recreational and tourist activities. We analyse the existing surface water resources, the present fish species, and the regulations for the practice of fishing, as well as the consideration of the environmental value of this territory for the development of an activity with strong ties to nature. The objectives are to establish lines of investigation to be followed and strategies to be implemented for building better knowledge of this activity and its practitioners. In this context, a survey of anglers will provide information to assess the logic of action, whether economic, environmental or administrative, to not only strengthen the value of the destination but also to boost this activity, contributing simultaneously to the enhancement of water resources as tourist assets with different uses and demands throughout the year.

Keywords: Tourism, Sport Fishing, Fluvial Resources, Nature-based leisure, Mountain, Serra da Estrela, Sustainability

RESUMO

A pesca recreativa e desportiva tem sido tradicionalmente vista e gerida como uma atividade secundária e mesmo residual no turismo, sem que exista uma estratégia eficaz para a sua valorização como ativo de desenvolvimento turístico sob a forma de estratégias concertadas ou que seja promovida de forma integrada com outros produtos. A investigação é desenvolvida no território de montanha da Serra da Estrela em Portugal, analisando a importância da pesca recreativa e desportiva, como produto diferenciado para os territórios rurais e os seus contributos para o alargamento da oferta turística deste destino. A atração das águas superficiais deste território de montanha pela pesca desportiva, em particular salmonídeos, representa um recurso turístico e recreativo para a região com efeitos concretos no comércio local, hotéis e restaurantes, dados os praticantes envolvidos e os contextos naturais e culturais oferecidos pelo território. O valor ambiental associado à sua geografia de montanha e aos ecossistemas existentes projetam a Serra da Estrela como um destino de pesca cada vez mais valorizado, quer como motivação principal, quer como complemento das atividades recreativas e turísticas. Analisamos os recursos hídricos superficiais existentes, as espécies piscícolas atuais, e os regulamentos para a prática da pesca, bem como a consideração do valor ambiental deste território para o desenvolvimento de uma atividade que estabelece uma forte relação com a natureza. Os objetivos são estabelecer linhas de investigação a serem seguidas e estratégias a serem implementadas para um melhor conhecimento desta atividade e dos seus praticantes. Neste contexto, a implementação de um inquérito aos pescadores permite-nos avaliar a lógica de acção, tanto a nível económico, ambiental e administrativo, para valorizar o destino e impulsionar esta atividade, contribuindo simultaneamente para a valorização dos recursos hídricos como bens turísticos com diferentes usos e exigências ao longo do ano.

Palavras-chave: Turismo, Pesca Desportiva, Recursos Fluviais, Lazer baseado na Natureza, Montanha, Serra da Estrela, Sustentabilidade
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RESUMEN
La pesca recreativa y deportiva ha sido tradicionalmente vista y gestionada como una actividad secundaria e incluso residual en el turismo, sin que exista una estrategia efectiva para su valorización como activo de desarrollo turístico en forma de estrategias concertadas o que se promocione de forma integrada con otros productos.

La investigación se desarrolla en el territorio de montaña de la Serra da Estrela en Portugal, analizando la importancia de la pesca recreativa y deportiva, como producto diferenciado para los territorios rurales y sus contribuciones a la ampliación de la oferta turística de este destino. La atracción de las aguas superficiales de este territorio de montaña para la pesca deportiva, en particular de salmónidos, representa un recurso turístico y recreativo para la región con efectos concretos sobre el comercio local, la hostelería y la restauración, dados los practicantes involucrados y los contextos naturales y culturales que ofrece el territorio.

El valor ambiental asociado a su geografía montañosa y a los ecosistemas existentes proyectan a la Serra da Estrela como un destino de pesca cada vez más valorado, ya sea como motivación principal o como complemento de las actividades recreativas y turísticas. Se analizan los recursos hídricos superficiales existentes, las especies piscícolas presentes y la normativa para la práctica de la pesca, así como la consideración del valor ambiental de este territorio para el desarrollo de una actividad que establece una fuerte relación con la naturaleza. Los objetivos son establecer líneas de investigación a seguir y estrategias a implementar para un mejor conocimiento de esta actividad y de sus practicantes. En este contexto, la realización de una encuesta a los pescadores permite evaluar la lógica de actuación, tanto a nivel económico como ambiental y administrativo, para poner en valor el destino y potenciar esta actividad, contribuyendo simultáneamente a la puesta en valor de los recursos hídricos como activos turísticos con diferentes usos y demandas a lo largo del año.

