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THE IMPORTANCE OF DATA TRIANGULATION IN NATURE-BASED SPORT MANAGEMENT IN PROTECTED AREAS:

THE STUDY OF THE NATURAL PARK OF SERRAS DE AIRE AND CANDEEIROS

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ABSTRACT: The increased demand for protected areas for activities in contact with nature is a current reality. Of these, we highlight the generality of recreational activities and tourism whose increase has been proving fundamental to sustainable development at local and regional levels. One of the main forms of expression of these activities is reflected by nature-based sports, whose unique characteristics allow their inclusion in different tourism products or individual leisure routines. However, the proper development of these practices in the natural space implies the existence of management processes covering different fields of study. This article reflects some general results of the study carried in the Natural Park of Serras de Aire and Candeeiros (NPSAC) and aimed to contribute to the management of nature-based sport activities in this protected area (PA). The methodological approach is based on principles of data triangulation, from different stakeholders, with the possibility of a participatory management. The study has an exploratory and longitudinal character, using different analysis models. The results revealed significant intersections of opinions resulting from the data triangulation, We observed some problems at social, environmental and managerial levels. The analysis of the various dimensions of management allowed us to identify a number of important actions to the present and future management of NPSAC, as a place for tourism and recreation through sports. **Keywords:** Protected areas, nature-based sports, management, participation, stakeholders.

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RESUMEN: El aumento de la demanda de áreas protegidas para actividades en contacto con la naturaleza es una realidad actual. De estos, se destacan la generalidad de las actividades recreativas y de turismo, cuyo aumento se fue revelando fundamental para el desarrollo sustentable a nivel local y regional. Una de las principales formas de expresión de esas actividades se refleja en los deportes de naturaleza, cuyas características únicas permiten su inclusión en distintos productos de turismo de ocio o rutinas individuales. Sin embargo, el desarrollo adecuado de esas prácticas en el espacio natural implica la existencia de procesos de gestión que cubren diferentes áreas de estudio. Este artículo refleja algunos resultados generales del estudio realizado en el Parque Natural de las Sierras de Aire e Candeeiros (PNSAC) y tuvo como objetivo contribuir para la gestión de actividades de deporte de naturaleza en esta área protegida (AP). El abordaje metodológico es basado en los principios de la triangulación de datos, de distintas partes interesadas, con la posibilidad de una gestión participativa. El estudio tiene un carácter exploratorio y longitudinal, utilizando diferentes modelos de análisis. Los resultados revelan intersecciones significativas de opiniones resultantes de la triangulación de datos. Observamos algunos problemas a nivel social, ambiental y de gestión. El análisis de las varias dimensiones de la gestión permitió identificar una serie de acciones importantes para la gestión presente y futura del PNSAC, como un local para el turismo y ocio a través del deporte. **Palabras-clave**: áreas protegidas, deportes de naturaleza, gestión, participación, partes interesadas.

RESUMO: O aumento da procura de áreas protegidas para atividades em contacto com a natureza é uma realidade atual. Destes, destacam-se a generalidade das atividades recreativas e de turismo, cujo aumento se foi revelando fundamental para o desenvolvimento sustentável a nível local e regional. Uma das principais formas de expressão dessas atividades reflete-se nos desportos de natureza, cujas características únicas permitem a sua inclusão em diferentes produtos de turismo de lazer ou rotinas individuais. No entanto, o desenvolvimento adequado dessas práticas no espaço natural implica a existência de processos de gestão que abrangem diferentes áreas de estudo. Este artigo reflete alguns resultados gerais do estudo realizado no Parque Natural das Serras de Aire e Candeeiros (PNSAC) e teve como objetivo contribuir para a gestão de atividades de desporto de natureza nesta área protegida (AP). A abordagem metodológica é baseada nos princípios da triangulação de dados, de diferentes partes interessadas, com a possibilidade de uma gestão participativa. O estudo tem um caráter exploratório e longitudinal, utilizando diferentes modelos de análise. Os resultados revelaram interseções significativas de opiniões resultantes da triangulação de dados. Observámos alguns problemas a nível social, ambiental e de gestão. A análise das várias dimensões da gestão permitiu identificar uma série de ações importantes para a gestão presente e futura do PNSAC, como um lugar para o turismo e lazer através do desporto**. Palavras-chave**: áreas protegidas, desportos de natureza, gestão, participação, partes Interessadas.

INTRODUCTION

Nature spaces are increasingly seen as important territories to tour operators in the nature tourism market, a segment showing a steady growth in Europe (Pröbstl, Wirth, Elands, & Bell, 2010).

Pröbstl et al. (2010) clearly argue that the European forests continue to provide engaging experiences, but only if they are able to maintain their natural qualities. For example, overexploitation for logging can in many cases result in negative effects on the quality of natural landscapes, in which recreation takes place; underdeveloped and undermaintained infrastructure can lead to the displeasure of those who travel to enjoy them; few opportunities for recreation and tourism can cause low levels of demand.

This is where the recreation and tourism management in natural areas, particularly in terms of protected areas (PA) is essential to ensure the sustainability ideals by which they are governed.

Assuming that the Nature-based sport activities (NBS), as a recreational and tourism practice, often have in PA excellent conditions for the activities, it was considered pertinent to study the management of these activities in the Natural Park of Serras de Aire and Candeeiros (NPSAC). The study aimed to contribute to a better understanding of the current conditions of these practices, identify potential problems and propose some important management actions for the future of PA as a space of leisure and tourism promotion through sport. In order to contribute to the overall goal, several dimensions of management were investigated, through a participatory perspective. Based on data triangulation from various stakeholder groups, it was possible to evaluate opinions, perceptions and needs to face both current problems as well as needs for future issues.

RECREATION AND TOURISM IN PROTECTED AREAS

According to the IUCN (International Union for Conservation of Nature), a PA is a clearly defined geographical space, recognized, dedicated and managed through legal or other effective means, with the objective of achieving the conservation of nature in the long term, ecosystem and the associated cultural values of local populations (IUCN, 2012). Over the past few years, the growth of these spaces worldwide (in number and size) is notorious (IUCN, 2012), clearly indicating the increasing sensitivity of different nations for its implementation.

Internationally, national parks are the well-known PA category; however, there are other designations, which likewise confer a protection status in terrestrial or marine areas. In Portugal, for example, the number of natural parks, nature reserves or protected landscapes outnumber the only existing national park, in this case represented by the Peneda-Gerês National Park. IUCN recognizes these differences, categorizing PA in relation to their

goals. These goals range from scientific research to the protection of cultural heritage, their primary objectives including the protection of nature and associated ecosystems, education, recreation and tourism. Analyzing the priority objectives in relation to each category, it can easily be seen that activities such as tourism, recreation or education are presented in almost all categories and even have priority in some cases, such as the natural parks.

