Tourism environmental attitudes in Berlengas Biosphere Reserve, Portugal

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Dissertação para obtenção do Grau de Mestre em Turismo e Ambiente

Dissertação de Mestrado realizada sob a orientação da Doutora Teresa Margarida Lopes da Silva Mouga, co-orientação do Doutor João Viljoen De Vasconcelos e Doutora Maria Sofia Fernandes de Pinho Lopes

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Resumo

O potencial conflito entre o paradigma de conservação da natureza e o desenvolvimento de atividades de turismo em áreas protegidas exige uma gestão rigorosa. Em alguns casos, o controlo da visitação é uma estratégia para a preservação dos recursos naturais assim como outras ferramentas de gestão tais como a capacidade de carga turística e/ou zonamento, com a definição de áreas de acesso restrito a visitas.

A fim de promover a harmonização entre essas duas forças opostas (preservação vs. visitação) algumas áreas protegidas têm mudado o turismo de natureza para o ecoturismo. Isto implica que as atividades turísticas deverão ser focadas numa viagem responsável a áreas naturais, e, ao mesmo tempo, na promoção da conservação do meio ambiente, na interpretação e na educação.

No nosso estudo analisamos o potencial do Ecoturismo na Reserva Natural das Berlengas, uma área protegida em Portugal. Foram analisados o perfil, as motivações e o comportamento ambiental dos turistas que visitam as Berlengas.

Um questionário bilingue foi elaborado e os dados foram recolhidos a partir de 304 turistas que visitaram as Berlengas, durante os meses de julho e agosto de 2014, o s quais concordaram em colaborar neste estudo. A análise dos nossos resultados permitiu-nos inferir que, de facto, o turista visita a ilha da Berlenga devido ao ambiente natural e à vida selvagem, a visita também está relacionada com as atividades de natureza, tais como, visitar as cavernas de barco, observação da vida selvagem, caminhadas e praia. No entanto, pelo facto dos turistas estarem motivados a visitarem a ilha para se envolverem na natureza não significa que eles tenham consciência pró-ambiental. Encontramos 53,2%/ medio-ecológicos e apenas 37,9% dos turistas pró-ecológico; 8,9% são mesmo anti-ecológicos.

Os nossos resultados sugerem que a natureza e a vida selvagem são motivações que não parecem ser suficientes para as pessoas apoiarem verdadeiramente a conservação da natureza e desenvolver comportamentos pró-ambientais. Mas, também verificámos que os turistas com um maior nível de instrução têm uma maior consciência ecológica. Assim, os turistas com maior nível de instrução tendem a ter menos impacto sobre o destino turístico. De acordo com nossos resultados, são apresentadas várias recomendações para a implementação do ecoturismo nas Berlengas.

Palavras-chave: Ecoturismo; Novo Paradigma Ecológico (NEP); Berlengas Reserva Mundial da Biosfera; Atitudes Ambientais; Turismo Sustentável.

Abstract

The potential conflict between the paradigm of nature conservancy and the development of tourism activities in protected areas demands a rigorous management. In some cases, the control of visitation is a strategy for the preservation of the natural assets and, very often, management tools such as tourism carrying capacity and/or zoning, with the definition of restricted areas to visitation are used.

In order to promote the harmonization between these two opposite forces (preservation vs. visitation) some protected areas have been changing nature based tourism into ecotourism. This implies that tourism activities should be focused on a responsible travel to natural areas but at the same time on the promotion of the conservation of the environment in interpretation and education.

In our study we analyzed the potential of Ecotourism in Berlengas Island Protected area in Portugal. The profile, motivations and environmental behavior of the tourists visiting Berlengas were analyzed.

A bilingual questionnaire was elaborated and data was collected from 304 tourists that visited Berlengas, during July and August of 2014, and who agreed to collaborate in this study. In our results we found that in fact the tourist visits the island of Berlenga due to the natural environment and wildlife; the visit is also related to the nature related activities such as, visiting the caves by boat, observation of the wildlife, hiking and beach. Yet, the fact that the tourists are motivated to visit the island to get involved into the natural area doesn't mean that they have pro-environmental awareness. We found out that most tourists are mid-ecological (53.2%) and only 37.9% of the tourists are pro-ecological; 8.9% are even anti-ecological.

Our results suggest that nature and wildlife motivations don't seem to be enough for people to truly support nature conservation and to develop pro-environmental behavior. But, we also proved that more educated tourists are more ecological aware, thus more educated tourists may tend to have less impact on the tourist destination. According to our results, several recommendations for the implementation of ecotourism in Berlengas are presented.

Keywords: Ecotourism; New Ecologic Paradigm (NEP) scale; Berlengas World Biosphere Reserve; Environmental Attitudes; Sustainable Tourism.

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Chapter I

Introduction

Introduction

Humans have for long been using the earth as if their actions have no negative impact and as if it has infinite resources. Although, in the past two or three decades, the important negative impact of humans activities and uses is being increasingly documented and therefore, public awareness seems to be increasing. Consequently, the relationship of humans towards environment appears to be changing into more environmental friendly attitudes.

Ecosystem sustainability is essential to address in terms of the progressive pollution of global ecosystems, rapid urbanization, and the progressively severe estimates of climate change. One way to achieve this ecological harmony of the ecosystem can be through sustainable ecotourism which attempts to provide a resource base for the future, and seeks to ensure the productivity of the resource base, maintain biodiversity and avoid irreversible environmental changes while ensuring equity both within and between generations. Nowadays, it is even more important to preserve the protected areas through planning and management capable of motivating local community to engage into ecotourism, preventing eventual conflicts between the locals and tourists. It is also necessary to motivate the tourist to take environmental attitudes of their own while visiting a protected area through specific activities that were created to that purpose.

The more ecological behavior and awareness has been accompanied by the touristic choices of visitors, due to environmental concern regarding tourism impact. The development of ecotourism and other nature-based tourism operations are examples of more sustainable touristic options. Natural sites should provide opportunities to appreciate and enjoy nature and also to develop visitors' knowledge and awareness regarding environmental friendly attitudes and nature conservation (Lee and Moscardo, 2005). Thus, in the context of nature tourism it is relevant to evaluate the ecological conscientiousness and behavior of such visitors, especially when they travel to natural destinations attracted by their natural features. These visitors may have higher environmental awareness when they experience natural environments and wildlife (Luck, 2003).

Ecotourism can be an important tool, to preserve and conserve the protected areas, associated with the implementation of a carrying capacity that helps to evaluate the

impacts of visitation on the natural resources and determine the areas and wildlife most sensitive to the impacts.

In this thesis we study the case of Berlengas' Natural Reserve, a Portuguese natural area, recognized as world biosphere reserve by UNESCO, visited by about 40 thousand tourists every year. The main goal of this work is to evaluate the ecological perspective and attitudes of the Berlengas' visitors, applying a measurement scale that has been already applied and validated in different contexts, the New Environmental Paradigm NEP) scale (Dunlap, et al., 2000).

The objectives of this study is to measure the "ecological awareness" of the tourists that visit the island of Berlengas, using the NEP scale of 15 items and based on three categories – pro-ecological, mid-ecological and anti-ecological – that was adapted from Thompson (2013). Together with the motivations, attributes, good practices, activities and socioeconomic aspects (gender, age, literacy level), we describe the profile of the Berlengas' visitor, in order to better understand the behavior and the motivations of the tourist that visits the island. Along with the results and with the support of authors (Ceballos-Lascurain, 1996; Wight, 1996; Ballantine & Eagles, 1994; Hvenegaard & Dearden, 1998; Eagles, 1992; Horwich, 1993; Lawrence, et al., 1997; Kutay, 1989) we delineate the most suitable type of tourist - the ecotourist - which gives importance to preservation and conservation of the island, . We investigated two tools to assess the conservation related beliefs, attitudes and world views of tourists. This study pursues to test of dimensionality and reliability of the revised NEP scale and examines the degree of endorsement of the NEP on the participants.

The first part of this study is a brief literature review about protected areas, ecotourism and their importance for the sustainability of the destination, carrying capacity, the description of the NEP and of Berlengas. Then we analyze the results, where we show through graphics and tables the socioeconomic aspects and the evaluation of the "ecological awareness" of the tourist, their motivations, if they have good practices at the destination, the activities that they would like to do, or already did in the island of Berlenga, and the attributes that affect their decision to visit the island. The last part of this study deals with the discussion of the results and, ultimately, we make the final conclusion.

1.1 Tourism in protected areas

The first protected areas were created following the conservationist model of protecting essentially the existing natural values. They appeared by the end of the nineteenth century, mainly in United States of America, Canada, Australia, New Zealand and South Africa. There were common features to these parks: they were created and managed by the government and contained important natural values. Nowadays protected areas cover 12.7% of the terrestrial surface (Bertzky, et al. 2012), and play a crucial role in tourism. Nevertheless, protected areas worldwide are highly demanded for the different activities, according to the specification of the destination they offer, causing a greater influx of tourists (Buckley, 2003). The main priority of the protected areas is to conserve species and habitats without having in consideration the visitor access (Boo, 1990), which obviously can result the deterioration of the habit and the disturbance of the wildlife by visitors (Kelly, Pickering and Buckley, 2002). According to Dudley (2008) “a protected area is a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values”. The definition of Dudley (2008) clearly states the importance of protected areas for the conservation of nature.

Despite the importance for nature conservation, protected areas cannot be viewed in isolation from local communities. As highlighted by the World Tourism Organization (WTO), tourism operations in protected areas need to be wisely planned, managed and monitored to ensure their long-term sustainability (WTO, 2005). Otherwise, such measures will have negative impacts, and tourism will contribute to further deterioration of these areas. It is important to guarantee that tourism is sustainable and it is vital to safeguard the sustainability of both natural and cultural environments.

In practice, nature-based tourism sometimes results in significant negative environmental and socioeconomic impacts. The main cause for such failure is the nonexistence involvement of the local community (Kruger, 2005). Some of the main issues are the overcrowding of some sensitive areas, the high patterns of visitor consumption, waste generation and the pressure on the availability and prices of resources consumed by local residents (Zal and Breda, 2010).

Yet, tourism can help to protect and even rehabilitate natural assets, and thus contribute to the preservation of biological diversity and ecological balance. Concepts such as carrying capacity, limits of acceptable change, visitor impact management, tourism optimization management model, tourism carrying capacity, have been discussed as essential visitor management tools in protected areas (Hewlett, Fyall and Edwards, 2004; UNWTO, 2004). The sustainability of nature-based tourism in and near protected areas or in other natural habitats is strongly reliant on its capability to increase the life conditions of local communities and to develop local residents' attitudes and behaviors towards conservation. Tourism can be successful and cause positive impacts on the community if the majority of the locals get involved and receives justly the benefits. From a conservation perspective, tourism can be successful if creates opportunities to increase employment of tourism staff, building of better infrastructure and several other management operations and in consequence the poverty is reduced The income created by tourism also allows the development of measures for habitats and species protection and conservation and, indirectly, improve the welfare and life conditions of the local communities (Buckley, 2010; Coria and Calfucura, 2012; Scheyvens, 1999; Wunder, 2000). In fact, tourism must become a tool for sustainable development. Social and environmental benefits need to be incorporated into local economy and nature conservation; community education and a commitment must be made to assure that economic benefits do not leak out of local communities.