Palabras clave: Turismo, pesca deportiva, recursos fluviales, ocio en la naturaleza, montaña, Serra da Estrela, sostenibilidad

INTRODUCTION
The lakes, lagoons and rivers of Serra da Estrela constitute a relevant resource for the promotion of recreational and sports activities related to fishing and nature contact. The attraction of the surface waters of this mountain territory for sport and recreational fishing, in particular salmonids, represents a tourist asset resource for the region with concrete
effects on the local economy, given the practitioners involved and the consumption of associated services, and in the nature given the need to preserve ecosystems and existing heritage values (Fernandes & Ventura, 2020). The environmental value associated with its mountain geography, classified as a natural park and a UNESCO World Geopark, and the existing ecosystems project Serra da Estrela as a fishing destination that is increasingly valued, either as the main motivation or as a complement to the recreational and tourist activities developed.

In this context it can be seen that the structuring of recreational and sport fishing in Serra da Estrela lacks a greater promotional development of the product, qualifying and regulating the bodies of water for the reception of this activity (Fernandes & Ventura, 2022). This recreational and sports offer constitutes a niche market of interest in combating the seasonality of the destination, in the territorial promotion of the region, in the valorization of the water resources, and in the profitability of the associated services (Ditton, Holland & Anderson, 2002; Miranda, 2012; Tekin, 2019).

This research seeks to reflect on the importance and value of inland surface waters for the development of economic activities, notably associated with tourism and leisure activities, and the effects that are potentially generated for local communities. The identification of demands that generate different ways of attracting visitors to the region, promoting mitigation effects of the traditional periods of lower demand, and fostering different tourism practices in inland destinations, such as sport and recreational fishing. The aim is to investigate how water resources can be exploited from a tourism point of view and consider their geographical features and the heritage context that the Serra da Estrela destination provides. The attempt is evaluate the business opportunities while reflecting on the ways of controlling the uses and logic of preservation and environmental sustainability. An electronic survey was applied to fishermen, with the support of associations, fishing clubs, and interest groups with a presence in social networks, to collect information that would allow knowing the practices and practitioners, the main problems detected, lines of action for its management and order, in the purpose of valuing and recognizing the tourist fishing product.

The classification of this territory as a Natural Park (PNSE) and a UNESCO World Geopark gives it greater international recognition and valorisation of its natural resources, which demands greater responsibility from the various agents of the territory, both in the valorisation of natural resources and in the control of outdoor activities with direct interaction with nature. Outdoor activities show a tendency to increase and diversify, fostering a growing interest in areas of recognised environmental value (Arlinghaus et al., 2021; Morar & Pop, 2016). In this context the use of surface waters for sporting and recreational activities, including fishing, gain expression and foster the visitation of the region. Thus, it is verified the potential enlargement of the assets to visit the region, to expand services, to implement control and inspection means, contributing to the tourism development in face of the natural conditions and activities to promote throughout the year. The study is structured in 5 parts, complementary to each other, establishing first the potential of surface waterways for recreation and sports and their value for inland regions, namely for sport and recreational fishing, as an activity that attracts visitors and tourism. This is followed by an overview of the Serra da Estrela territory and its several surface water resources, their functions and uses, and the fish species held. The third part explains the methodology of the research and the process of surveying the anglers. In the fourth part we promote a framework of the fishermen and their practices and motivations for moving to this territory. Descriptive analyses are established based on the survey and its systematization in tables, seeking to establish references to the profile of the fisherman and his behavior in the organization of the fishing journey. The fifth part analyzes the results of the survey regarding the angler’s behavior and their perceptions about the recreational and sportive potential of the rivers and lakes of the
Serra da Estrela, the potential of fishing as a differentiated tourist product and the main constraints for the management of the water resources and fishing practices. At the end, conclusions and reflections are made about the importance of fishing to inland regions and regions of high natural value, the main concerns of the anglers, and contributions to the valorization of fishing as a differentiated touristic product.

1. FLUVIAL WATERS AND THEIR RECREATIONAL AND SPORT FUNCTIONS

The recreational and sports practices based on water resources use the hydro-tourism potential to diversify the offer and foster activities with different intensities of water use, from contemplation and bathing to sporting activities of greater physical intensity (Batinaú & Sorocovshi, 2012). Aquatic environments such as rivers, lakes, estuaries, margins, wetlands, among others, are systems with high ecological-natural value, offering specific opportunities for education and the understanding of nature, recreation, and leisure, while at the same time being vulnerable to tourism activities (Grecu & Iosif, 2014; Morar & Pop, 2016). The areas classified and that have statutes of protection/preservation are, in their entirety, in close connection with the water and how it interacts at the level of ecosystems and geomorphological structures, constituting environments of significant fragility. Their value, environmental and heritage, should mean for local communities opportunities to promote forms of sustainable development, linking tourism, education, conservation, and protection in the valorisation of the resource and in the relationship with local communities, enhancing their recognition, their self-esteem, and the generation of conditions to improve their income and social well-being. (Eagles, McCool & Haynes, 2002).