In Portugal, the so called National Network of Protected Areas (NNPA) is managed by the recently created Institute for the Conservation of Nature and Forests (ICNF). The NNPA is composed of thirty-four protected spaces, namely: one national park, thirteen natural parks, nine natural reserves, six protected landscapes and five natural monuments (ICNF, 2012).

Therefore, management of PA incorporates more dimensions than being places for nature conservation. They also should have a place for recreational, tourism, cultural and educational activities that promote a healthy and enriching interaction between man and natural environment.

Relating to tourism, Rollins, Eagles, and Dearden (2009) reported that it has always been an extremely heterogeneous activity, with different types of tourists, demands and motivations in a constant change. Inside PA, nature tourism and ecotourism are assumed as the main offer. Some authors, over the past few years, denoted a sharp growth of this sector, as well as the increasing relevance in the economic, social and environmental spectrum, mainly due to sustainable development and the potential contribution to local economies and, in some cases, to national economic development (Aas, Ladkin, & Fletcher, 2005; Baldin, Deadman, & Eagles, 2003; Li, 2006). Accompanying this growth, there are attempts in European literature to understand new trends in tourism demand in the coming years. Bell, Tyrväinen, Sievänen, Pröbstl, and Simpson (2007) predict an increase in the demand for natural spaces for leisure and tourism due to factors such as: the increasing conscience of people to occupy leisure actively; the facilitated access to information, the growing concern with

health and well-being, the increased valuation of environmental issues as well as a greater willingness to be in contact with nature. Changes in society thus originate new forms of demand for these spaces in a complex interaction between different stakeholders. This poses great challenges and difficulties to the management agencies, especially in PA, as well as for those that provide recreational and tourism services.

The growth and importance of Nature-Based Sports within the sector of nature tourism in PA

The demand for Nature-based Sports (NBS) is increasing mainly due to the previously mentioned motivations and a component of challenge, novelty and the possibility of broad participation (Soares & Paixão, 2010).

The increase in the practice of NBS in PA was already denoted in the American reality in the mid-90s, by Cole (1996). In Europe a similar trend is observed (Pröbstl, 2010; Pröbstl et al., 2010) as well as in Brazil (Marinho, 2008). The last author refers to a significant growth of visitation in natural areas in this country, with an emphasis on adventure sports with increased demand showing an overall growth between 10% and 30% per year. In Portugal, Carvalhinho (2006) also emphasizes the characteristics of these activities and their potential growth in the national territory. The possibility of being associated with nature tourism, especially in the "Adventure" market, leads to the possibility of an important role in local economic development. The wide variety of physical environments (water, air, land), associated with different forms of physical activity, resulted on benefits in certain locations. This association between sport and nature tourism has been shown for scuba diving (Ditton & Baker, 1999), or in mountain tourism (Beedie & Hudson, 2003; Bourdeau, Corneloup, & Mao, 2002).

In the Portuguese case and considering the main trends of international tourism, the National Strategic Plan for Tourism defined 10 products based on their competitive market potential. Within the scope of nature tourism products, NBS arise in two

different formats: Soft and Hard. These have specific features, representing respectively 80% and 20% of international demand (TurismodePortugal, 2007). This assumption can be represented in reality through the work of Marques, Reis and Menezes (2010). The authors, in an attempt to segment the profile of visitors in national PA, found the demand for NBS activities as one of the most important reasons to visit them. Oliveira and Pereira (2008) also found in a study on Madeira island that several activities such as mountain biking, trekking, climbing and canyoning are relevant factors in the selection of this tourism destination.

The benefits of tourism and recreation in PA

Tourism and recreation developed in PA can originate benefits, but also costs or problems. According to the IUCN (2002) these effects (positive and negative) interact in a complex way. A proper planning and management of tourism and recreation in PA should promote: i) economic opportunities, ii) the protection of cultural and natural heritage, iii) the quality of life of those involved in the process (visitors and residents in the destination). Similarly, Rollins et al. (2009) and Eagles, Bowman and Tao (2001) identify the benefits of tourism and recreation in PA, at three different levels: economic, social and environmental.

According to Font, Cochrane and Tapper (2004), a proper support of tourism activities is one way for the PA to be able to generate revenue and demonstrate their contribution to the economy. According to the authors, some of the potential benefits arising from tourism and recreation in PA, include: (i) finance to the development of infrastructure and services, ii) the provision of employment, iii) provision of funds for development and maintenance of sustainable practices, iv) education, v) an entry product that originates direct benefits for the development of other products at a local and regional level; vi) the tourist satisfaction and quality of experience in the tourist destination. Apart from these, it may still be possible to strengthen the relations between different stakeholders, especially between local communities, the

private sector and NGOs, thus giving greater recognition of the PA as part of the national values.

In general, tourism and recreation in PA may provide a justification for continued investment and encouragement to the generality of the activities related with nature conservation.

The Management of tourism and recreation in PA

Achieving the benefits previously mentioned implies the existence of management processes specific to recreational and tourist activities within the PA. These processes, given the wide dynamics associated with this type of activity, are quite complex, emerging from different conceptions, structures and management methods all over the world.

According to Nilsen and Tayler (1997), since the mid-70s, a variety of planning and management processes in PA have been developed with the objective of defining methods to assess aspects such as: recreational carrying capacity, the human use that causes changes on ecosystems, the determination of appropriate uses, levels and conditions of use and a set of techniques to inventory and manage recreational opportunities for PA visitors. These management processes were named Visitor Management Frameworks (VMF).

According to Brown, Koth, Kreag and Weber (2006), many of the so-called "management models" of visitation in PA, applied all over the world, are not real models, but concepts, techniques or processes. In order to be qualified as models, information that is used in its development lacks standard information (inputs and outputs) and techniques. In addition, the results must attain a level of accuracy widely accepted by the industry and academic sector. However, even if in many cases they cannot be considered models, these structures and processes are valuable in the way that they provide conceptual and organizational advances that provide management expertise, contributing with outputs useful in the management of PA. Effective management of tourism and recreation should involve scientific and empirical considerations

and, in the case of the complex and multidisciplinary nature of outdoor recreational practices, these structures and processes may prove to be highly useful (Brown et al., 2006).