According to recent guidelines from United Nations Environment Programme (UNEP), "sustainable tourism should maintain essential ecological processes and help to conserve natural heritage and biodiversity, respect the socio-cultural authenticity of host communities, and provide socioeconomic benefits to all stakeholders" (UNEP, 2007).

Cautiously planned and efficiently managed, tourism can provide important benefits to protected areas and local communities (Eagles, et al., 2002), particularly communities that are dependent on natural resources and through tourism if the resources were well harnessed can increase the living conditions of the populations (Tosun, 1999, 2000). The benefits created by ecotourism, thus, can counteract other political choices that are ecologically destructive (Boo, 1990; Goodwin, 1996; Lascurain, 2001; Yu, et al., 1997).

1.2 Nature based tourism versus Ecotourism

Nature-based tourism or nature tourism according to Laarman and Gregersen (1996), refer to “travel motivated totally or in part by interests in the natural history of a place, where visits combine education, recreation and, often, adventure”.

Other important pillar for both nature-based tourism and for ecotourism is the quality of the destination. Ecotourists will be more inclined to visit a well-managed protected area where species diversity is high, water quality is good, and the landscapes/seascapes are kept intact than an area where management failures are rampant (Belleville, 1992). It is recognized that the quality of the natural environment plays a key role in attracting international visitors to tourist destinations (Kaltenborn, et al., 2011).

The main feature that distinguishes nature tourism from ecotourism is that nature tourism is for the purpose of enjoying undisturbed natural areas or wildlife and ecotourism additionally requires a contribution to conservation and has an educational purpose (Goodwin, 1996). Hence, nature-based tourism refers to tourist’s interest in travelling to specific destinations. In addition, nature tourism includes the marketing of natural elements to tourists, as well as the enjoyment of nature (Goodwin, 1996).

According to Valentine (1992) nature-based tourism has been claimed to contain three main components: the first one relies on the nature of experience which is nature-dependent, containing attributes such as intensity of interaction with nature, and social sensitivity; the second is the style of the experience where different product elements such as willingness to pay, group size and type, and length of stay are considered to be of significance; and the last one is the location of the nature-based tourism experience, such as accessibility, ownership of location, and the fragility of the resources used. The same author (Valentine, 1992) also refers that the activities of natural-based tourism also can be distinguished into three main categories: activities dependent on nature (i.e. bird-watching, fishing, hunting); activities enhanced by nature (i.e. camping); and activities where the natural setting is incidental (i.e. swimming, diving).

The term ***ecotourism*** was coined by Hector Ceballos-Lascurain in Mexico City in 1983 refers that “Ecotourism is that tourism that involves travelling to relatively undisturbed natural areas with the specific object of studying, admiring and enjoying the scenery

and its wild plants and animals, as well as any existing cultural aspects (both past and present) found in these areas. Ecotourism implies a scientific, aesthetic or philosophical approach, although the 'ecotourist' is not required to be a professional scientist, artist or philosopher. The main point is that the person who practices ecotourism has the opportunity of immersing him or herself in nature in a way that most people cannot enjoy in their routine, urban existences. This person will eventually acquire an awareness and knowledge of the natural environment, together with its cultural aspects, that will convert him into somebody keenly involved in conservation issues" (Ceballos-Lascurain, 1996). It signifies a different configuration of visitation to the natural areas, sustained with a transformation in the stakeholders' tactical goals involved in these ecotourism visitation patterns, hence it is not directly related with historic recreational activities as nature-based tourism may be (Lindberg and McKercher, 1997).

According to Agardy (1993) and Barnes (1996) ecotourism has developed in traditional tropical regions, like Central and Latin America, the Caribbean, Australia, New Zealand, and Antarctica.

Ecotourism can occur in protected or unprotected areas, but it occurs in pristine habitats and conservation and education components are key issues (Blamey, 1995 a, b, 1997). According to Cristureanu (2006) ecotourism "is one of the forms of tourism developed in countries with natural and cultural potential of a universal value". And Nistoreanu (2003) refers to ecotourism "as response to increased interest in knowledge of nature, and the warning signs coming from the farthest corners of the world".

In fact, according to the WWF (2000) the ecotourism accreditation has been recognized as an effective process for achieving four objectives: The first one is the eco-efficiency and natural area protection; the second is the biodiversity protection and minimization of ecological footprints; the third is the social aspects of tourism development; and the last one is the economic aspects of tourism development. Besides all these aspects ecotourism is also committed to promote education of visitors and of all the other stakeholders, including staff.

As Norris (1992) refers, it is important that activities created are connected with ecotourism, capable of producing better protection. Therefore, participants in wilderness or adventure travel can have a deeper knowledge of the natural places. However it is not enough if they don't take actions or attitudes to help the preservation and conservation of the protected areas, that way the activity cannot be defined as

ecotourism. A good example is in mountain destinations (i.e. Himalayas) where people use the mountain regardless their impacts. Thus they act as nature tourist instead of ecotourists because they have negative impact on natural resources. In fact, due to the rapid popularity increasing of ecotourism, there have been developers that label their product as ecotourism to make more profit but continue causing damage to the natural environment (Kaltenborn, et al., 2011; Richardson, 1997; Wight, 1993b). Unfortunately, there are many examples from around the World where tourism has had significant negative impacts to wildlife. Some examples are the Kenya's Maasai Mara National Reserve, the Amboseli, and the Nairobi National Parks, where excessive numbers of tourists in vehicles have threatened the cheetah population (Honey, 1999).

The most recent definition of ecotourism, according to TIES (2015) is the following: "Responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education" (TIES, 2015). Education is meant to be inclusive of both staff and guests. The basic premise of the ecotourism is that the satisfaction of the future generations must not be harmed by the visitors of today (Blangy and Wood, 1992). Therefore, if that basic premise is respected we have a sustainable destination.

As stated, the meaning of ecotourism is more restrictive than that of nature-based tourism. Any tourism that takes place in relatively undisturbed areas is nature-based tourism, but ecotourism must satisfy the following principles according to TIES (2015):

- Minimize impact;
- Build environmental and cultural awareness and respect;
- Provide positive experiences for both visitors and hosts;
- Provide direct financial benefits for conservation;
- Provide financial benefits and empowerment for local people;
- Raise sensitivity to host countries' political, environmental, and social climate.

It is quite clear, therefore, that ecotourism must be an activity undertaken by small operators (O'Neill, 1991). In that way, these operators restrict the numbers of clients that they are able to handle at a given moment, providing a better experience for the clients, offering the quality of wildlife and natural environment for a fair price. This means that ecotourism can be a more expensive type of tourism to compensate the few numbers of clients per day that are willing to pay to experience a quality natural destination, investing also in conservation and education through specific ecotourism

activities. This type of tourism, thus, can be an alternative to mass tourism which puts at risk the sustainability of the destination (Choegyal, 1991; Williams, 1990). In fact, the short-term ecotourism seems to be less abusive to the destination than the mass tourism, because of the dimensions and the need of fewer or smaller facilities (Butler, 1990). Yet, the main issue for ecotourism and protected areas is that ecotourism occurs mainly in extremely delicate and susceptible environments, some of which cannot survive even moderate levels of use, and which often have little or no infrastructure to deal with development (Butler, 1990). In the long-term the effects of ecotourism may penetrate deeper into the environment and the surrounding communities, which can transform it into less sustainable tourism (Duffy, 2002).

Most of the ecotourist desire to experience natural areas in an untouched state; therefore there is a significant contradiction of interest for conservation objectives. However, according to Buckley (1994) McNeely and Thorsell (1989) “ecotourism to natural areas may have positive results and it is important for management to be aware of possible adverse effects so that they might be addressed through careful planning and effective management strategies”.

In sum, the key element of ecotourism is sustainability. Consequently, it is important to provide a resource base for the future, and pursue to ensure the productivity of the resource base, maintain biodiversity and avoid irreversible environmental changes while ensuring equity both within and between generations. Wearing and Neil (2009) state that “ecotourism pursues to capitalize on the growth in tourism to protected areas renowned for their outstanding attractiveness and astonishing environmental interest and return the profits of this to the local community”. Ecotourism is related to the idea that can only be sustainable if the natural and cultural resources survive and prosper. To do that it is important to reduce social and biophysical impacts caused by visitors, reduce the leakage of potential benefits away from developing countries, increase environmental awareness and action among tourists and create opportunities for the people who would otherwise depend on the extraction of local resources (Wearing and Neil, 2009).

Australia constitutes a good example of the implementation of ecotourism; in Australia one of the keys between nature based tourism and ecotourism is that a primary focus of nature tourism is "experiencing nature areas", whereas a primary focus of ecotourism is "experience natural areas that fosters environmental and cultural understanding, appreciation and conservation" (Ecotourism Australia, 2015).

The confusion between the notions of nature-based tourists and ecotourists is quite common, but many authors defend that there is a difference between the two definitions and that they shouldn't be treated in the same context (Ballantine and Eagles, 1994; Eagles, 1992; Horwich, 1993; Hvenegaard and Dearden, 1998; Wight, 1996). Wight (1996) argued that, in order to be called an ecotourist, an individual should be "on the ground and behave according to the principles of ecotourism". Besides, ecotourists are generally characterized as mature, well educated, affluent, and employed in professional and managerial occupations (Ballantine and Eagles, 1994; Hvenegaard and Dearden, 1998).

In addition, Eagles (1992) suggests that ecotourists are motivated in learning about the environment. Wight (1996) also proposed that true ecotourism should not be defined based on the product but rather on responsible behavior that aligns with ecotourism principles. This behavior includes volunteering with a conservation association and consumption of local products (Horwich, 1993), supporting local communities (Wight, 1993a), and donating money for conservation.

Like the nature-based tourism, the general trend of activities in ecotourism is the same, like swimming, skiing, camping, walking, diving and many others. However, the ecotourism must have activities with a more educational and instructive connotation, such as, wildlife observation, participation in festivals, cultural activities and nature landscapes (Cengiz, 2007; Kiper, 2011).People that visit natural areas for many reasons are considered "ecotourists" for watching wildlife (such as birds, sea turtles, and marine mammals), learning about coastal ecology, scuba diving or snorkeling in untouched areas, or to experience nature in its broadest sense (Agardy, 1993). Other environmentally aware tourists may visit a natural area to learn about the local indigenous culture and its particular traditional use of coastal land and sea (Johannes, 1984), learn about marine archeology and history, or partake in other coastal recreational activities such as diving, canoeing, etc. In all cases, the natural-based component of ecotourism is based on three essential features (biological, physical and cultural) in protected and non-protected areas, wherein the elements of sustainability and conservation must be taken into account (Ziffer, 1989).

Hence, ecotourism is a very specific form of tourism, part of the broad concept of nature-based tourism, and it can be ecotourism describes a nature-based operation in the field of tourism. According to Weaver (2001) “the most obvious characteristic of ecotourism is that it is nature based” Fig. 1.