Inland regions and areas of recognised natural value have, in the context of the valorisation and promotion of surface water tourism, the possibility of making the recreational and sport fishing activity an opportunity to promote leisure activities and nature-based tourism experiences in inland areas, particularly mountain areas where the environmental, landscape and geo-heritage values add to these activities a differentiation, fostering a link to the eco-cultural values of mountain ecosystems and promoting economic benefits for the region, for the services enjoyed and goods consumed. In fishing, in addition to relaxation and recreation, the educational focus should be promoted, as protected areas should be conserved and valued for the heritage resources they contain and the fragility of their ecosystems (Ministerio do Turismo, 2010; Brainerd, 2010). Thus, the articulation between the resources and the different forms of enjoyment should promote new types of tourism in the region. At the same time, there is an increased awareness of the environmental values and uses associated with local people, particularly considering their natural assets (FAO, 2008; McManus et al., 2011). Recreational fishing is one of the dominant or even exclusive uses of many aquaculture resources in inland waters (Arlinghaus, 2008). In mountainous regions. where water resources are abundant, income growth and employment opportunities can be fostered from fishing tourism, supported by the fish farming and associated services (Hoisty, Waynarovich & Moth-Polsen, 2012).

Fishing tourism may be developed according to the following variables that should be observed (Fernandes & Ventura, 2022):
existence of surface water bodies – rivers, lakes, dams, canals, ponds, weirs, among others;
• specific fish species, generating attraction and interest for recreational and sport fishing;
• basic infrastructure and support for the development of fishing tourism – commerce and services;
• access conditions to fishing places – roads, paths, and trails;
• capacity of the water body and its banks for a safe and sustainable activity;
• environmental and landscape quality for an activity that values the contact with and contemplation of nature;
• adequate legislation and regulation for a sustainable fishing practice and control of the activities to be promoted;
• complementary services that guarantee the tourist fishing activity and its accomplishment with comfort and safety.

For the development of fishing tourism, it is also crucial to know the characteristics and trends of the segment that seeks it and about the region that hosts and develops it, allowing the correct decision-making and definition of strategies to improve tourism performance and the protection of water resources that support the different practices (FAO, 2008; Templetom, 1995). In addition to the income generated by fishing activity and associated services, benefits can also be expected from the conservation of species and their habitats in terms of biodiversity and geoconservation (Brainerd, 2010). Anglers will search for an area according to its species and the abundance of catches. The quality of the water resources, the natural context of its surroundings, the existing species, and their abundance, generate recognition as a destination for fishing activities, which presupposes that the natural resources are properly managed, ensuring the maintenance of fish stocks, in particular salmonids, promoting the attractiveness of the anglers and their stay in the region. (Fernandes & Ventura, 2022; Higginbottom, 2004; Taylor et al., 2016).

Recreational fishing is divided into two categories (Amaral & Ferreira, 2010): recreational fishing and sport fishing. Recreational fishing is considered to be ‘fishing carried out as a leisure or recreational activity in which the fish caught cannot be sold. Sport fishing is recreational fishing carried out in organized competition to obtain sporting marks, including championships, learning techniques, and developing equipment. The perception of recreational fishing activities has not traditionally been seen and managed, in Portugal, as a privileged activity within tourism, particularly in inland mountain waters. In practice, there has not been a national or regional strategy for its valorisation as a tourism development asset, through actions and the involvement of players that articulate and foster the economic and social factors present in this activity. The existence of clubs, associations, and fishing federations has sought to boost the competitions, but in a way disconnected from the tourism process, i.e. the structuring of a differentiated tourism product, able to potentiate the displacement of specific demand segments, as the main or complementary motivation. According to IBAMA, (2010, p.46), fishing tourism by itself is capable of attracting tourists from all over the world, and should add other attractions and other product options, without losing the essence, the practice of fishing and interaction with nature.

It is therefore strategic to recognise the importance of aquatic resources, the enhancement of ecosystems, and the effective management of species conservation, their natural environments, and fishing activities, given the uses to be considered in the management of these resources and the demand they experience. Fluvial tourism does not require large investments but it needs regulation, control, and promotional information. It forms an integral part of its surroundings with its historical, archaeological,
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In this context, the regulation of recreational fishing should provide a balance between the conservation of the environment and natural resources and the economic safeguard that sustains the activity. It becomes relevant to develop studies and investigations that allow knowing the facts and the perceptions of the activity, either by anglers, local communities, and administrative entities, or in biological, socio-economic, and regulatory terms. In this context, regulatory measures must be taken that are dynamic and sensitive to changes in ecosystems, to the interests of anglers, and to the economic sectors for which the activity is important (Higginbottom, 2004; Ditton, Holland, Anderson, 2002). The importance of the community and its active participation in the process of developing tourism activity must be recognized and promoted, obtaining the collaboration of the populations in its conservation and the perception of new opportunities for the local economy. The local community should be perceived as a great ally of tourism fishing activities, as its knowledge of natural resources, respect for the preservation of the environment in which it lives, and capacity to control activities become relevant and contribute to the solution of the social, economic and political/administrative problems associated with this activity, which results from a direct relationship with sensitive environmental resources. (ANA; 2005).