Several management structures can be found in PA, whose determination and suitability stems from the characteristics of the area, the region and the country where they were established. However, especially from the mid-80s, a new way of understanding the management in PA emerges in the scientific community. This is participatory management, or collaboration, whose principles are governed by public participation of all those who are involved in some way and are affected by management decisions regarding the PA. Whether by moral, political or efficiency reasons, the use of these processes tend to slightly increase throughout the world (Pimbert & Pretty, 1995).

Those who participate in these processes are called "stakeholders". According to Gray (1985), a stakeholder is i) someone who has the right and ability to participate in a process; ii) someone who is impacted by the action of another stakeholder and has a the right to be involved; iii) a stakeholder should have the "skills" to participate. In this context, a stakeholder in the tourism industry is someone who is impacted by tourism development, whether positively or negatively.

Then, a stakeholder of tourism in PA can assume several facets, ranging from the visitor, to companies operating in the sectors of tourism and recreation, NGOs, the PA management agency and many others.

Visitation management

PA provide opportunities for visitors to experience the spiritual, physical and aesthetic attributes of the natural environment. These attributes make PA unique places of significant public interest (Dearden & Rollins, 2009). However, the quality of the recreational experience generated by visitation implies the suitability and quality of the supply in the PA. The satisfaction generated from this adaptation is crucial to the success of PA as a place for

leisure and tourism (McCool, 2006). Thus, visitors are one of the key points of tourism and recreation management. The importance of the studies focused on visitation are based on three key factors: (1) visitors are the core users of the characteristics and potential of the area in terms of recreation and tourism (IUCN, 2002), (2) they have opinions and expectations in relation to several factors that influence their experience (Hornback & Eagles, 1999) and (3) are one of the major causes of environmental, social and economic impacts in this areas, whether positive or negative (Manning, 2007).

There are several management dimensions associated with visitation, whose interaction is complex. Overall published studies in this area allowed the identification of the management dimensions most commonly studied, with a clear direct effect on a key aspect: the quality of the experience when visiting and the consequent satisfaction.

Considering the work of Hornback and Eagles (1999), a brief reference is made to the main themes of research, focusing on visitors. The studies most commonly carried out are the following: (i) characterization studies of visitors' profile and trip or visit, (ii) studies of economic activity, (iii) satisfaction studies, evaluation of PA, resources and services, (iv) recreation conflict studies; (v) studies on environmental behaviors, beliefs and expectations, (vi) studies on public values and needs of visitors, (vii) studies of natural resource use and environmental perception, (viii) visitation targeting studies (deriving from i.).

Specifying the management sectors that involve the visitor's participation, Manfredo, Driver, and Brown (1983) report that only through the integrated management of the physical, social and management attributes, can managers provide an array of recreational opportunities built to meet the diversity of visitor's motivations.

Some management factors have been the subject of numerous scientific studies, usually individually, with the gathering of several dimensions together being less frequent. The vast

majority of these works have been developed in the fields of perception, opinions and characteristics of visitors in PA, being less frequent in this specific context of study, the participation of other stakeholders (e.g. associations, NGOs). Some of the most studied factors include:

1. Environmental perception of sites visited (Amuquandoha, 2010; Hillerya, Nancarrowb, Griffinc, & Symed, 2001; Monz, Cole, Leung, & Marion, 2010).
2. Recreation conflict and crowding between visitors, especially in sport activities (Mann & Absher, 2008; Needham, Szuster, & Bell, 2011; Tumes, 2007; Vaske, Dyar, & Timmons, 2004).
3. Acceptance of management measures (Arnberger, Eder, Allex, Sterl, & Burns, 2012; Benton, 2011; Heywood, 2011; Smyth, Watzin, & Manning, 2009).
4. Visitors and visit characterization and segmentation (Marques et al., 2010; Pimentel & Saito, 2010).

A thorough understanding of the problems, needs and opinions for improvement of natural spaces for recreational and tourism purposes requires the adequate understanding of relevant factors and how they interact.

THE CASE STUDY

The Natural Park of Serras de Aire and Candeeiros

The Natural Park of Serras de Aire and Candeeiros (NPSAC) was created in 1979 (Decree-Law no. 118/79), in order to protect natural features and the existing architectural heritage. One of the most important repositories of limestone formations in Portugal can be found in the NPSAC. Its karst morphology, vegetation, the network of underground watercourses, a specific fauna (bats) and an intense activity of stone extraction are the main aspects that led to the classification of this area as a natural park, an area of 38,900 ha, including two districts and seven counties: in the district of Santarém, the municipalities of Alcanena, Rio Maior, Santarém, Torres Novas and Ourém in the district of Leiria, the municipalities of Alcobaça and Porto de Mós (ICN, 2004).

Classified as a natural park, one of the main goals is the promotion of leisure activities (Category V, IUCN). Even with limited information on recreation and visitation in this protected area, existing data over the last 10 years show that it is one of the most visited in Portugal, with a total of 510,875 visitors. In 2009, NPSAC has recorded the highest visitation number of all national protected areas. There were 206 guided tours, attended by 13,304 people, which means a monthly average of approximately 1,108 visitors (ICNB, 2010).

THE NATURE-BASED SPORT MAP (NBSM)

The National Program for Nature Tourism, applicable in National Network of Protected Areas (NNPA), aimed at the integration of four vectors: local development, nature conservation, qualification and diversification of tourism through the promotion of the values and strengths of these spaces. Thus, in order to enhance the NBS activities within PA (Decree-Law no. 18/99 of August 27), every protected area should develop a map of these activities, containing the rules and guidelines for every activity held, designating the locations and periods of the year that they can be visited as well as the respective carrying capacity. NPSAC was the first Portuguese PA to publish the NBSM showing the sensitivity of this area for the development of sport activities. Despite the legal obligation, subsequently to NPSAC, only another PA, the Natural Park of Sintra Cascais, has published this same management document, a symptom of the complexity of these issues.

The county of Rio Maior

Integrated in an area dubbed "Estremadura Ribatejana," the county of Rio Maior is located in an area influenced by the coast and by the inland region of Ribatejo. It covers an area of 277.4 km^2 with elevations up to 500m and a dense hydrographic network (CMRioMaior, 2012). Part of the district of Santarém and

composed of 14 civil parishes, the city of Rio Maior is nationally nicknamed as the "City of Sports". This is due to the several relevant sport infrastructures of high national and international recognition, including the Rio Maior Sports Center, the Municipal Swimming Pools, the Golf Courses, and the Sport Sciences School of Rio Maior.