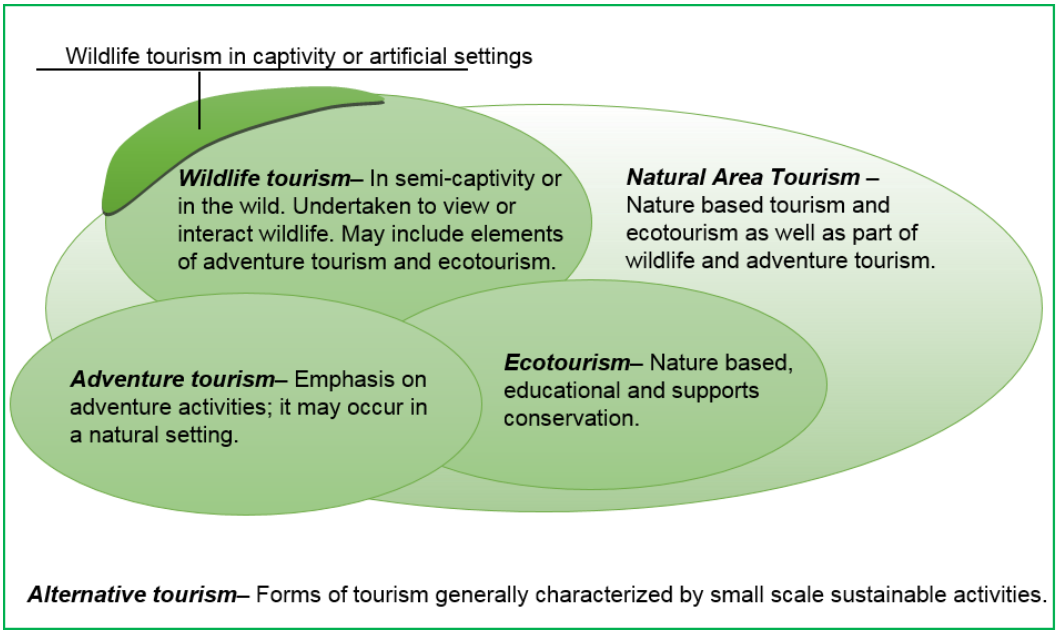


Figure 1 Relationship of ecotourism to other forms of tourism (Adapted from Hill and Gale, 2009)

The sustainability of tourism activities and the contribution for nature conservation and education are the main positive characteristics of ecotourism, whereas its weakness arises from the pressure between productivity and its altruistic objectives, or between conservation and profit goals (Lawrence, et al., 1997). Kutay (1989) refers that ecotourism can be seen as a model of development in which natural areas are planned as part of the tourism economic base, and organic resources and ecological processes are clearly related to the community and financial sectors. Also, according to Ziffer (1989), as mentioned before, “nature tourism is grounded in the behavior and motivation of the individual (tourist) whereas ecotourism is a more comprehensive concept which is based on a planned approach by a host country or region designed to achieve societal objectives beyond (but including) those of the individual”. Therefore, the essential and differentiating component of ecotourism is the location in which ecotourism functions work, and thus the quality of the natural environment forms the basis of the industry.

Furthermore, ecotourism differs from conventional tourism as it aims to educate tourists, encourage the conservation of the area in which it operates and minimizes environmental damage aiming to ensure long-term sustainability.

According to Accot, (et al., 1998) a given individual can ideologically be an ecotourist regardless the location. For instance, someone who is environmentally responsible, even though visiting a non-ecotourist site such as a city, can still be an ecotourist, whereas a person who is in an ecotourist location can equally be a non-ecotourist.

The greatest challenge facing tourism in protected areas today is to find new ways of demonstrating that the conservation of nature and the sustainable use of resources have a fundamental relevance to the daily lives of people, including those who may never visit a protected area.

1.3 Environment Education

Environmental education according to Biderman and Bosak (1997) refers “to raising sensitivity, awareness, and understanding of the linkages and interdependencies among human beings and the natural world in which they live”. Furthermore environmental education is used as a tool of protected areas management in reducing environmental impacts on protected areas according to International Union for Conservation of Nature (IUNC, 1994) the actions are focused on:

1) Developing a general environmental awareness among local people;
2) Changing local people's attitudes to and relationships with protected areas by:
    a. Developing an appreciation of the environmental values of protected areas among local populations;
    b. Arguing for the commercial value of protected areas and training local stakeholders to exploit these;
    c. Fostering pride in protected areas;
    d. Changing visitor attitudes and behavior.

The challenge of environmental education is the support of the public to the importance of having environmental awareness on protected areas or unprotected areas that helps to preserve and conserve natural environment and wildlife and can cause positive benefits for the local communities, economy and society (Biderman and Bosak, 1997).

1.4 Tourism Carrying capacity

The most common definition of tourism carrying capacity, used by many authors (e.g. Maggi and Fredella, 2011; Mason, 2003; Queiroz, et al., 2014; Santonocito, 2009; Sayan and Atik, 2011; Zacarias, et al., 2011), was established in the decade of 80`s and 90`s by the World Tourism Organization (WTO, 1999). WTO defines carrying capacity as "the maximum number of people that may visit a tourist destination at the same time, without causing unacceptable and irreversible destruction of the physical, economic, socio-cultural environment or a decrease in the quality of visitors' satisfaction".

According to Libosada (2009) an operative way to regulate the carrying capacity of an ecotourism destination is through the ecological concepts, particularly the Liebig's Law of the Minimum which states that: ''Under 'steady-state' conditions the essential material available in amounts most closely approaching the critical minimum needed will tend to be the limiting factor''.

For example, in an island, defining tourist carrying capacity is an important management tool to guarantee sustainability, through measuring the number of simultaneous users that can use and take advantage its natural resources, landscape, bathing, fishing and other tourist activities without endangering its natural heritage and cultural values. It is also easier to evaluate the carrying capacity of the destination because of the limitations of the natural area, that is, most of the times there is only one way to enter the island, so it is possible to control the access of all people that enter and leave.

The tourism carrying capacity has been used as an important management tool for protected areas and it is an operational tool to achieve sustainability. As argued by Saarinen (2006), "there is no sustainability without limits", which means that it is important the establishment of existing limitations (visitants, resources or natural area), in order to control, evaluate and anticipate the negative and positive impacts of a destination.

As emphasized by the guidelines developed by UNEP - PAP/RAC (1997), a good technique for carrying capacity calculation must be able to reflect the priorities of the area under examination, recognize local restraints to tourism progress, matching the demand of new tourist infrastructures and the obligation to protect local environment, ,

chose a set of indicators that can be useful to all tourism sector managers and that can be simply applicable, with well-defined sources and explain scenarios for the development of the destination.

Despite the advantages, calculating the carrying capacity represents difficult challenges, such as: the difficulty to calculate the maximum number of visitors (since the tourists visits vary during peak season, daily, weekly, and yearly), the discourage of the tourists to visits the spots, where the carrying capacity is imposed and unnecessary excess of infrastructure that might solve the problem of overcrowding (Chougule, 2011). However, the same author also emphasizes that once the carrying capacity is given a thought for ecotourism development, it is possible to discover a sequence of positive effects. Several benefits of carrying capacity can be safeguarding of the unique spot, providing good quality services, healthier management and planning, less damage to the environment and assurance of the security. Defining carrying capacity, thus, helps to manage and plan the strategy for socio-cultural, economic and environmental sustainability.

1.5 Tourist ecological motivations – New Ecological Paradigm

The New Environmental Paradigm (NEP) Scale, first published in The Journal of Environmental Education by R. E. Dunlap and K. D. Van Liere (1978), has become the most widely used measure of environmental concern in the world and has been employed by hundreds of studies in dozens of nations (Dunlap, 2008). It has also been widely used in the tourism context, evaluating the environmental attitudes of visitors, namely in protected areas (Augar and Fluker, 2014; Benckendorff, et al., 2012; Imran, et al., 2014; Kaltenborn, et al., 2011; Kim, et al. 2005; Luo and Deng, 2007; Su, et al. 2015).

The studies of human-environment relationships on different levels – individual, group, social, political, economic or organizational - is of great value for the development of a scale to measure environmental concern of people.

The term “paradigm” means a pattern or an example, serving as a model or standard, a shorthand description of the world’s view. According to Kostova (et al., 2011) an environmental social paradigm can be used to describe a new way of thinking about how people approach their activity after they have seriously considered the impact on

production efficiency, economic validity, social responsibility and environmental compatibility. These four factors can be represented like four sides of a pyramid and come together to form a strong structure, which can become a personal philosophy for every day behavior.

According to the “human exemptionalism paradigm” (HEP), humans are exempt from laws of nature, because they have special attributes that make them different from other species and human technology can overcome limits. The HEP claims that human-environment relationships are unimportant sociologically, because humans are independent from environmental forces through cultural change (Kostova, et al., 2011).

The Dominant Social Paradigm (DSP) represents a shift from democracy to corporate rule, which favors economic growth, scientific development, competition, free market economy, care for the present population without thinking about the future, exploiting the grow-or-die principle, combining financial and political resources and enduring risks (Kostova, *et al.,* 2011).

Dunlap and Van Liere (1978) recognized the limits of HEP and DSP and suggested a new perspective that took environmental variables into fuller account in the New Ecological Paradigm (NEP) which assumes that while humans have exceptional characteristics, they remain among other species that are interdependently involved in the global ecosystem. In

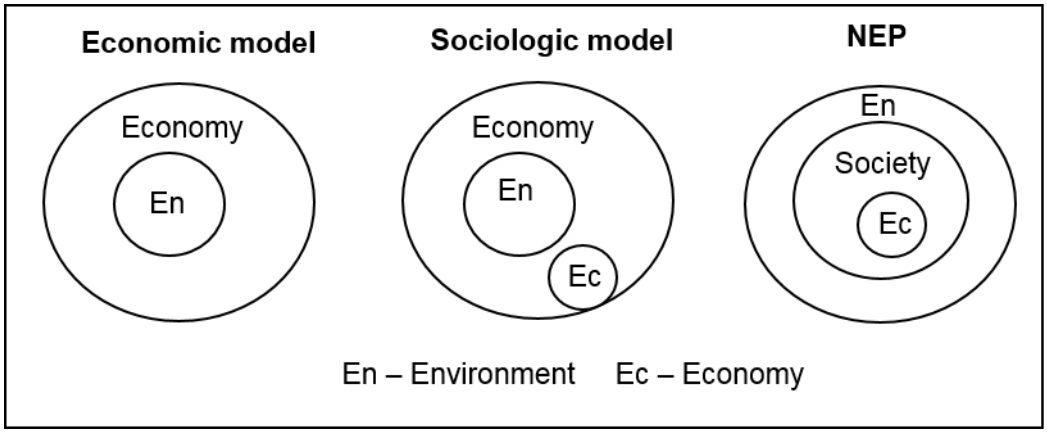


Figure 2 Different visual representations of the models of human-environment relation (Adapted from Kostova et al., 2011).

Both DSP and NEP represent the view of the vast majority of people within the world. More than three decades of their existence accompanied by research and discussions have not brought the two views to a consensus on the proper route to take in order to

resolve environmental issues and no one expects that all arguments will come to fruition (Beck and Grande, 2010).