2. SERRA DA ESTRELA: TERRITORY AND FLUVIAL RESOURCES

Serra da Estrela is the highest mountain in continental Portugal, with a geomorphologic and climatic structure that gives this territory unique national characteristics which are the basis for its conservation and classification as a protected area. It integrates, in structural terms, the Cordillera Central Ibérica and its geomorphological profile establish, from its central plateau (Torre, with 1993 m), the structuring of the hydrographic network and the occupation of the slopes, with emphasis on the Mondego and Zêzere valleys, originating a differentiated occupation and with distinct bioclimatic plateaus. It corresponds to an area dominated by granites, although the argillaceous schists have great representativeness, both being ancient rocks of the Hercynic, very fractured and with diverse evolutionary behaviour towards erosion, giving origin to differentiated landscape forms (Fernandes et al., 2016; Gomes et al., 2017). The central plateau of Serra da Estrela represents an important biogenetic reserve, registering, according to the Habitats Directive, thirty-four natural habitats, which led to its classification as a Natural Park and 2000 Natura network. In addition to this biological wealth, it includes notable geomorphologic resources, especially those of glacial origin such as valleys, moraines, circles, erratic blocks, and lagoons. It constitutes a "living laboratory" in which natural resources, the population's way of life, and the biological and geological diversity are mixed in cultural landscapes, providing the potential for nature tourism and the development of products differentiated by the resources held and the potential for associated practices (Fernandes, 2015).

The Serra da Estrela territory encompasses markedly natural areas with others of great historical and cultural value, generating an ecocultural mosaic of great environmental relevance. The uniqueness of these spaces contributes to the strong symbolism regarding their morphological structure, the richness of fauna and flora, the heritage, and the cultural and ethnographic dimension. These elements, associated with the different settlement forms of the Serra da Estrela region and its production systems, accentuate the
genuineness and authenticity of mountain spaces, promoting tourist attractiveness (Silvia, Abrantes & Kastenholz, 2018; Fernandes, 2015).

The surface waters of the Estrela Geopark territory are composed of rivers, lakes, and reservoirs, corresponding in total to a surface divided by 53.7 km² of retained waters (lakes, dams, rivers, and RAMSAR site - Wetlands of International Importance) and 826.8 km of running water, corresponding to rivers, their tributaries, and sub-tributaries. The diversity of water lines, and the ecosystems they integrate, together with lakes, provide the territory with strong potential for the development of water-based tourism and leisure activities. The main activities carried out on these water surfaces, given their characteristics in terms of geomorphology, climate, ecosystems present, and recreational/sports interests of local communities and tourists, can be systematized in Table 1 and Figure 1.

### TABLE 1 - SURFACE WATER RESOURCES AND ASSOCIATED RECREATIONAL AND SPORT USES

<table>
<thead>
<tr>
<th>WATER RESOURCES</th>
<th>ENTERTAINMENT USES AND SPORTS</th>
<th>RESTRICTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivers:</td>
<td>Recreational (contemplation and picnics)</td>
<td>- Sport fishing requires licenses for its practice due to its performance in rivers or in the protected fishing zone of Serra da Estrela</td>
</tr>
<tr>
<td>Zezere and tributaries; Mondego and tributaries; Alva and tributaries.</td>
<td>Bathing, Canoeing, Rafting, Recreational and sport fishing</td>
<td></td>
</tr>
<tr>
<td>Dams, Lakes, and Lagoons: Lagoa Comprida; Lagoa Escura; Lagoa do Vale Rossim; Lagoa do Vinato; Lagoa do Covão de Ferro; Albufeira da Barragem do Lagoacho; Lagoa do Covão do Forno; Poços de Loriga; Lagoa Seca Lagoa das Conchos; Lagoa Redonda; Lagoa da Erva da Fome Lagoa do Covão do Curral; Lagoa do Vale do Conde; Lagoa dos Cântaros.</td>
<td>Recreational (contemplation and picnics) Bathing Canoeing Windsurf and Padel Scientific Activities</td>
<td>- Fishing is subject to a specific calendar and obtaining special licenses for daily fishing in the protected fishing zone in the lagoons of Serra da Estrela</td>
</tr>
</tbody>
</table>