Due to the sports culture of this city, it was selected as the focus for the study of the NBS activities in NPSAC, to incorporate the perspective of different stakeholders.

METHODS

This paper focuses on the study of the perspectives and opinions of the stakeholders related with the sport practices in NPSAC residing in one of the seven counties covered by the PA's geographical area, the municipality of Rio Maior.

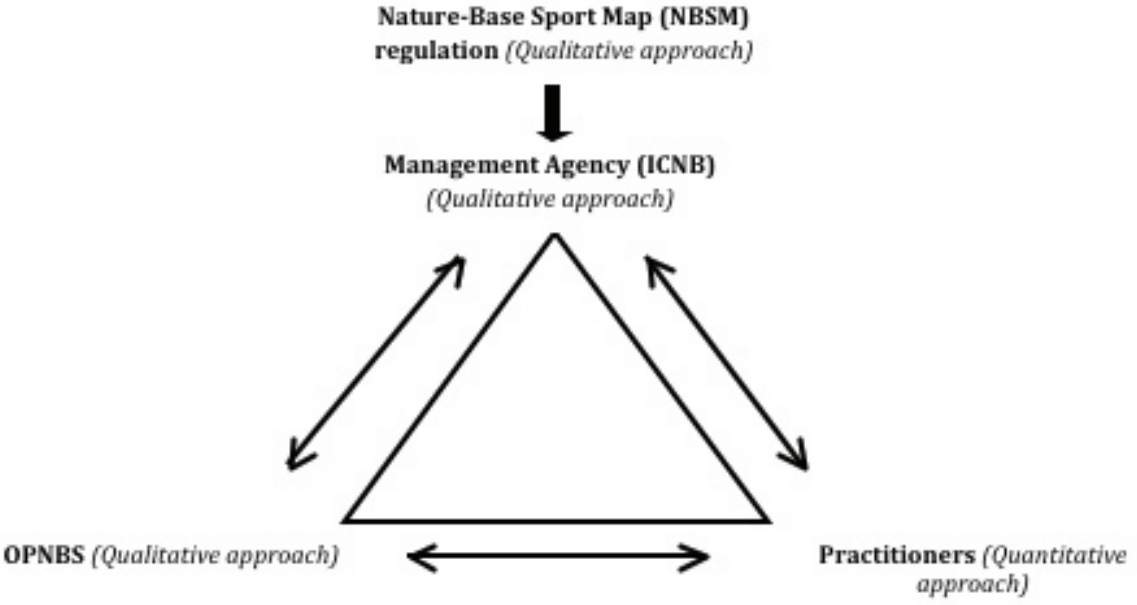
The methodological approach adopted is based on the assumption that the stakeholders of a PA are key informants about the environmental, social and management conditions in the area, and that they have the right to participate actively in the planning and management of these spaces. According to Wray (2011), public participation has become a fundamental principle of sustainability and social responsibility and suggests that, when examining the role of communities in tourism, it is impossible to separate the social, economic and political factors that operate within a community. In the selected methodological approach, the traditional management approaches (top-down management) are considered inefficient in paving the way for a rapprochement characterized by participatory strategies (Bottom-up), since they allow the inclusion of important social elements in management practices (Khadka & Nepal, 2010). In this particular case, the participation of stakeholders only happens on an "informative" phase.

To achieve these principles, a methodology that encompasses several groups of respondents, analysis models and instruments was developed. The nature of the study allowed us to define various stages of methodology development, namely: 1) A literatu-

re review; 2) A preliminary study, consisting in the documentary analysis of the Nature-Based Sport Map regulation (NBSM) and a semi-structured interview applied to the NPSAC management agency (referred throughout the study as "MA"); 3) A study focused on organizations that promote NBS activities (companies and local development associations) in NPSAC (called throughout the study as OPNBS) from the municipality of Rio Maior (n = 4), in a qualitative approach using semi-structured interviews; 4) A study focused on NBS practitioners (Denominated only "Practitioners"), from the municipality of Rio Maior, using a quantitative framework and through a questionnaire (n = 82).

The instruments were subject to validation processes to ensure their appropriateness. Figure 1 reflects the different groups selected and their interrelations.

Figure 1. Stakeholders involved in the study



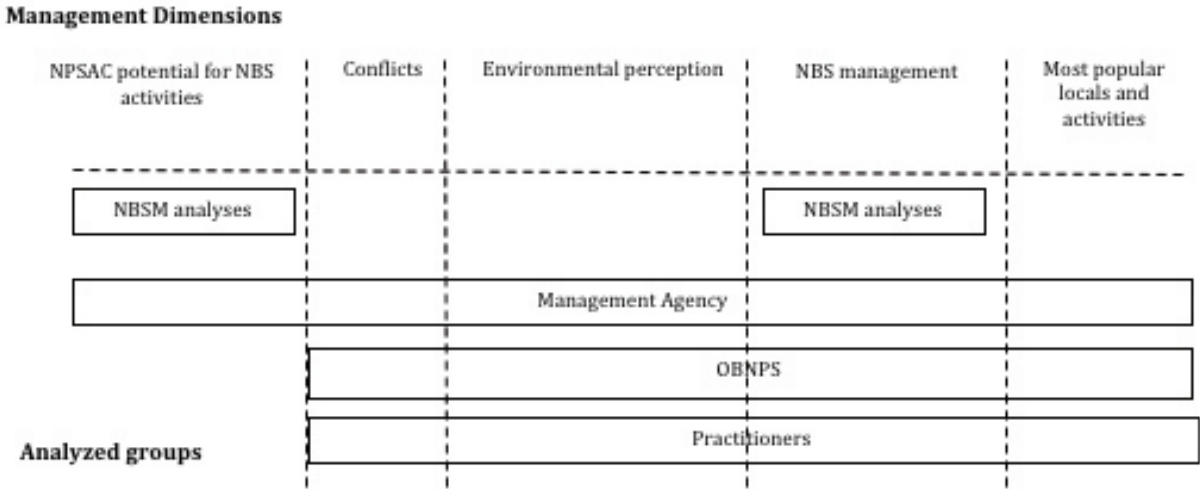
The first stage of analyses (NBSM) was essential to understand the potential of NPSAC of sport activities as well as the various restrictions and management measures applied to practice sites. It was also important to make inferences about a set of possible problems (identified with support of the literature review), essential for the construction of the interview conducted with the NPSAC Management Agency, which constitutes the second part of the first phase of the methodological development.