NEP is the most frequently used measure of environmental concern and is widely acknowledged as a reliable multiple-item scale for environmental attitudes (Kostova, et al., 2011). It has been used for more than 30 years by psychologies, political scientists, sociologies and geographers but criticism is addressed to its theoretical foundations that is considered not to be comprehensively specified. The forms of anthropocentrism are well captured by the scale but "crucial elements of environmental ethics debate" are missing (Carina, 2007). It has not been placed in the context of a social-psychological theory of attitude formation or attitude-behavior relationship (Stern, et al., 1992). It does not account for the specific context of the different communities (Erdogan, 2009). Nevertheless this ecological attitude assessment scale is easy to apply and work out, possesses the necessary psychometric properties and has not been replaced by a better one so far (Kostova, et al., 2011).

The first version of NEP (1978) is a 12 Likert items scale, focused on water pollution, loss of aesthetic value and resource conservation. It surveyed beliefs about humanity's ability to upset the balance of nature, the existence of limits to growth for human societies and the humanity right to rule over the rest of nature. Its characteristics, such as group validity, predictive validity, criterion validity, content validity, construct validity, were investigated and found reliable. The revised second version of NEP – New Ecological Paradigm Scale (Dunlap, et al., 2000) is a 15 Likert items scale and focuses on pollution hazardous wastes, ozone depletion, deforestation, loss of biodiversity, climate changes on a global level (Stern, et al., 1992). It takes into account the fact that the environmental impact of local activities has global effects on the planet. It is composed of three distinct dimensions: balance of nature, limits to growth and human dominance of nature and can be used as a single scale or as multidimensional measure. The items are constructed as follows: a) The reality of limits to growth -1, 6, 11 items; b) Anti-Anthropocentrism - 2, 7, 12 items; c) The fragility of nature's balance - 3, 8, 13 items; d) Rejection of exemptionalism – 4, 9, 14 items; e) Possibility of an eco-crisis - 5, 10, 15 items (Table.1).

Based on this scale the above mentioned five subscales intend to analyze:

- *The reality of limits to growth:* The New Ecological Paradigm (NEP) is concerned with equity and development issues;

- *The fragility of nature´s balance:* The NEP holds the idea there is balance in nature and human interference endangers this balance;
- *Anti-anthropocentrism:* The NEP does not accept the idea that nature exists primarily for human use and has no inherent value of its own;
- *Rejection of exemptionalism:* The NEP assumes that people reject the human exemptionalism which is based on the worldview that humans are exempt from the constraints of nature. This view supports the human domination and domination of economy over nature;
- *The possibility of an ecocrisis:* The NEP stresses on human dependence to nature and disastrous outcome of human interference to nature.

Table. 1: Analyses of the five hypothesized facets of an ecological worldview

The five hypothesized facets of an ecological worldview	
The reality of limits to growth	**The fragility of nature's balance**
NEP.1 We are approaching the limit of the number of people the earth can support.	NEP.3 When humans interfere with nature it often produces disastrous consequences.
NEP.6 The earth has plenty of natural resources if we just learn how to develop them.	NEP.8 The balance of nature is strong enough to cope with the impacts of modern industrial nations.
NEP.11. The earth is like a spaceship with very limited room and resources.	NEP.13 The balance of nature is very delicate and easily upset.
Antianthropocentrism	**Rejection of exemptionalism**
NEP.2 Humans have the right to modify the natural environment to suit their needs.	NEP.4 Human ingenuity will insure that we do NOT make the earth unlivable.
NEP.7 Plants and animals have as much right as humans to exist.	NEP.9 Despite our special abilities humans are still subject to the laws of nature.
NEP.12 Humans were meant to rule over the rest of nature.	NEP.14 Humans will eventually learn enough about how nature works to be able to control it.
The possibility of an ecocrisis	
NEP.5 Humans are severely abusing the environment.	
NEP.10 The so-called "ecological crisis" facing humankind has been greatly exaggerated.	
NEP.15 If things continue on their present course, we will soon experience a major ecological catastrophe.	

Source: Dunlap (et al., 2000)

The NEP scale measures a wide range of ecological attitudes and behaviors. The statements in white boxes support NEP, therefore matching ecocentrism, which focuses its basic ideas on human-nature relationships following environmental ethics.

The statements in grey boxes support DSP that is, matching anthropocentric beliefs. Hence, in the seven even numbered items (2, 4, 6, 8, 10, 12, 14) disagreement indicates pro-ecological view, while in the eight odd numbered items (1, 3, 5, 7, 9, 11, 13, 15) agreement indicates pro-ecological view (Dunlap, et al., 2000). In this study we analyze how visitors to Berlengas' island perceive the environment of the Park.

Chapter II

Case study: Berlengas' Natural Area

2.1 The Berlengas Biosphere Reserve

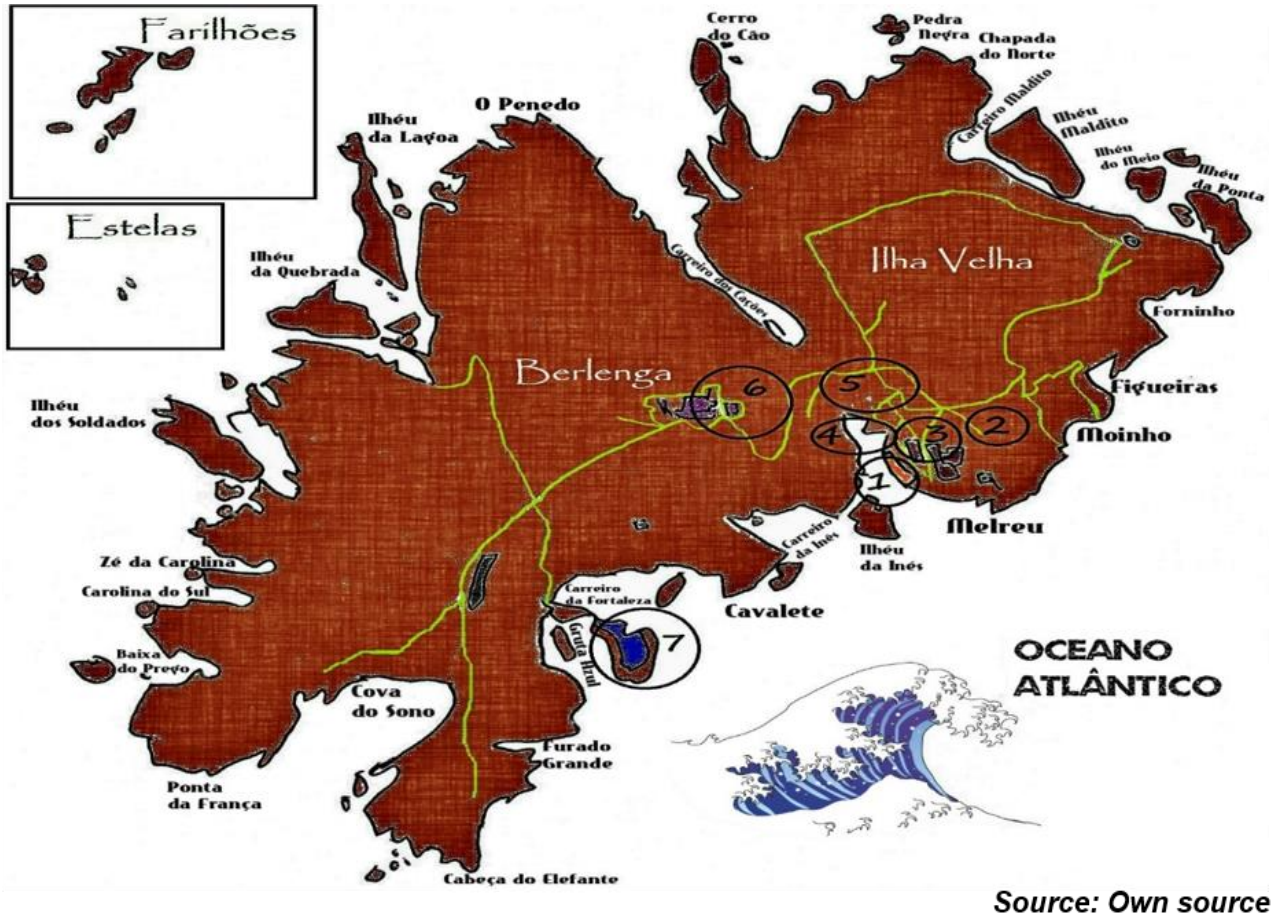
It is expected that nowadays people are aware and concerned about damage to the natural environment and want to do something about it. Therefore, they try to be more eco-friendly when they travel and have greater concern regarding natural areas. Most of the people believe that mankind is severely abusing the planet and that interference with nature may cause disastrous consequences, such as, loss of biodiversity, changes of the landscape and the limits of resources on the planet. In this chapter the environmental attitudes and activities of the visitors of a protected area was studied, in order to understand their behavior towards a natural area with sensitive and delicate environments more precisely in the Berlengas' Natural Reserve.

Berlengas is a small island, classified as protected area and is part of the list of patrimony of UNESCO due to its richness of the point of fauna and flora in particular through the marine habitat and birds. The objectives of Berlengas Natural Reserve are to conserve representative terrestrial and marine ecosystems of the Portuguese coast, and to protect the significant archaeological resources of the area. Thus the Natural Reserve is important for its biological, scientific, cultural, touristic, and recreational values. Consequently, it is a fragile habitat and exposed to a number of potentially contradictory activities: nature conservation and tourism. Then, due to Berlengas' great natural and environmental value and to its several conservation statutes, (ZPE, National Ecological Reserve, World Biosphere Reserve, etc…), Berlengas' natural reserve is of great importance for Portugal. Do these statutes make visitors more aware of the need to adopt good environmental practices, in order to preserve the tourist destination?

2.2 Site location

The Berlengas archipelago is located in the Atlantic Ocean, on the Portuguese continental shelf, on the western side of Iberian Peninsula, close to Cape Carvoeiro (Peniche). It distances approximately 5.7 miles from mainland. The archipelago consist of three islands groups: Berlenga Grande Island and adjacent islets and reefs, Estelas Islands and Farilhões Islands.

The archipelago has a land surface of approximately 104 ha, from which 78.8 ha corresponds to the Berlenga, the largest island, emerged area and additionally, 3.8 ha to the islets and reefs around it (fig.3).



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Legend: *1: Wharf; 2: Castelinho; 3: Pavilion and restaurant "Mar e Sol" and fishermen's village; 4: Beach of Carreiro do Mosteiro; 5: Camping support; 6: Lighthouse; 7: Forte de S. João Baptista.*

Figure 3: The Berlengas Biosphere Reserve

2.3 Legal Statutes

The importance of Berlengas wild islands is the biological value of the surrounding marine area, the great botanical interest of the vascular terrestrial species, its role as a nesting habitat for marine birds and as an important migratory passage for marine birds. It is also very interesting for the presence of underwater archaeological heritage. Owing to all these features, the archipelago was classified as Natural Reserve, in September 1981 (Decree-Law n. º 264/81).

In 1997 this area was integrated into the Nature Network 2000 under the Habitats Directive (92/43/EEC), as some of the archipelago's habitats have particular significance for the

conservation of biological diversity, such as Reefs, sea cliffs), pioneer vegetation and other annuals of muddy and sandy areas, halophilous scrubs, halo-nitrophilous scrubs and submerged sea caves or partially submerged.