The lakes and rivers of the Serra da Estrela make various practices possible throughout the year, complementary to each other and promoting differentiated demands and with distinct physical and technical demands, of which fishing assumes significance both for its effect in attracting practitioners and for the need for its control and regulation in benefit of its sustainability. The environmental value of this territory, framed in singular mountain geography and in its ecosystems, projects Estrela into a space of great attractiveness for the practitioners of fishing, especially directed to the trout species (brown and rainbow). Fishing in this territory can be subdivided into components according to the bodies of water in which it is done. In this context, we differentiate between fishing in rivers and streams, which in general can be practiced by holders of general fishing permits (national, regional, or local), according to the hunting seasons of the different species throughout the year. And fishing in lakes and dams, which is subject to special fishing permits restricted to each particular body of water and practiced following the days of the week and fishing period established especially for the purpose in each fishing season. Besides this practice, we must consider the fishing competitions promoted by the federation or by fishing associations/clubs and that require permission by the ICNF, to manage the bodies of water.
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For Fishing Tourism, the interpretation of the bio and geodiversity can stimulate a new look regarding the rational use and conservation of the resources involved, constituting as an awareness tool for both local anglers and tourists. These anglers may constitute themselves as elements of interest in the control of the quality of the resources and contribute to the operationalization of studies that contribute to the monitoring of the fishing activity and the preservation of the environment. The connection of this activity with the existing trout farms should be noted, stimulating their activity both through greater commercialization of fish for gastronomic purposes, as well as for the repopulation of the region’s lakes and rivers. There are some gastronomic events based on trout cooking, allowing the creation of value to the product and stimulating trout farms both in its commercialisation for food and in the repopulation of rivers, lakes, and dams. The role of the Institute for Nature Conservation and Forests (ICNF) in the control, production, and repopulation of the water resources of the Serra da Estrela and in raising awareness of the importance of salmonids in local ecosystems and their value as a fishing resource should be highlighted.

### TABLE 2. PRINCIPAL FISH SPECIES IN THE WATER BODIES OF THE SERRA DA ESTRELA

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>GEOGRAPHIC EXPRESSION/WATER BODY</th>
<th>RECREATIONAL FISHING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Trout (Salmo trutta)</td>
<td>Lakes, Dams, and Rives</td>
<td>Fishing with/without death</td>
</tr>
<tr>
<td>Rainbow Trout (Oncorhynchus mykiss)</td>
<td>Lakes, Dams, and Rives</td>
<td>Fishing with/without death</td>
</tr>
<tr>
<td>bordalo (Squalius alburnoides)</td>
<td>Lakes, Dams, and Rives</td>
<td>Catch and release</td>
</tr>
<tr>
<td>Sunfish (Lepomis gibbosus)</td>
<td>Lakes, Dams, and Rives</td>
<td>Fishing with death</td>
</tr>
<tr>
<td>Ruivacos (Achondrostoma oligolepis)</td>
<td>Lagoa do Covão do Forno</td>
<td>Fishing with death</td>
</tr>
<tr>
<td>Escalos (Leuciscus idus)</td>
<td>Lagoa do Covão do Forno</td>
<td>Fishing with death</td>
</tr>
</tbody>
</table>

SOURCE: PNSE- PARQUE NATURAL DA SERRA DA ESTRELA
The demands on these lakes are quite high because they are controlled and restocked by ICNF and are inserted in the protected area of the Serra da Estrela Natural Park. Each year the ICNF establishes a notice – Reserved Fishing Area of the Serra da Estrela Lagoons – setting out the rules and restrictions for the fishing season. The contributions of fishing activities to the territory are diverse and allow highlighting the importance of this market for rural areas, given its environmental, economic, and social impacts. Thus, fishing can constitute a differentiated tourist product, promoting attraction to the Serra da Estrela destination with positive impacts for the economy and the environment, as a result of the increase of control, demands due to the preservation of the ecosystems and diffusion of the natural and tourist potential of this territory.

The management and promotion policies to be developed imply an increasing knowledge of the resources, the activities developed, and the characteristics of the demand markets. It requires a growing responsibility of all actors involved, from fishermen, governors (local and national), supervisory authority officials, involved tourism operators, researchers, and other interest groups, such as non-governmental organizations and the community itself (Lemus et al., 2018; Madriaga & Garcia del Hoyo, 2014). Therefore, for effective fisheries management, it is essential that the sector which includes all actors with a legitimate interest in the activity – recognize their responsibilities, share good practices and sustainably value the water bodies and fish species (Bochechas, 2000; Ditton, Holland & Anderson, 2002). In particular, the practice of quality recreational fishing should be promoted, whose management recognizes the ecological, economic, and social impacts. Guiding principles of tourism planning should consider the development and promotion of this product as a complement to the attractions that this mountainous area generates, particularly those associated with nature tourism, geo-tourism, sports tourism, health, well-being, and gastronomy.
3. METHODOLOGY