After analyzing the results of this stage, the remaining two instruments for data collection were developed for the study of OP-NBS and Practitioners (developed simultaneously). The triangle in fig.1, represents the possibility of data interrelations between the stakeholders.

For the qualitative data analysis (interviews), techniques of content analysis were used, through processes of categorization and encoding. For the quantitative data, the statistical treatment was carried out (descriptive statistics) using PAWS Statistics Software (Version 18).

The combination of different data collection methods reflects one of the most important methodological decisions of the study, allowing the analysis possibility of data triangulation. To ensure this analysis, all methods incorporate the same dimensions of management, thus allowing to cross the different opinions of different stakeholders involved. Figure 2. shows the management dimensions in the study and the different data sources that contributed to their understanding.

Figure 2. Management Dimensions and Analyzed groups



The second part of the preliminary phase, consisting of an interview with the MA, was the one that globally contributes to all aspects of management analysis. Given the limited nature of documentary analysis, the NBSM contributed less for the objectives of the study.

RESULTS

The overall results are presented for each management dimension analyzed. To facilitate the reader's understanding, the results are presented using tables when appropriate, to enhance the relations found from the analysis of the answers of the groups surveyed.

1) NPSAC potential for NBS practice

The NPSAC potential for NBS must be understood as the characteristics of the territory allowing the practice of different activities. The existence of practice locations properly identified in NBSM, the diversity of activities that can be developed and those with higher expression (in terms of number of locations) also contribute to this enhancement.

To respond to this objective, data was obtained from the first stage of the study, consisting of the NBSM analysis and the interview with the MA.

It was possible to verify the existence of nine different activities in NBSM, namely: mountain biking (MTB), climbing, hiking, orienteering, caving, paragliding, canoeing, equestrian activities and ballooning. The interview with the MA allowed identification of the relevance of All-Terrain Jeeps tours. Although these are not referenced in the NBSM, they have an impact on the other activities.

It was also found that the activities are unevenly distributed among the three physical environments, and the vast predominance of locals focus on land. The activities with the highest expression (in terms of number of locations) in NBSM are climbing and hiking (with 9 and 15 practice sites respectively).

The analysis also allowed the confirmation that not all authorized activities have practice sites (e.g. orienteering, Ballooning or MTB). In the interview with the MA, it is perceived that the absence of these locations is due to the high cost of creating and maintaining dedicated routes or start/departure sites.

The existence of a NBSM, is recognized to be key, not only in the organization of the territory, but also as a tool for disclosure of these same spaces. The existence of information about mana-

gement methods inherent to each space (e.g. carrying capacity), specific locations, activities and levels of practice are, according to the IUCN (2002) and Manning (2007), essential to increase the demand and ensure the orderly use of space. However, the existence of this instrument is clearly insufficient for managing these activities, given the lack of monitoring and periodic collection of data about who does what and where. Therefore, it is extremely important to potentiate these spaces not only through their disclosure, but also by maintaining and equipping them with supporting infrastructure given the potential of NPSAC for sport. A solution to manage the costs to maintain these sites may be based on participatory principles, including the active collaboration of the various NPSAC stakeholders (e.g. companies and sports clubs).

2) Conflict between practitioners and incompatibilities with other forms of land use

In recreation and tourism in PA management, the concept of conflict is associated with the notion of "goal interference between users." According to some authors, this is one of the most studied aspects in outdoor recreation (Manning & Valliere, 2001; Marcouiller, Scott, & Prey, 2008; Vaske & Shelby, 2008). The relevance of the study of conflicts between visitors in PA arises mainly with the increasing visitation in these areas (Manning & Valliere, 2001) and assumes that various recreational activities interact with different degrees of compatibility resulting in different consequences or results (Marcouiller et al., 2008). This interference can occur between practitioners or visitors goals, between stakeholders, between them and the management agency of the area and even with other activities also using the protected territory (e.g. agricultural or traditional activities).

All groups surveyed were asked about the existence of conflicts within the PA and important issues were found in their responses. Each stakeholder refers to different forms of conflict. For example, at the practitioners level, conflicts were identified mainly between groups practicing the same activity or different activities, whereas at OPNBS, conflicts were identified primarily

with the PA management agency and some industrial activities. Despite the individual relevance of these findings, emphasis is given to issues referred to by different groups of respondents.

The main result that emerges from the analysis of this dimension is the limited perception of conflict situations, a given concordant between the 4 OPNBS, 51.2% (n = 42) of practitioners and the MA, which mentioned only general cases (Table 1.). The results reveal a positive situation essentially based in the low perception of conflict. However, some correspondences on problems should be addressed.

Table 1. Perception of Conflict in the groups surveyed

Conflicts	Groups surveyed	MA	OPNBS	Practitioners
Between NBS practitioners	In the same activity	×	×	√ (20%, n=16)
	Between different activities	×	×	√ (17.1%,n=14)
With NPSAC management agency		×	√ 3R	√ (3.7%,n=3)
Between NBS and other economic activities	Stone extraction	√	√ 3R	
	Pig farms	√	×	√ (29,3%,n=24)
	Hunting	√	√ 3R	
	Local populations	√	×	×

Legenda: (x) No correspondence in responses; (√) There is correspondence in response; (4R) Nº. of respondents matched.

Three main types of conflicts were investigated: between practitioners; with the MA and between NBS practices and other activities that make use of the territory.

The main correspondences occur in conflicts with other activities, namely the stone extraction industry, pig farms and hunting. Given the characteristics of NPSAC, this is considered to be extremely relevant. This is an area with significant social and economic activities, with many important industries, such as stone extraction or pig farms.

Therefore, and taking into account the views of 3 OPNBS, it is necessary to enable the coexistence of tourism, recreation and sport activities with other industries that are important to the local economy. One important step may be the awareness of industry stakeholders to create an understanding of the effect of their activities on visitation in NPSAC, and that tourism can also be a way for

economic development, thus creating diversity of economic activities in the region.

Another important concern is related with hunting, identified by all groups under study as problematic. In the specific case of OPNBS, references were made to problems with the ordered hunting regime. The responders assumed that the hunting regime is interfering with several sports in dedicated locations.

Somewhat less relevant, conflicts between the various groups and MA were identified. Three of the respondents within the group of OPNBS have referred to the lack of communication and interest of the agency on tourism within the PA, as well as a lack of transparency in the decisions that often affect local populations. In this context, Pimbert and Pretty (1995) refer to the importance of communication and clarification of the decisions that are taken in the PA, mainly when they are not well accepted by the people. Hall (2000) also argues that a more transparent and inclusive policy is essential for the improvement of relations between MA and the stakeholders of tourism.