Later on, in 1998, this area was reclassified as Marine Reserve Area, consisting on the entire Berlengas archipelago and a Marine Reserve area, thus turning to be part of the national network of Protected Areas (Regulatory-Decree n. º 30/98, of December 23). Besides the terrestrial part, this new classification greatly increased the marine protected area (1% of the total area is terrestrial and 99% is oceanic).

Finally, the International Coordinating Council of UNESCO's Man and the Biosphere Programme (MAB) included the Berlengas archipelago to the World Network of Biosphere Reserves (WNBR) in a statement on 30 June 2011, demonstrating the importance of this natural reserve worldwide, proving the importance of this archipelago as a repository of genetic diversity, of species and habitats on the most western area of continental Europe.

According to the UNESCO report in 2000 the Biosphere reserves areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use. They have the role of activating ecological connections with the economy, sociology and politics as well as of ensuring that good political intentions do not generate inadequate results. The performances and achievements are evaluated on a regular basis, and the observations and desires of local communities remain a priority. Biosphere reserves are truly remarkable places for the population and nature and they represent a key element in the biosphere management process of these areas.

2.4 Natural characteristics

The Berlengas' archipelago hosts several important species and other interesting features, which are relevant either national and internationally. These unique features of the archipelago are due to its insular nature, its geological characteristics, its geographical location and climate, along with a low human interference. All together, these features contributed to the preservation and speciation of some organisms, such as terrestrial and marine flora and fauna (Amado, et al., 2007; Queiroga, et al., 2008).

2.4.1 Abiotic characteristics

From a geological point of view, Berlenga and Estelas consist of pinkish granitic, relatively eroded, rounded islets, while Farilhões consists of sub vertical, steep, inhospitable cliffs, which are sharp metamorphic rocks. The different geological compositions of the two groups determined differential erosion patter during geological times (Amado, et al., 2007; Romão, 2009).

The granites of the archipelago are very fractioned due to the existence of geological faults. There are also numerous landforms such as cavities, natural arches and bridges (e.g. “elephant head”) which resulted from continuous wearing caused by the mechanical action of the waves. This Horst of Berlengas is a small fragment of the Pangaea supercontinent that existed 280 million years ago and had much larger dimensions. The last 2 million years have significantly eroded the structure, due to the effect of glaciations and consequent rises and falls of sea level. Due to their spectacular features, some of these landforms should become classified as geo-monuments (Romão, 2009).

Regarding the geographical location of the archipelago, this set of reefs is located in a temperate area, under the influence of seasonal upwelling controlled by atmospheric circulation associated with the Azores Anticyclone, and in the transition zone between the European and Mediterranean sub regions (Amado, et al., 2007; Araújo, 2012). Therefore, global biodiversity is very high, showing both species from cold/temperate waters, mainly during the autumn and winter, and from warmer waters, mainly during the spring and summer.

Berlengas is, also, under the influence of the Nazaré Canyon. This is a submarine canyon of tectonic origin located off the coast of Nazaré, Portugal. Considered by many as the largest submarine canyon in Europe, separating the Iberian coast in the east-west direction from the continental shelf, a distance of about 211 km starting at a depth of 50 meters to the Iberian abyssal plain, were it reaches depths of around 5000 meters. The canyon has great impact on underwater richness by bringing to the surface large amounts of nutrients that were deposited over time on the seabed (Queiroga, et al., 2008). The underwater currents that are formed due to the canyon cause the upwelling of water from great depths, full of these nutrients. For this reason the web chain is particularly rich in this region - these nutrients increase primary production producing large amounts of phytoplankton, which, in turn, nourish high amounts of zooplankton, which allows the survival of large numbers of pelagic fish.

These features, complemented by a low human occupancy motivated by the small size of the islands and land scarcity, allowed species of fauna and flora to develop in the particular conditions of the islands throughout past centuries, consenting also speciation to occur.

2.4.2 Biotic features

The Berlengas archipelago is the only breeding area in Continental Portugal for the cory's shearwater (*Calonectris diomedea*), guillemot (*Uria aalge*) and Madeira' storm-petrel *(Oceanodroma castro),* representing the only territory where these three species breed in the Iberian Peninsula and marking the southernmost breeding point of Continental Europe. But the importance of the Berlengas goes beyond its breeding species. The surrounding marine area is vital for more than 20 seabird species as well as many marine mammals and other marine fauna. Some of them, such as the Balearic shearwater (*Puffinus mauretanicus*), the most threatened seabird in Europe, uses these waters both for feeding and resting during their spring or autumn migrations (Amado, et al., 2007; Queiroga, et al., 2008).

Other four marine species nest in Berlengas' archipelago: Caspian gull (*Larus cachinnans*), lesser black-backed gull (*Larus fuscus*), black-legged kittiwake (*Rissa tridactyla*) and shag (*Phalacrocorax aristotelis*). Also three terrestrial species nest there: kestrel (*Falco tinnunculus*) (1 couple), peregrine falcon (*Falco peregrinus*) (1 couple) and black redstart (*Phoenicurus ochruros*).

Most of these species have a very high conservation value in the European context, many of them being listed on the European Birds Directive and simultaneously presenting a threatened status. Also, depending on each case, the Berlengas' archipelago is the only one, the most important nesting area in the region or in the European continent, or constituting the most southern or northern nesting limit in Europe.

- **Cory's shearwater** (*Calonectris diomedea*): in terms of threatened status in mainland Portugal the species is considered "Vulnerable", nesting only in the archipelago of Berlengas;
- **Murre or guillemot** (*Uria aalge*): in terms of threatened status in mainland Portugal the species is considered "Critically Endangered";
- **Madeira' storm-petrel** (*Oceanodroma castro*): in terms of threat status in Portugal the species is considered "Vulnerable", nesting only in Farilhões;
- **Peregrine falcon** (*Falco peregrinus*): in terms of threatened status in mainland Portugal the species is considered "Vulnerable".

In addition, this area also bears some relevance as a place to stop and rest for some species of other migratory birds, such as, **booted eagle** (*Hieraaetus pennatus*) and **bluethroat** (*Luscinia svecica*).

On land, there are three endemic plant species (fig.4), included in the Habitats Directive, which have a remarkable conservation value: the *Armeria berlengensis* and the *Pulicaria microcephala.* Some other species, although not endemic of the Berlengas' archipelago, have restricted range, being endemic of the Iberian peninsula or occurring only in the Iberian Peninsula and North Africa, such as *Angelica pachycarpa, Calendula suffruticosa* subsp. *algarbiensis, Echium rosulatum, Linaria amethystea* subsp. *multipunctata, Narcissus bulbocodium* subsp. *obesus, Silene latifolia* subsp. *mariziana, Silene scabriflora* and *Scrophularia sublyrata* (Draper, et al., 2003; Tauleigne Gomes, et al., 2004).

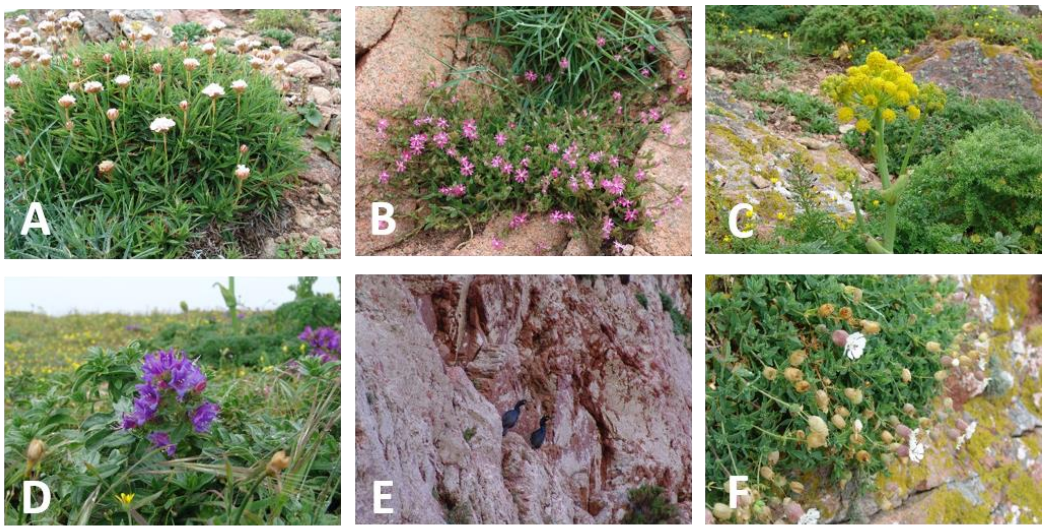


Figure 4: Some of the plant species and wildlife that exist on the archipelago of Berlengas. A: *Armeria berlengensis*; B: *Silene scabriflora*; C: *Thapsia villosa*; D: *Echium rosulatum*; E: Shag (*Phalacrocorax aristotelis*); F: *Silene latifolia* subsp. *mariziana*

Although the endemic and halophyte flora of Berlenga is still flourishing, some of the vascular plants are vulnerable, rare or threatened of extinction, due to several factors. To begin with, the introduction, in late 1950s, of the species *Carpobrotus edulis*, to reduce rock falls in recreational areas. This is an invasive species that is spreading out over the cliffs and hillsides of these islands, occupying the territory of the natural vegetation (5). Other species, such as the ruderal *Calendula suffruticosa*, are also gaining significance on the island, due to the growth of the population of seagulls – those ruderal species are nitrogen requiring that lives on the litter produced by the seabirds. Their growth tends to modify natural floristic composition (Tauleigne Gomes, et al., 2001).

It is widely recognized that marine area of the Berlengas archipelago, representing about 99% of the total area of the Biosphere Reserve, has high biological interest.

Marine Invertebrates of Berlengas are characteristic of Palearctic and Mediterranean regions. Among the marine invertebrates present in the tidal zone, due to its high commercial value, is the **goose neck barnacle or leaf barnacle** (*Pollicipes pollicipes*), which catch is regulated since 2000.

For the area of the Nature Reserve of Berlengas are referenced seventy-six fish species (Rodrigues et al., 2008). As part of this group there are the small pelagic, such as: **European pilchard** (*Sardina pilchardus*), **the Atlantic mackerel** (*Scomber scombrus*), **pacific chub mackerel** (*Scomber japonicus*) and **Atlantic horse mackerel** (*Trachurus trachurus*), which are the most important species caught with purse seine nets, the main fishing art used by the fleet of light boats of Peniche. Other fish species are **the European conger** (*Conger conger*) and some species of ray, are other fisheries resources landed in large quantities in the port of Peniche.

The most numerous family in terms of fish species is *the* Sparidae*,* with eleven species. This group is commercially important due to species such as **white seabream** (*Diplodus sargus),* the **snapper** (*Pagrus auratus*) and **gilthead seabream** (*Sparus aurata*), among others. This is undoubtedly the group most sought by sports fishermen, lawful activity that develops throughout the year in the marine protected area, with special focus on the area of Estelas, considered the richest area in fish of the Nature Reserve of Berlengas. The most endangered species within this group of vertebrates is the **grouper** *Epinephelus marginatus*, included in the family Serranidae, and considered “Endangered” by IUCN (International Union for Conservation of Nature and Natural Resources). It is sought by many people, especially by spear fishing.