The study aims to analyze the sustainability of the fishing activity, as a differentiated tourist product for Serra da Estrela and their contribution to the activity, trying to evaluate, in parallel, the angler’s perception. Supported by the theoretical framework on how surface water resources are structured for recreational functions and activities, allowing to generate diverse attractions throughout the year, enhances the existence of services, and increases the flow of visitors to the region. The identification and representation of the main surface water resources, the fishing species held, and activities associated with the recreational use of water were promoted, allowing the development of summary tables and cartography. A survey was applied to anglers, through its dissemination in electronic format with anglers’ clubs, fishing associations, and social networks, seeking to know their perception of the importance of fishing for tourism and promotion of the region (electronic survey: https://forms.gle/iQz79B7oXfU5iUgT8). The survey allowed to knowledge about the weaknesses identified for the practice of fishing in the destination Serra da Estrela, the administrative and supervisory conditions, as well as to gauge the angler’s view of its effects on tourism and the enhancement of the image of the region as a differentiated product. The data collection became complex in the availability of fishermen to collaborate in the survey process, using its dissemination with clubs and fishermen’s associations or electronic platforms related to fishing to fill out the survey. It should be noted that paper surveys were made available (to clubs and fishing associations) and an electronic version was promoted, seeking to streamline and expand the potential for responses in social networks and platforms where fishermen are associated. Seventy-one surveys were validated and supported the analysis produced, seeking to extract results on the perception of the potential of surface water for sport fishing, value of the destination as a differentiated tourist product, and main problems in fishing management.

4. PROFILE AND BEHAVIOR OF ANGLERS IN THE MOUNTAIN WATER RESOURCES OF THE ESTRELA GEOAPRK

The profile of anglers in this territory reveals a clear dominance of men, with the participation of women being residual (5.7%), as can be seen by the results of the sample surveyed. In academic terms, the survey shows that secondary school graduates are the most representative group (Table 3). It should be noted that 16.9% of respondents have higher education and 5.6% have basic education. Considering that fishing activities require travel, in order to develop the activity in nature near the desired bodies of water (lakes, rivers or streams), it appears that more than half of the anglers (61.4%) travel a distance greater than 50 km to carry out a fishing day, in 19.8% of the anglers, this distance is greater than 100 km and 4.8% travel distances greater than 200 km, demonstrating their interest in searching for water bodies with fishing potential and inserted in relevant natural contexts. The trips are developed mostly in personal cars (83.1%) and also by off-road vehicles (16.9%), a situation that is related to the absence of regular routes to non-urban areas of the destination serra da estrela, compromising the use of this alternative.
These anglers organize their fishing days in the company of friends or other anglers. Individual travel is the least significant with 19.1%. De referir que a companhai de família não apresenta registo, o que esta relacionada com a inexistencis de uma adequda estruturação do produto de turismo de pesca.

### TABLE 3 - PROFILE AND FORM OF ORGANIZATION OF THE JOURNEY

<table>
<thead>
<tr>
<th>ACADEMIC QUALIFICATIONS</th>
<th>N.</th>
<th>%</th>
<th>TRIP DEVELOPMENT - ORGANIZATION OF THE TRIP</th>
<th>N.</th>
<th>%</th>
<th>DISTANCE COVERED</th>
<th>N.</th>
<th>%</th>
<th>TYPE OF TRANSPORTATION</th>
<th>N.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary School</td>
<td>4</td>
<td>5.6</td>
<td>With friends</td>
<td>23</td>
<td>32.4</td>
<td>0-25 kms</td>
<td>10</td>
<td>14.1</td>
<td>Non-motorized Vehicle</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Secondary School</td>
<td>47</td>
<td>66</td>
<td>With other fishermen</td>
<td>34</td>
<td>47.8</td>
<td>25-50 Kms</td>
<td>16</td>
<td>22.5</td>
<td>Motorcycle/Motorbike</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Professional Course</td>
<td>8</td>
<td>11.3</td>
<td>Individual</td>
<td>14</td>
<td>19.7</td>
<td>50-100 kms</td>
<td>27</td>
<td>38</td>
<td>Personal cars</td>
<td>59</td>
<td>83.1</td>
</tr>
<tr>
<td>Higher Education</td>
<td>12</td>
<td>16.9</td>
<td>With family</td>
<td>0</td>
<td>0</td>
<td>100-150 kms</td>
<td>8</td>
<td>11.3</td>
<td>All Terrain Vehicle</td>
<td>12</td>
<td>16.9</td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>100</td>
<td>Total</td>
<td>100</td>
<td>100</td>
<td></td>
<td>8</td>
<td>11.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOURCE: SURVEY APPLIED TO THE ANGLERS