Connected with the types of conflicts found are the main reasons why these happen. The results for this variable are presented in Table 2.

Table 2. Reasons for conflict

	Groups surveyed			
Main reasons for conflict	**Specific reasons**	**MA**	**OPNBS**	**Practitioners**
Attitudes	Lack of civility	√	×	√ (20%, =16)
	Lack of awareness from the activities promoters	√	√ 3R	×
Sound/Visual impact of economic activities	--	√	√ 2R	√ (17.1%,n=14)

Legenda: (x) No correspondence in responses ; (√) There is correspondence in response ; (4R) Nº. of respondents matched

For this variable, "Attitudes" and the "Sound/Visual impact" are the main reasons for conflict. The attitudes that lead to conflict situations happen for two main causes: expropriated attitudes among practitioners (e.g. lack of civility) and among entities pro-

moting sports events often neglecting the impact of their activities on local populations. References to this cause were revealed by the MA and by 3 OPNBS, relating occasional events such as major sports events, which are often poorly disclosed, alarming local populations. These activities are also considered "poorly organized" in the sense that they cause negative effects on the cultivated land, accesses or rubbish in the locations. The second cause results from the action of industrial activities and the visual impact and noise caused in the recreational space.

Again, awareness among these entities is critical. The NPSAC management agency should be responsible for ensuring actions to raise awareness. If this happens, acceptance of sport and tourist activities by the local population might increase.

3) Perception of environmental problems

Perception of environmental problems is understood as the perception of individuals about environmental aggressions to physical environment where NBS are developed. The perception of negative environmental impact, such as conflict, has also been the subject of numerous investigations, in order to understand the trends of the results and the factors that influence the perception from visitors in PA.

In agreement with the results shown above, the perception of environmental problems is low in all groups. For the MA, data are more specific, while in line with other studies (Amuquandoha, 2010; Deng, Qiang, Walker, & Zhang, 2003; Takahashi & Milano, 2004), the results for the OPNBS and Practitioners focus mainly on the existence of rubbish at the practice sites (Table 3).

Table 3. Perception of environmental problems

	Groups surveyed	
Environmental Problems	MA	OPNBS
Collection of fossils	√	×
Disrespect for trails physical limits	√	×
Collection of floristic species	√	×
Rubbish in sites of practice	√	√ 3R
Waste generated by other activities	√	×

Legenda: (x) No correspondence in responses ; (√) There is correspondence in response ; (4R) Nº. of respondents matched ; (g.n.q) Group not questioned

Existence of waste in places of NBS practice is an aspect perceived by different groups. It is important to emphasize that presence of waste is not only due to practitioners, but result from other activities that use the territory, contributing to the perception of conflict that was observed in the previous dimension. In addition, practitioners were also asked about the physical conditions of the places of the dominant practice (understood as the main activity undertaken by respondents) and at other locations. The dominant activity among respondents was Mountain Biking (MTB), thus the main concerns are specially associated with MTB trails.

In this case, 43.9% (n = 36) of respondents recognized "Some signs of degradation," and none selected the response "Presents significant degradation". For most other sites of practice, and in agreement with results obtained for the first variable, responses concerning categories "... some signs of degradation" and "no observed changes" were superior to the hiking trails (68.3, n = 56) and accesses to practice sites (73.1%, n = 60).

Since most activities carried out by respondents occur on trails (hiking and mountain biking), dedicated actions should be undertaken in these places. The environmental quality is essential to the quality of the visitor experience (White, Virden, & van Riper, 2008) and to nature conservation. Therefore, it is essential to set up appropriate and feasible monitoring programs to support maintenance actions. However, based on data from the interviews conducted with the MA, monitoring actions are very unusual or practically nonexistent. The financial difficulties experienced today are a major constraint for these actions, especially due to limited material and human resources. Once again, the active contribution of various stakeholders sharing tasks and responsibilities could be part of solutions to improve the current situation.

4) NBS management

The management dimension includes topics that when put together contribute significantly to the overall understanding of the management methods currently applied in NPSAC. In this

context, the first topic identified was the current management methods used by the MA. The study of this topic was exclusive of the NBSM analysis and the interview with the MA where the key tools and methods currently used were identified. Thus, in collaboration with MA, relevant issues were identified, such as:

5.1) Database about the developed activities (only organized activities, not including general visitation)
6.2) Geographical Information System Mapping
7.3) Nature-Based Sport Map
8.4) Protected Area Master Plan

Looking at the results, the picture is of an "incomplete management system" mainly focused on instruments, whose implementation and effectiveness is limited and lacking relevant data for management. Furthermore, these are only carried for organized practice (e.g. Tourism business activities), excluding visitation in general. Monitoring processes are virtually nonexistent, and occasionally applied by temporary staff.

Regarding the NBSM, the main methods of management of practice sites is done using two different criteria: carrying capacity and temporal restrictions, both for reasons related to nature conservation and protecting biodiversity.

The second topic explored focused on opinions about the adequacy of existing and new methods to regulate NBS. OPNBS and Practitioners were asked to evaluate a list of different techniques using a Likert scale with 5 levels (1 = not appropriate; 5 = completely appropriate).

The 12 techniques presented (Table 4), can be characterized by their (1) character: "Direct" (more restrictive and punitive measures) or "Indirect" (measures related with awareness or other actions that are not usually noticed by visitors) and (2) primary objective: "Nature Conservation", "Conflict Reduction" and "Control of practice." Both the character and objectives of each technique were omitted from the table presented to respondents.

Results from practitioners were analyzed in quantitative terms only. For the OPNBS group, the same framework was presented, but comments were requested for each measure.

Table 4. Management techniques

Management techniques
1. Awareness and education of participants
2. Limiting the size of the groups in the spots where they engage in activities
3. Creation of sites dedicated to the practice of certain activities
4. Promote the dispersion of practitioners using information about other sport and recreation opportunities
5. Periodic prohibitions of practice in certain locations due to physical deterioration.
6.Seasonal limitation of access in times of the year with greater impacts
7. Limiting the duration of daily practice
8. Active supervision by the ICNB
9. Limiting the number of daily users in PA
10. Payment of fees
11. Construction and upgrading of infrastructure to support practice
12. Prohibition of practice time (due to fauna and flora)

Results obtained for practitioners and OPNBS are presented in table 5.