The herpetofauna of Berlengas consists of a high density population of **carbonell's wall lizard of Berlengas** (*Podarcis carbonelli* subsp*. berlengensis)* and a small population of **ocellated lizard, eyed lizard or jeweled lacerta** (*Lacerta lepida*). Both populations were isolated in the archipelago since the last glaciations and have developed behavioral and / or unique morphological attributes. The carbonell's wall lizard of Berlengas (*Podarcis carbonelli* subsp. *berlengensis*) is an endemic subspecies of the Portuguese fauna, with particular characteristics derived from the insularity that it was and is subjected to, having for this reason a high intrinsic value. The *Lacerta lepida* species is the largest lizard on Europe, existing only in the south of France, Northern Italy, Spain and Portugal (Amado, et al., 2007; Sa-Sousa, et al., 2000; Vicente, 1987).

Finally, the archipelago presents only two terrestrial mammalian species: the common **rabbit** (*Oryctolagus cunniculus*) and the **black rat** (*Rattus rattus*) (Amado, et al., 2007). Both

species have been introduced on the island of Berlenga and are invasive alien species, currently being subjected to control projects.

2.5 Infrastructures and Facilities

The tourism infrastructures are conditioned by the available space and by its deficient conservation status of. In the Berlengas island there are some accommodation services, food supply and other infrastructure that support the arrival and stay of the visitors. The accommodation capacity on the island is reduced, composing by the camping support, with capacity for 128 people and a 100% occupancy rate in July and August, the Loge “Mar e Sol”, with capacity for 19 people house in 6 bedrooms and the Forte de S. João Baptista, with capacity to lodge 58 people. The accommodation could be significantly improved, through major financial investment in the fort, the fishermen's village and the camping support, providing them with a more efficient management. In relation to the food service, is also few in the island, with just one restaurant “Mar e Sol” with capacity for 26 tables allowing to serve about 100 meals simultaneously, the Castelinho that functions as supply market for the temporary visitors and residents and also serving meals and the Forte de S. João Baptista that is a small bar with a minimum resources to satisfy the visitors.

2.5.1 Water supply

One of the main problems of the archipelago is the absence of a permanent supply of fresh water, because there aren’t aquifers or permanent water lines. Thus, all the water must be carried from Peniche and stored in the island in permanent infrastructures. The municipality has the responsibility of water supply, there are good storage conditions for very little water, about 60 000 liters of freshwater, and it is not proper to drink. In general, the water transportation channeling isn’t enough. Therefore, in fishermen's houses, the mini market, in the restaurant, and public sanitary facilities use salt water. Some fishermen's houses have cisterns for rainwater harvesting. The freshwater for drinking is bottled in land, is transported to the Berlenga by sea, whereby the seasonal population growth increases the logistical difficulties and consequently the costs associated with this service.

2.5.2 Sanitation

The sanitation infrastructures are rudimentary. The sea water is pumped into tanks and used in sanitation facilities, and later returns to the sea through the ducts. A part of this salt water passes through the waste shredding system, deployed in the periphery of the fishermen's village. The water from the washes of catering services is also released directly into the sea through the same conducts system.

There are no other tanks or neither other sanitation systems nor any water treatment, therefore the release of these effluents directly into the ocean may cause deterioration of water quality and the occurrence of odors.

2.5.3 Solid urban waste

In the absence of a waste treatment in the island, all the solid waste must be taken to Peniche. During the summer period, with the increase of the number of visitors, there is an obvious increase in the solid waste production. The collection of waste in the fishing village and in the camping support is carried out by the workers of the municipality, and is ensured only during summer season. Some of the litter remains outside the garbage containers, namely in the beach, the camping support, and the village. Organic waste is triturated and thrown into the sea. However, the garbage crusher causes unpleasant odors in the fishermen's village, and the agglomeration of waste at the pier emits intense smell.

The waste is then transported by boat and unloaded on the quay of the port of Peniche, at least once a week, more often during July and August.

2.6 The impact of tourism activities

The impact generated by tourism activities is strictly dependent on tourist behavior and on the type of tourism predominant in the destination, on this case, the Berlengas' archipelago. Each tourist visiting the destination generates a different amount of impact (waste production, energy and water consumption, land use, and so on) which is dependent on numerous factors, such as the type of activities undertaken during the holiday, the length of the stay, etc. Nevertheless, it has to be considered that the type of tourist services available for tourists also influences the possibility for them to adopt sustainable behaviors: tourists make consumption choices which are limited by the effective availability of sustainable products and services and are determined by their environmental consciousness and

responsibility. This implies that it is not possible to assess the sustainability of a destination in an absolute manner, but it is more useful to define scenarios for the evaluation, considering possible patterns regarding the production (tourism offer) and the consumption (tourism demand) sides (Castellani and Sala, 2012).

There is a general trend towards appreciative activities, with more travelers seeking life-enriching travel experiences. In fact, there is a growth in the types of tourism that involves learning-while-travelling (e.g. guided tours), in specific learning travel programmes (e.g. group educational tours), and generally in learning activities, such as wildlife viewing, attending festivals, cultural appreciation and nature study. Nature based tourism is one of such forms of tourism (Wight, 2001). Tourism of this kind requires explanatory materials (e.g. guides, booklets), interpretive facilities (e.g. in visitor centers) and interpretive guiding (e.g. ecotours). It increases the expectations of service quality in protected areas, and raises political pressure for greater protection of cultural and natural heritage.

The Berlengas archipelago enables a unique opportunity to integrate seabird conservation with the sustainable use of one of the Portuguese most charismatic tourist destinations. Despite its vicinity to Peniche at the center of Portuguese coastline, an area well known for beach based tourism and maritime sports such as kite surfing, diving and surf, the seabird populations of Berlengas are poorly known. Only recently the Cory's shearwater population has received some attention, but still there are many information gaps, especially with regards to its population dynamics, the effects of predation by black-rat, its interaction with fisheries and/or the impacts caused by human disturbance. In order to increase the knowledge on these matters, and to implement conservation measures, a Life project is being implemented in the archipelago from 2014 until 2018 (LIFE Berlengas - Conserving threatened habitats and species in Berlengas SPA through sustainable management, LIFE13 NAT/PT/000458).

Other important activity is diving: clear waters and large marine biodiversity makes this one of the best diving spots in Europe.

The main economic activities in the archipelago are tourism and fisheries. Either commercial fishery with purse seine gears are used, as well as fishing rods, for recreational purposes. An important commercial activity is the dangerous catch of goose barnacles, which is licensed, subjected to annual quotas and regularly surveyed. This activity greatly contributes to the income of local economy, due to the high commercial value of the population of barnacles growing in the islands.

Regarding tourism and other human-related economic activities in the area, the Berlengas archipelago is one of Portugal's busiest weekend-destinations. Its proximity to Peniche and Baleal, the historic fortress of São João Baptista, diving activity, beach tourism and bird watching businesses bring to the archipelago more than 35000 visitors per year (25,000 year 1998, 30,000 year 2000, 40,000 year 2003 and 2004). Tourists presence is heavily concentrated during the summer months and most people remain on a very small area of the island, basically that of the sandy beach, fortress and the small camp-site. The afflux of tourists used to be regulated by a management plan which defined a carrying capacity of 350 people daily (Amado, et al., 2007). The new management plan, approved in 2008 doesn't define a carrying capacity, but recent studies indicate a value up to 500 people. Recent empirical data reveal that this carrying capacity is regularly widely exceeded during the months of July and August, by a factor of 2 or 3.

According to Wynn (2003) low impact activities are amongst the tenth most popular activities undertaken by visitors in Zambezi: Bird watching; walking; (from land); swimming/sunbathing; picnicking. And the remaining three—sightseeing, game viewing and camping—were categorized as having medium impact.

Similarly, in Berlengas we can consider that the main tourist activities have low-impact. The main touristic activities are sea and sun, swimming, diving, snorkeling, fishing, sailing, boat trips, walking tours, and nature contemplation. There are more than 20 licensed tourist operators to implement such activities. All these activities also significantly contribute to the income of the local economy.

The establishment of the natural reserve management plan determined the definition of boundaries for the different activities, regarding the main natural values and traditional uses, trying to prevent any conflict between conservational issues and social needs. One of the actions taken was the definition of horizontal zoning, which resulted in different land uses and forbidding the access of tourists within core protected areas and surrounding landscapes, namely geological features, seabird nests and cliff vegetation, protecting these areas from potential external damage. Other action was the definition of the activities allowed, including those with low environmental impact such as scuba diving, and those forbidden, such as the use of recreational motor vehicles.

There are impacts due to the presence of tourists and, generally, to their activities in the area and because of that the presence of tourists can generate two main kinds of problem:

- The first in the production of solid waste and wastewater (which increases cost for waste collection and building waste disposal systems. These are paid by the local

community and the service of collection needs to be scaled to the maximum volume generated during the year, that is, at the peak of the tourist season);

- And the second is the conflict that may occur between residents and tourists in the use of local resources and services, such as, drinking water and wastewater treatment plants. The presence of tourists also increases air pollution, noise pollution, crowding, etc. Furthermore, when natural and protected areas are involved, the presence of a high number of visitors can cause disturbance to fauna and flora, especially when visitors are not well informed about the proper way to behave in such a context.

2.7 Types of tourism in Berlengas

In the archipelago of Berlengas are currently developing the following types of tourism (RNB, 2007):

- ***Seaside tourism*** - is the main type of tourism of Berlenga being practiced mainly on the beach of Carreiro do Mosteiro;
- ***Nature tourism*** - consists on the visit of places of rich natural heritage, in order to observe biodiversity and natural landscapes. At this level, Berlenga offers the possibility of making two trails: the trail of Berlengas with 3 kilometers of extension and the trail of the Ilha Velha with 1,5 kilometers of extension, with the possibility to undertake guided tours;
- ***Nautical tourism*** - boating with previously established programs and organized in which to frame the visit on caves, recreational diving and fishing tourism.

2.8 Objectives

Being Berlengas a protected natural reserve and with the disrespect by the carrying capacity mentioned previously, the planning and the management of Berlengas tourism activity is crucial for the sustainable development of this island. To understand profile, the motivations, the environmental behavior of the tourists visiting Berlengas and the relation between all these variables can be an important tool in the development of an environmental-friendly management strategy.

Therefore, we established the following research objectives:

1) To identify the profile of the tourists visiting Berlengas in different perspectives: social-demographic characteristics, characteristics of their visit (motivations, activities, good practices) and environmental awareness.
2) To study the relation between social-demographic variables and characteristics of the visit and the ecological awareness of the tourists visiting Berlengas.
3) To recommend possible strategies to be applied in coordination among the tourism enterprises, government sector and all other interested parties, to contribute to the ecological education of visitors and attraction of tourists more focused in nature and nature related activities.

Based in the literature review, we propose the following hypothesis to be studied:

H1: The tourist main motivations for visiting Berlengas are associated with the natural assets of the Island such as fauna and flora.

In previous works it was verified that visitors of protected areas tend to be motivated by the nature related characteristics (Kaltenborn, et al., 2011), therefore it is expected that this is also verified in the context of Berlengas.

H2: The social-demographic characteristics of the tourists visiting Berlengas influence their environmental attitudes.