We can see, in accordance with the survey results provided in Table 4, that the anglers practice an average of more than 7 fishing days per year, which means that their frequency of more than 7 days represents 83% of practitioners. It should be pointed out that more than 10 fishing days per year is identified by 40.8% of the fishermen surveyed. The main motivation for fishing in this territory is recreational fishing (56.3%), followed by its practice / development in the context of visits for rest and leisure in the region.
TABLE 2 - MOTIVATIONS FOR FISHING IN SERRA DA ESTRELA AND EXPENSES ASSOCIATED WITH THE JOURNEY

<table>
<thead>
<tr>
<th>FISHING JOURNEYS</th>
<th>N.</th>
<th>%</th>
<th>REASONS FOR COMING TO THE TERRITORY</th>
<th>N.</th>
<th>%</th>
<th>AVERAGE VALUE OF EXPENSES INCURRED - FISHING JOURNEY (€)</th>
<th>N.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2</td>
<td>1</td>
<td>1,4</td>
<td>Practice of recreational fishing activity</td>
<td>40</td>
<td>56,3</td>
<td>0.25</td>
<td>20</td>
<td>28,2</td>
</tr>
<tr>
<td>3 to 3</td>
<td>5</td>
<td>7,0</td>
<td>Practice of sports competition</td>
<td>8</td>
<td>11,3</td>
<td>25-50</td>
<td>19</td>
<td>26,8</td>
</tr>
<tr>
<td>5 a 6</td>
<td>6</td>
<td>8,5</td>
<td>Activity within the scope of a fishing club/association program</td>
<td>9</td>
<td>12,7</td>
<td>50-100</td>
<td>15</td>
<td>21,1</td>
</tr>
<tr>
<td>7 a 8</td>
<td>14</td>
<td>19,7</td>
<td>Travel due to vacations</td>
<td>0</td>
<td>0,0</td>
<td>100-150</td>
<td>9</td>
<td>12,7</td>
</tr>
<tr>
<td>8 a 10</td>
<td>16</td>
<td>22,5</td>
<td>Travel for rest and leisure</td>
<td>14</td>
<td>19,7</td>
<td>150-200</td>
<td>8</td>
<td>11,3</td>
</tr>
<tr>
<td>&gt;10</td>
<td>29</td>
<td>40,8</td>
<td>Others</td>
<td>0</td>
<td>0,0</td>
<td>mais de 200</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>71</td>
<td>100</td>
<td>Total</td>
<td>71</td>
<td>100</td>
<td>Total</td>
<td>71</td>
<td>100</td>
</tr>
</tbody>
</table>

SOURCE: SURVEY APPLIED TO THE ANGLERS

It should be noted that fishing as a result of organized competition or social activities or programs between members/members of clubs or other organizations related to fishing represents 24% of the reasons for fishing by fishermen in the region. This figure is indicative of the stimulus promoted through competition initiatives or the dissemination of fishing activity (fishing as a sport and recreational activity), with interest for the region and with the potential to be a niche market of interest for tourism. It can be seen that 45.1% of the participants spend more than 50 euros a day fishing, with 11.3% specifying spending between 150-200 euros. These flows are mostly spent on access to services and fuel, which a better organization and structuring of the fishing tourism product could expand, either in the organization of programs, or in services that can contemplate the family involvement in trips that associate fishing with rest and other leisure activities.

5. ANGLER'S PERCEPTIONS AND BEHAVIORS AND MAIN PROBLEMS IDENTIFIED

In an analysis of the fishing activity and its dynamics, it’s crucial to know the angler’s understanding about the characteristics of the destination, the importance of fishing, and the improvements to be promoted to make it more dynamic. The incorporation of fishing activity as a product or structured recreational activity requires a strategic approach, involving the anglers, the community, and the regulatory authorities.
The evaluation of fishing as a tourist resource for the Serra da Estrela can be analyzed according to its positioning or function (Fig. 2), of which the greatest contributions are identified as those related to:

- a sports product;
- a recreational and leisure activity;
- a factor promoting the image of the destination;
- a benefit to local communities;
- a differentiation strategy of the tourism offer.

There is an appreciation of the value in particular as a recreational resource, as a factor in promoting the image of the destination, and as an activity that generates benefits for the local economy, as a result of the services involved and associated expenses.

**FIGURE 2 - EVALUATION OF FISHING AS A TOURIST RESOURCE FOR SERRA DA ESTRELA DESTINATION.**
**SOURCE: SURVEY APPLIED TO THE ANGLERS**

It is recognized the natural value of the territory, the landscape, and surface water quality, capable of promoting attractiveness and generating a differentiated product of recreation and tourism for the region. The UNESCO identity associated prevails its natural values and a patrimonial recognition of the territory, inducing a broad demand in the motivations and tourist and recreational practices to be developed.