Similar results for both groups are bold and underlined. It is noticeable a trend in which the groups show higher acceptance of measures with an indirect character and lower acceptance of more restrictive measures (Direct; Control). The lowest observed value for both groups is the measure nº 10 "payment of fees for activities development". The OPNBS were extremely critical of this measure, which is already applied to companies developing activities in NPSAC. This group considers that this measure is "dysfunctional" and "restrictive", and possibly responsible for the exclusion of companies from the PA. As an alternative, they propose a kind of "environmental tax" imposed on customers that should be used directly in the improvement of infrastructure or maintenance of sites of practice and accesses.

Table 5. Results regarding adequacy of management techniques

Management technique	Character	Main objective	Practitioners (n=82)				OPNBS (n=4)
			Min	Max	M	SD	M
1.Awareness and education of participants	Indirect	Nature Conservation	2 *7,3%*	5 *58,5%*	**4,27**	0,99	4,75
2.Limiting the size of the groups in the spots where they engage in activities	Direct	Nature Conservation Conflict reduction	1 *4,9%*	5 *35,4%*	**3,72**	1,21	3,75
3.Creation of sites dedicated to the practice of certain activities	Indirect	Nature Conservation Conflict reduction	1 *1,2%*	5 *45,1%*	**4,01**	1,09	4,5
4.Promote the dispersion of practitioners using information about other sport and recreation opportunities	Indirect	Conflict reductio	1 *4,9%*	5 *48,8%*	3,95	1,24	4,75
5.Periodic prohibitions of practice in certain locations due to physical deterioration.	Direct	Nature Conservation	1 *2,4%*	5 *25,6%*	3,52	1,14	4,75
6.Seasonal limitation of access in times of the year with greater impacts	Direct	Nature Conservation	1 *4,9%*	5 *25,6%*	3,44	1,17	4,5
7.Limiting the duration of daily practice	Direct	Nature Conservation Conflict reduction	1 *40,2%*	5 *2,4%*	**2,10**	1,45	2,75
8.Active supervision by the ICNB	Direct	Control of the practice	1 *18,3%*	5 *8,5%*	2,66	1,15	3,5
9.Limiting the number of daily users in PA	Direct	Nature Conservation Conflict reduction	1 *34,1%*	5 *7,3%*	2,22	1,19	1,75
10.Payment of fees	Direct	Control of the practice	1 *70,7%*	5 *4,9%*	**1,50**	0,98	1,5
11.Construction and upgrading of infrastructure to support practice	Indirect	Conflict reduction Practice improvement	1 *3,7%*	5 *46,3%*	4,06	1,08	5
12.Prohibition of practice time (due to fauna and flora)	Direct	Nature Conservation	1 *3,7%*	5 *35,4%*	3,84	1,14	4,75

Legenda: (Min) Minimum value of the response scale; (Max) Maximum value of the response scale; (M) Mean; (SD) Standard Deviation

In table 6, a summary of the responses according to the character and primary objective of the measures is presented.

Table 6. Adequacy of the management techniques according to their character and objectives

Management technique	Average of responses per group	
	Practitioners	OPNBS
Indirect measures 1. Awareness and education of participants 3. Creation of sites dedicated to the practice of certain activities 4. Promote the dispersion of practitioners using information about other sport and recreation opportunities 11. Construction and upgrading of infrastructure to support practice	4,07	4.75
Direct measures 2. Limiting the size of the groups in the spots where they engage in activities 5. Periodic prohibitions of practice in certain locations due to physical deterioration 6. Seasonal limitation of access in times of the year with greater impacts 7. Limiting the duration of daily practice 8. Active supervision by the ICNB 9. Limiting the number of daily users in PA 10. Payment of fees 12. Prohibition of practice time (due to fauna and flora)	2,88	3,40
Direct Measures with Nature Conservation objectives (measures 5, 6, 12)	3,6	4.66
Direct Measures with Nature Conservation and conflict Reduction objectives (measures 2, 7, 9)	2,68	2.75
Direct Measures with practice control objectives (measures 8, 10)	2,08	2.5

In table 5, a greater acceptance of indirect measures was found in accordance with the results reported in the literature (IUCN, 2002; Manning, 2007; Needham & Rollins, 2009). The results reflect an approximation of opinions between the two groups, with the group of practitioners showing lower average results for all categories.

The largest difference was found for direct measures with nature conservation objectives, showing a higher acceptance by the OPNBS. The results prove to be quite positive, because it demons-

trates the awareness of respondents to environmental issues, something that was also clear in the 4 interviews.

Another aspect that deserves attention is the lowest mean value for measures 8 and 10, clearly showing the lower acceptance, for the groups surveyed, of direct measures related with the strict control of sport practice. Extremely restrictive measures may lead to the reduction of visitation in these areas, particularly in terms of the NBS.

The adoption of measures of indirect character associated with measures to increase awareness, infrastructure enhancement and information are factors to be taken into account in the future management of NPSAC.

5) Most developed activities and most popular sites

The characterization of NBS practitioners allowed the collection of data useful to comparisons with the other groups surveyed, particularly concerning the most developed activities and places used for NBS activities. What visitors do, when and where are important information for recreation management on PA (Cole & Daniel, 2003). This information allows better assessment of trends in practice, as well as the definition of the most appropriate actions to be taken into account in the management of the used spaces, whether at infrastructural, environmental or social levels (Watson, Cole, Turner, & Reynolds, 2000).

The analysis of this management dimension allowed comparison of results from different respondents. Firstly, regarding most developed activities, two variables were used, namely, "Activities developed", corresponding to all activities developed by each respondent, and " Dominant Activity," corresponding to the activity that the individual develops more frequently or considers preferential. The results for both variables show a similar trend in terms of typologies of NBS developed in NPSAC. Table 7 shows the general results obtained.

Table 7. Most developed activities

Activities	Groups surveyed			
	NBSM	MA	OPNBS	Practitioners
Mountain Biking	×	√	g.n.q	√ (68.3%,n=56)
Hiking	√	√	g.n.q	√ (51.2%,n=42)
Climbing	√	×	g.n.q	√ (24.4%,n=20)
Caving	√	×	g.n.q	√ (7.3%,n=6)
Other Sports (Orienteering and Motorized sports)	×	×	g.n.q	√ (6.1%,n=5)

Legend: (x) No correspondence in responses ; (√) There is correspondence in response ; (g.n.q) Group not questioned

Data collected by MA showed that hiking and mountain biking activities were the most developed NBS. Comparing with NBSM, relevance of mountain biking is not matching since there is a lack of sites identified and thus a match was not expected. Regarding hiking, climbing and caving, a different situation was expected, due to the large number of locations. As reported by the MA, these activities gained expression after 2006, when the NBSM was published. However, a strong bias might exist due to the type of data available, which was quite limited at the time this study was developed. Improvement of data collection is essential for planning and support selection of adequate management measures and given the relationship between supply (practice sites properly identified and considered in NBSM with diversity of recreational/sport opportunities) and demand (search for activities with more locations or possibilities) (IUCN, 2002).