There are several studies investigating the relation between social-demographic variables and the ecological behavior. In some of them, it was proven that gender, age and education affect the environment concern (Dunlap et al., 2000; Sakellari and Skanavis, 2013; Van Liere and Dunlap, 1980). If this holds for tourists visiting Berlengas, this information can be used in the development of strategies to educate visitors who are about to visit the island. The information can be presented having in mind the target public, in this case tourist revealing lower levels of ecological awareness, and the best way to reach such public.

H3: The motivation for the development of nature activities are related with the environmental attitude of tourists.

H4: Tourist activities in the destination are associated with the Environmental Attitude of tourists.

It was verified that there is a relation between the environmental attitudes and the practice of outdoor recreation activities, especially in activities which do not interfere with nature (Wolf-

Watz et al., 2011). Those with more ecological concern tend to be more likely to experience nature (Eagles and Higgins 1998). If such relations are also verified for the visitors of Berlengas, this information can be used as to attract tourists with higher ecological awareness levels and therefore with a greater respect by the nature features of the island.

Chapter III

Methodology

3.1 Questionnaire, data collection and sample

In order to measure the ecological awareness of tourists visiting Berlengas, a questionnaire was elaborated, based on the NEP scale described in table 1. The 15 items described in table 1 are expressed in a Likert scale with the statements 1-"strongly disagree"(SD), 2- "mildly disagree" (MD), 3- "unsure" (U), 4- "mildly agree" (MA) and 5- "strongly agree" (SA).

Besides the NEP scale, other variables were measured variables: socio-demographic ones (gender, age, literacy levels and residence place), variables about the respondent's visit to Berlengas - the tourist's company, the motivations, the attributes which contributed to the decision of going there, the activities developed there) and questions on the good practices in the destination generally (appendix I).

We considered as universe of this study tourists visiting Berlengas in during July and August of 2014. The sample size formula to determine a population proportion (Guimarães and Cabral, 2007) was applied:

, $$n = \frac{\left(z_{\left(1-\frac{\alpha}{2}\right)}\right)^2 \cdot p \cdot q}{E^2}$$

Where n denotes the sample size, the population dimension is considered infinite or unknown, the margin of error considered was E=5,7%, the level of confidence was 95% ($z_{(1-\alpha/2)}$) and p=q=0,5, which correspond to the assumption that we do not have previous information on the proportion to be determined. Considering these conditions the sample size should be at least 296.

Therefore, data was collected from 304 tourists that visited Berlengas, during July and August of 2014, and who agreed to collaborate in this study. Participants were requested to collaborate answering the questionnaire just before their boat trip and visit to Berlengas.

The questionnaires were provided in Portuguese, for the Portuguese participants, and in English, for the international visitors.

3.2 Statistical methods

In order to evaluate the global NEP score of each respondent, the scores corresponding to the even numbered NEP items (grey items in table.1) were reordered so that, for all the items, high scores indicate pro-NEP worldview. After this reorientation, in order to assess the reliability of the revised NEP scale for the Berlengas' visitor's case, the Cronbach alpha was

determined. This coefficient measures the internal consistency reliability among a group of items combined to form a single scale, reflecting how well the items are measuring the same concept. According to Pestana and Gageiro (2008*)* and to Pallant (2007), a Cronbach alpha greater than 0,7 is considerable acceptable.

The dimensionality of the NEP scale in the context of tourists visiting Berlengas was studied applying factorial analysis, with the principal components extraction method. Prior to performing the factor analysis, the adequacy of data for factor analysis was verified by the inspection of the correlation matrix, the Kaiser-Meyer-Olkin value, Bartlett's test of sphericity and the anti-image matrix Marôco (2014). A varimax rotation was performed in order to provide a better understanding of the factors extracted Marôco (2014).

The NEP score of each respondent was obtained as described in previous works (Edorgan, 2009; Fleury-Bahia, 2014; Ogunbode, 2013; Wilhelm-Rechmann, 2014) using the following scale we operationalized the answers in a scale from 1 to 5, with the same orientation from an "ecological awareness" measurement point of view. The final NEP score of a respondent is the average of the scores for each item. Therefore, it ranges from 1 (all answers 1-"strongly disagree") to a maximum of 5 (all answers 5-"strongly agree"). Based on this score, each respondent is associated to one of three "ecological awareness" categories – pro-ecological, mid-ecological and anti-ecological. The criterion used to associate a score to a category was adapted from Thomson (2013):

Pro-ecological – NEP score greater than 4. Such a score indicates that on average the respondent would have had to give environmentally positive strongly agree or mildly agree to most NEP answers and strongly disagree and mildly disagree to most DSP answers.

Mid ecological –NEP score greater than 3 and less than or equal to 4, corresponding to a wide range of possible combinations.

Anti-ecological – NEP score between 1 and 3 (3 included). The most environmentally positive answers someone in this group could give would be 15 unsure responses. At the lower end of this grouping someone would have to strongly disagree with all environmentally positive statements and strongly agree with all the negative statements.

In our study, we also considered partial NEP scores for each of the five theoretical dimensions (Dunlap, et al., 2000) usually considered - the reality of limits to growth, the fragility of nature´s balance, anti-anthropocentrism, anti-exemptionalism and the possibility of an ecocrisis on table.1 (Denis and Pereira, 2014; Edorgan, 2009; Fleury-Bahia, 2014; Hofmeister-Tóth, et al., 2008; Liu, et al., 2010; Ogunbode, 2013; Poursaeed, 2011; Wilhelm-

Rechmann, 2014). Each dimension is constituted by three items of the NEP scale. The partial NEP score of each dimension was calculated just as the global score, but considering only the three items of the corresponding dimension.

In order to check for relations between the NEP scores and other variables, such as social-demographic characteristics, motivations to visit Berlengas and activities developed there, we conducted independent-samples comparison of mean tests, t-test t or ANOVA, according to the number of groups to be compared. The homogeneity of variances, an assumption of these tests, was verified by the Levene test. The association between variables was also analyzed with the independence Chi-square test. When the variables being studied were both at least ordinal, the Spearman coefficient was also applied to examine the existence of relations between them. (Marôco, 2014; Pallant, 2007; Pestana and Gageiro, 2008). All the statistical tests were performed using IBM SPSS Statistics 22.

Chapter IV

Results

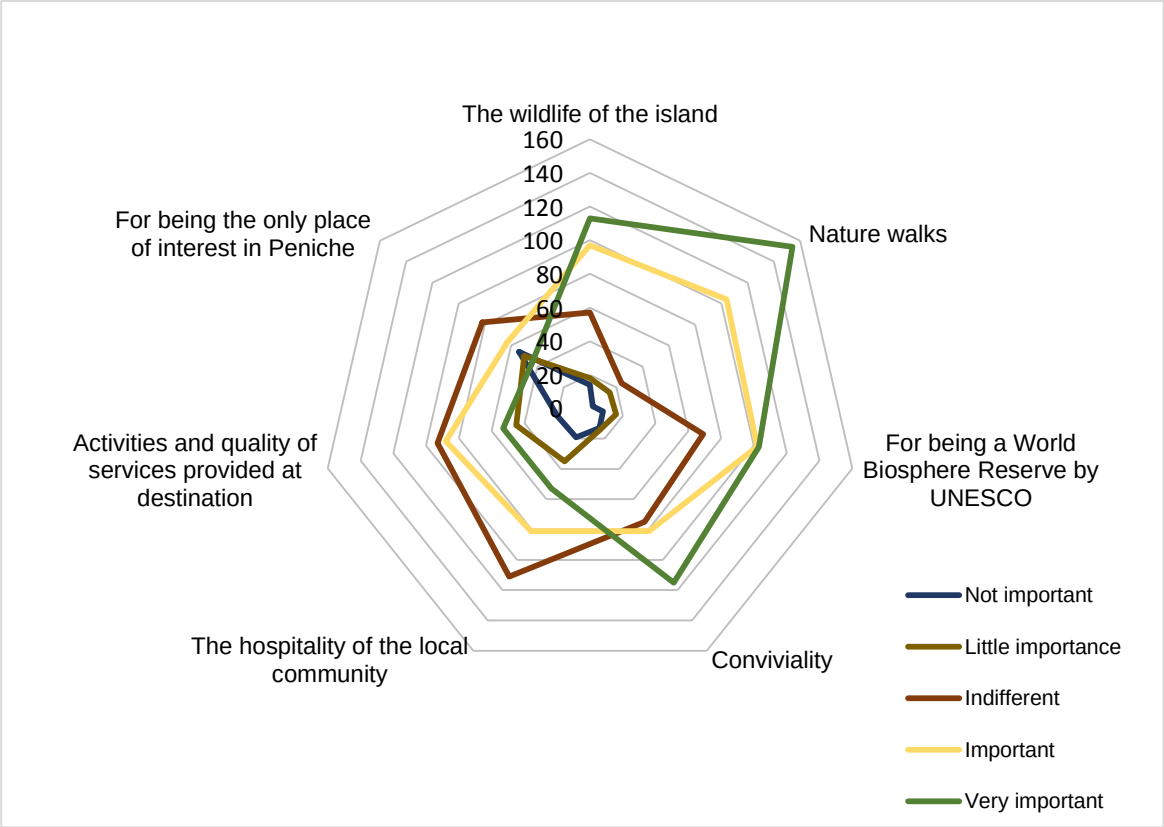
4.1 Social-demographic profile

A total of 304 tourists participated in this study, but only 269 participants completed all the 15 items of the NEP scale and so, when the results on the NEP scale are analyzed globally (table 6), only these respondents are considered. As it is represented in table 2, 53% of the participants are women, 39% have less than 24 years old, 79% live in Portugal and come from the center part of the country. 61% of the respondents do not have a University level degree and 94% visited Berlengas with friends and/or family and/or companion. Most of the visitors who participated in our survey are Portuguese living in Portugal. Only 12% of the participants are foreigners and 9% are Portuguese emigrants.

4.2 Motivations of the tourists

In the case of Berlengas, the motivations (graph.1) that seem to be more important for the tourists to visit the island are the nature walks (for 154 of the participants was a very important reason for their visit), the fact of being a World Biosphere Reserve of UNESCO (with 103 of the tourists considering it a very important motivation) and the wildlife of the island (very important for 113 of the participants). The least important motivations to visit the island are for being the only place of interest in Peniche (with 54% of the participants considering it not important), the activities and quality of services provided at destination (45% consider them little important and 20% not important at all) and the hospitality of the local community (little important for 35% of the participants and not important for 19% of them).

Graph. 1: Motivations that lead tourist to visit the island



4.3 NEP scores

4.3.1 Reliability

In the current study, the Cronbach alpha coefficient for the 15 items NEP scale was 0.748, suggesting that the NEP scale has a good internal consistency. According to Pallant (2007), a Cronbach alpha coefficient greater than 0.70 is considered acceptable in most research situations. All items appear to be consistent: apart from the 6th NEP item, all items correlated with the total scale ranging from 0.278 to 0.463. Removal of the 6th item would increase alpha only by 0.01.