Regarding the aspects to be valued for a greater tourist attraction to Serra da Estrela based on fishing activities, the following are recognized according to their importance and contributions to a structured offer of the product (Fig 3):

- Improving repopulations with native species;
- More control and inspection of fishing activity;
- Electronic access to obtaining permits;
- Promotion of the fishing activity as a tourist resource;
- Improved information on fishing waters and their regulation;
- Development of a specific tourism offer associated with fishing.

The order of the contributions is established considering the perceptions of greatest interest. To highlight a concern with the operational aspects of fishing, namely restocking, regulation, and access to licenses. Anglers identify the importance of this activity as reinforcing the promotion of the destination and the need for a greater structuring of the fishing tourism product, allowing a greater organization and orientation of the practitioners for the choice of the destination.
To guarantee viability and profitability, tourism destination managers have to ensure the destinations’ success with performance and competitiveness based on the quality of the offer and associated services. The management policy to be developed implies an increasing degree of knowledge and responsibility of all the actors involved, from the anglers themselves, the researchers and officials of the supervisory authority, the tourism operators involved, and other interest groups, such as non-governmental organizations and civil society itself (Lemus et al., 2018; Madariaga & Garcia del Hoyo, 2014). Therefore, for effective fisheries management, it is essential that the sector – which includes all actors with a legitimate interest in the activity – recognize their responsibilities, share good practices and sustainably value the water bodies and fish species. In particular, the practice of quality recreational fishing should be promoted, whose management recognizes the ecological, economic, and social impacts (Figure 4).

In environmental terms, we can consider as relevant the actions that the fishermen develop to monitor the water resources and their ecosystems, to maintain the quality of the water bodies, the landscape, and the riverside ecosystems, as well as information on the species and the restrictions of the practices to develop in an area classified as Serra da Estrela Natural Park and UNESCO World Geopark. In this context of sport fishing, the fishermen complement, to a great extent, the actions of the nature guards and, besides being agents of environmental preservation, they are elements that promote the natural values of the region. At the administrative management level, it is important to control and regulate fishing, so that it can become an effective tourist product. Access to fishing permits should be improved, as well as the development of tourism planning, where fishing is a potential resource.

FIGURE 3 - ASPECTS TO ENHANCE BASED ON THE FISHING ACTIVITY FOR A GREATER TOURIST ATTRACTIVENESS OF THE SERRA DA ESTRELA.
SOURCE: SURVEY APPLIED TO THE ANGLERS
At the economic level, sport fishing is a differentiated product for the destination Serra da Estrela, allowing to increase demand, particularly in periods of lower tourist influx to the region. In this ambit becomes important to create packages directed for these segments, potentiating the restoration, the hotel, and specialized services. The possibility of holding competitions, sporting events, and international competitions is a reality that could be expanded, generating revenue for the region and the players in the sector, boosting the region's marketing, and the consumption of existing goods and services.

CONCLUSIONS

The practice of fishing and its socio-economic and environmental effects require an increasing collaboration between the interested parties - local communities, administrative entities, fishermen's associations and clubs, which promote mechanisms and processes for its sustainable development in its sportive and recreational components. In this context, it is relevant to regulate aquatic activities and the existing flows of visitors, with encouragement to stop being managed as a secondary or even residual activity within tourism. Its valorization as a tourism development asset arises for inland regions as a factor of economic valorization of water, generating financial flows that promote concrete effects on the economy, both in the access to goods and services.

The natural conditions of the Serra da Estrela, its status of Natural Park and UNESCO World Geopark, its water resources, and the existing fish species, particularly salmonids, allow the structuring of fishing as a tourist product in this territory. Its greater organization, valuation and control have allowed the generation of economic value for the region, both in terms of the goods and services needed, and in the promotion of the destination. Therefore, it needs a greater promotional development, qualifying the water bodies to welcome this activity and creating specific programs that allow the development of a differentiated product. It is worth mentioning the connection of this activity with the enjoyment of the other tourist assets of the destination, allowing a family
dropped experience, with the extension of the stay and the consumption of services. The gastronomic promotion of trout allows to generate an image to the destination and to reinforce the link with the existing trout farms, stimulating their activity, both through a greater commercialization of fish for gastronomic purposes and for the repopulation of the lakes and rivers of the region. It is worth mentioning the sport fishing competitions promoted by the Portuguese sport fishing federation, the European championships and several meetings that enhance the destination's image and the development of a differentiated product, as well as the stimulation by the sport fishing clubs and associations.

The fishermen see fishing as a recreational activity of interest to the region, which requires more attention and development for its affirmation as a tourism product, with effects for the image of the destination and benefits for local communities. They point to management and control problems, structured and accessible information about the activity, access to licenses, and supervision. They consider that collaboration between the different actors is of interest for the structured development of fishing tourism and for the recreational valorization of the different bodies of water.

REFERENCES


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