The most popular sites for sports activities (table 8) were identified from two sources: analysis of the NBSM, where areas with high concentration of activities were identified and the interview to the MA, that allowed verification of the analysis performed to the NBSM.

The most popular places for NBS activities identified were: Chãos / Alcobertas (a rural area adjacent to the municipality of Rio Maior), Marinhas do Sal (peripheral zone of the same county) and Olhos d'Água do Alviela (an area offering a large number of activities in a physically delimited space within the municipality of Alcanena). Together with the high level of demand, the

area of Olhos d'Água do Alviela was referenced by the OPNBS as an area of "special attention" in environmental terms because of the large influx of people especially during summer.

Table 8.Most popular local for NBS in NPSAC

Most used locals	Groups surveyed			
	NBSM	MA	OPNBS	Practitioners
Chãos/Alcobertas	√	√	√ 2R	√ (82.9%,n=68)
Marinhas do Sal	√	√	√ 2R	√ (53.7%,n=44)
Olhos d'Água do Alviela	√	√	√ 4R	√ (41.5%,n=34)
Minde/Mira de Aire	√	√	√ 3R	√ (26.8%,n=22)
Porto de Mós	×	×	×	√ (19.5%,n=16)
Alvados	×	√	×	√ (18.3%,n=15)
Cortiçal/Barreirinhas	×	×	×	√ (13.4%,n=11)
Other	×	×	×	√ 0

Legenda: (x) No correspondence in responses ; (√) There is correspondence in response ; (4R) No. of respondents matched

The data obtained, in spite of reflecting solely the opinions of respondents from the municipality of Rio Maior, are important in the sense that they allowed identification of potentially more popular sites, which require special attention from the PA management, but also allowed to conclude that the demand is not necessarily related to the space of residence of practitioners (proximity factor), as was observed at Olhos d'Água do Alviela or Porto de Mós, which distanced considerably from the municipality of Rio Maior.

Specific management plans, developed in a collaborative way with relevant stakeholders may contribute to an increased focus on the places that offer the best conditions for sports and that tend to have higher demand by visitors and companies to recreational and tourism activities.

CONCLUSIONS AND IMPLICATIONS FOR MANAGEMENT

Reflections on the methodology used

The selected methodological approach is based on the potential and adequacy of participatory processes, especially in areas facing an increase on visitation and reduced financial possibilities, as is the case of NPSAC.

Consideration of correspondence of opinions from different groups in key issues having different points of view enriches the validity of the results.

The methodological principles associated with data triangulation were essential to the results, especially in the construction of the data collection instruments (questionnaires and interviews). The division of the study on specific management dimensions allowed a more detailed analysis, organized and focused on specific problems and, at the same time, a general discussion about issues that affect each other. Therefore, it is important to contribute to improvement and adequacy of the methods, especially in the participatory processes field, where collection and analysis of data from various stakeholders is a difficult step.

The results obtained in this work should not be generalized for the entire PA, since they mirror the characteristics and points of view of stakeholders living in the municipality of Rio Maior. However, results are still important for two main reasons:

1) They allowed assessment of trends, especially those related with the high number of MTB practitioners (an activity growing in the national territory), the main problems in terms of conflicts especially with other industrial activities and some environmental problems, mainly related to rubbish found in NBS locations. Also important is the potential of NPSAC for NBS practice. This is a PA characterized by many municipalities (7), with different traditions, cultures and infrastructures for tourism and recreation. These characteristics, together with NBS activities, may contribute to touristic potential as well as its quality. Sharing of responsibilities and the adoption of a participatory process are essential for many of the actions required to address the problems identified here, and certainly many others outside this analysis, to be implemented.

2) Additionally, this study allowed a significant gain of experience and knowledge, against a set of methodological procedures, which given the reality that the investigation unfolds, demonstrate themselves difficult. The objectivity of the collected data and, in

part, the validation of a methodology that surely deserves constant improvement, strongly contributed towards this.

Implications for management

The main problems identified can be tackled by means of a set of actions that can be taken into account in the future of the management in NPSAC, for NBS practices in the fields of tourism and recreation, including:

1) Within the scope of the territory and trends of current practice: i) it is relevant to review the NBSM, in order to include new practice locations and access the current state and trends in demand for these sports. MTB is an activity that shows an apparent exponential growth in this PA, but a network of trails dedicated to these activities is not yet identified, which may result in a disordered and harmful use, negatively impacting the environment and even other activities; ii) Existence of and the knowledge of OPNBS and the 7 municipalities within the PA can be advantageous if a participative management process is properly set up.

2) In terms of the environmental and social problems identified: i) Some major sport events can be a potential cause of environmental and social problems, especially among local populations. Awareness of promoters are essential; ii) Popular sites such as Marinhas do Sal, Chãos / Alcobertas and Olhos d'Água do Alviela, are subject to a significant demand, often causing some conflicts. Tailored monitoring actions on most popular sites are essential for supporting definition of new management strategies while ensuring their sustainability; iii) The consideration of an approach to major industrial activities in the PA including awareness of their impacts and need to take into account sports and tourism, also important in the generation of benefits for local populations; iv) A need to revise the regime of hunting was identified; v) The main environmental problems associated with NBS are in trails and areas of access to practice sites. The creation of new practice sites (to increase practitioner's distribution), adequate signing and information are important actions to

increase awareness and contribute to maintain the environmental quality of these sites.

In general, lack of perception of problems was found to predominate over identification of issues by stakeholders, a positive sign for PA case study. However, as outdoor activities and nature conservation are dynamic and subjected to certain social or economic pressures, management must be in constant adaptation.

The NPSAC is recognized as an asset to the local and regional economy and there is a need for greater investment in this sector. The involvement of relevant PA stakeholders proved to be very useful for the development of a collaborative approach that meets the need of planning and management of the territory and to partly overcome the financial difficulties currently experienced in national PA. The ICNF, as the entity responsible for the National Network of Protected Areas, should be the driving force behind this process.

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