Table. 2: Profile sample

	Frequency	Percent
Gender		
Male	142	46.7
Female	162	53.3
Total	304	100
Missing	0	0
Age		
<= 24	119	39.1
25-34	93	30.6
35-49	57	18.8
>= 50	20	6.6
Total	289	95.1
Missing	15	4.9
Literacy levels	11	3.6
Elementary school (4th–6th grade)	11	3.6
Secondary education (9th–12th grade)	174	57.2
Bachelor´s degree or attending	90	29.6
Master´s degree or Ph.D. degree	29	9.5
Total	304	100
NUTS II of Portugal (regions)		
Norte	39	16.7
Centro	120	51.5
Lisboa	65	27.9
Alentejo	9	3.9
Total	233	76.6
Missing	71	23.4
Origin		
Portuguese	233	79
Portuguese emigrants	27	9.2
Foreigners	35	11.9
Total	295	97
Missing	9	3
Travel with:		
The family/friends/companion	283	94
On excursion	11	3.7
Alone	7	2.3
Total	301	99
Missing	3	1

4.3.2 Dimensionality

The 15 items of the NEP scale were subjected to factorial analysis, with the principal components extraction method. Prior to performing the factor analysis, the suitability of data for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of coefficients of 0,3 and above. The Kaiser-Meyer-Olkin value was 0,791, exceeding the recommended value of 0,6 (Pallant, 2007) and Bartlett's test of sphericity reached statistical significance, supporting the factorability of the correlation matrix. The anti-image matrix was also checked and all the elements on the diagonal (measure of sampling adequacy) were greater than 0,5, suggesting that all items can be used in the factor analysis (Marôco, 2014). To aid the interpretation of the factors, varimax rotation was performed.

Table. 3: Rotated factor matrix and communalities for FA with varimax rotation

Item	Factor 1	Factor 2	Communalities
NEP1_NEP	,183	,293	,119
NEP2_DSP	,109	,**516**	,278
NEP3_NEP	**,651**	,042	,426
NEP4_DSP	,080	**,650**	,428
NEP5_NEP	**,696**	,069	,489
NEP6_DSP	-,255	**,479**	,294
NEP7_NEP	**,707**	,025	,501
NEP8_DSP	,129	**,622**	,404
NEP9_NEP	**,668**	,128	,463
NEP10_DSP	,108	**,573**	,340
NEP11_NEP	**,498**	,159	,273
NEP12_DSP	,110	**,628**	,407
NEP13_NEP	**,521**	,018	,272
NEP14_DSP	,110	,**718**	,528
NEP15_NEP	**,520**	,243	,329
Cronbach's alpha	0,711	0,703	

*In bold the loadings above 0,4.

Factor analysis revealed the presence of three factors with eigen values exceeding 1, explaining 23,3%, 13,7% and 8,6% of the variance, respectively. As a result of the analysis of the screeplot and the analysis of the Cronbach's coefficients of each of the three factors, it was decided to retain two factors.

In first factor, the items with strong loadings are all the odd numbered items, with the exception of the 1st item. In the second factor, corresponding to the Dominant Social Paradigm, all the odd numbered items loaded strongly.

4.3 3 NEP Scores

In table.3 the NEP data collected is presented. Besides the frequency of each category, we present the mean and the standard deviation per item. We recall that for the odd numbered items, high levels of agreement, which reflect a high mean, indicate pro-ecological view. For the even numbered items high levels of disagreement, which would reflect in a low mean, indicate pro-ecological view. In order to make the data more intuitively interpretable, in the case of the even numbered items, the mean scores were calculated after adjustment for direction, so that, as for the rest of the items, higher score indicate pro-NEP worldview.

For all the items with the exception of the 6th, the mean score is "positive" (greater than 3). There may be a possible explanation in the negativeness of this item. In fact this 6th item does not seem to have a negative context as the others items of the DSP or people truly believe that the Earth has plenty of natural resources if we just learn how to use them sustainably. Regarding the 6th item, there seems to be some anthropocentric beliefs, maybe showing some ingenuity towards the capacity of humans to overcome the problems dealing with overpopulation and the overuse of limited resources. All the other items support a pro-ecological behavior and, at some extent, ecocentric beliefs of the tourists visiting the islands. For the even numbered items, with the exception of the 6th and the 12th, the mean scores were between 3 and 4. Generally, the odd numbered items had higher scores: all these items, except the 1st, 11th and 13th had mean scores greater than 4.

Next we analyze the responses, grouping the items according to the theoretical dimensions referred previously.

Fragility of nature's Balance: Item 3 states that human intervention in nature often produces disastrous consequences. 84.2% of the participants agreed, whereas only 9.5% disagreed and 6.3% were unsure. Regarding the fragility of nature's balance (item 13),

74.8% agreed that it is delicate and easily upset, 14.1% disagreed while 11.1% h indecisive views. Item 8 provides a DSP view: 65.5% disagreed, 20.3% agreed with the statement that the balance of nature is strong enough to cope with the impacts of modern industries and a considerable part of the sample (14.3%) detained indecisive views. On this subscale it is evident that the impact of balance in nature is mainly caused by the humans and, the more humans use the natural resources to satisfied their needs, the more the balance in nature will be endangered.

Limits to growth: An investigation of this subscale reveals that 51.3% of the participants embrace beliefs about population control (item 1), strongly (14.9%) and mildly (36.4%), 25.5% oppose these beliefs and 23.2% have indecisive views. Regarding the limits of natural resources to human interference with nature (item 11), 62.2% of the sample detained pro-NEP views, 20.4% disagreed and 17.4% had uncertain views. However, most of the sample (63.1%) accepted the DSP idea of unlimited resources and learning to use them (item 6), while only 25.2% disagreed and 11.6% had undetermined views. Thus, in this subscale the sample studied seems to be less accepting of the NEP valuation of nature and more aligned with the DSP value on economic growth.

Anti-anthropocentrism: A pro-NEP worldview does not accept the idea that nature exists primarily for human use and has no inherent value of its own (Dunlap, et al., 2000), and that humans have the right to modify the natural environment to suit their needs (item 2). Almost three quarters (70.2%) of the sample (34.4%) strongly and (35.8%) mildly oppose the anthropocentric view by item 2, and the minority (20.2%) agree and 9.6% of the sample have irresolute views. The responses to item 12 show that in the studied sample there is a majority of anti-anthropocentric views with 80.4% disagreeing (totally or middle), while a smaller number of participants (12%) holds anthropocentric views and only 7.6% have ambivalent views. The anti-anthropocentric statement about the right of existence of plants and animals (item 7) is supported by the vast majority (93.1%), being opposed only by 3% while 4% held ambivalent views. These results on this subscale may suggest that a person can acknowledge the right of existence of plants and animals without necessarily belonging to an environmentalist movement and proves that nowadays people are more concern about the environment and how much impact may have in our lives if natural environment is not preserved.

Anti-exemptionalism: A pro-NEP worldview assumes that people reject human exemptionalism views which are based on the idea that humans are exempt from the constraints of nature. This view supports human domination over nature and the domination of economics over nature. Findings on items 4 (Human ingenuity will insure that we do not

make the earth unlivable) indicate that 44.7% of the sample a have mild (25.7%) to strong (19%) anti-exemptionalism worldview, whereas 31.4% of the sample have exemptionalism views and 24% have ambivalent opinions. Concerning item 14, which states that humans will eventually learn enough about how nature works to be able to control it, 56.7% of the sample have a mild (29.9%) to strong (26.8%) anti-exemptionalism worldview, whereas 24.5% of the sample have exemptionalism views and 18.8% have undecided opinions. It seems that many of those surveyed do not trust in human ingenuity and ability to overcome the constraints of nature. Over three quarters of the sample (79.4%) believe that "despite our special abilities, humans are still subject to laws of nature" (item 9); while only 4.6% disagree and 15.9% have unsure views.

Possibility of an ecocrisis: The NEP stresses human dependence on nature and the disastrous outcome of human interference with nature. The great majority of the sample (84.3%) agreed strongly (52.5%) and mildly (31.8%) with the statement regarding human abuse of nature (item 5), 7.3% disagreed and 8.4% held indecisive views. Regarding the probability of an ecological catastrophe (item 15) almost three quarters (76.2%) of the sample agreed that the present course of society is unsustainable, 8.9% disagreed and 14.9% were unsure. Opinions were divided on the claim that the ecological crisis has been greatly exaggerated (item10), 24.4% of the sample being supporters of this pro-DSP view while 52.6% were opposed to it, and 23% holding ambivalent views.

Table. 4: NEP items with frequency, mean, and standard deviation of responses

NEP items	% Distribution					N(1)	Mean(2)	St.D(3)
	Totally disagree	Middle disagree	Unsure	Middle agree	Totally agree			
1. We are approaching the limit of the number of people the earth can support.	8.9	16.6	23.2	36.4	14.9	302	3.32	1.18
2. Humans have the right to modify the natural environment to suit their needs.	34.4	35.8	9.6	14.9	5.3	302	3.79	1.21
3. When humans interfere with nature it often produces disastrous consequences.	3.6	5.9	6.3	36.2	48.0	304	4.19	1.04
4. Human ingenuity will insure that we do not make the earth unlivable.	19.0	25.7	24.0	27.7	3.7	300	3.29	1.17
5. Humans are severely abusing environment.	3.0	4.3	8.4	31.8	52.5	299	4.26	0.99
6. The earth has plenty of natural resources if we just learn how to develop them.	9.3	15.9	11.6	27.9	35.2	301	2.36	1.35
7. Plants and animals have as much right as humans to exist.	2.0	1.0	4.0	15.0	78.1	301	4.66	0.78
8. The balance of nature is strong enough to cope with the impacts of modern industries.	30.9	34.6	14.3	15.0	5.3	301	3.71	1.20
9. Despite our special abilities humans are still subject to the laws of nature.	1.3	3.3	15.9	30.6	48.8	301	4.22	0.92
10. The so-called "ecological crisis" facing human kind has been greatly exaggerated.	22.3	30.3	23.0	17.7	6.7	300	3.44	1.21
11. The earth is like a spaceship with very limited room and resources.	9.7	10.7	17.4	32.1	30.1	299	3.62	1.28
12. Humans were meant to rule over the rest of nature.	58.8	21.6	7.6	8.0	4.0	301	4.23	1.14
13. The balance of nature is very delicate and easily upset.	3.4	10.7	11.1	35.9	38.9	298	3.96	1.11
14. Humans will eventually learn enough about how nature works to be able to control it.	26.8	29.9	18.8	18.5	6.0	298	3.53	1.23
15. If thing continue on their present course, we will soon experience a major ecological catastrophe.	2.3	6.6	14.9	36.3	39.9	303	4.05	1.01

N(1) *= Number of participants who responded to each item;*
Mean(2) *= Mean scores after adjustment for direction. Higher score indicates pro-NEP worldview;*
St.D(3) *= Standard deviation.*

In table.5, some statistics on the environmental attitudes of the participants according to the New Ecological Paradigm – Revised subscales are presented. The mean scores are anti-anthropocentrism subscale has the highest rate (M=4.23; SD=0.69) and the subscale limits to growth is the one with the lowest average score (M=3.10; SD=0.83).

Table. 5: Environmental attitudes according to NEP subscales

New Ecological Paradigm	*N*	*Missing*	*Mean*	*SD*
Fragility of nature`s balance	296	8	3.96	0.73
Limits to growth	295	9	3.10	0.83
Anti-anthropocentrism	296	8	4.23	0.69
Anti-exemptionalism	292	12	3.68	0.78
Possibility of an ecocrisis	294	10	3.92	0.70

The NEP global scores of the participants of this study – considering now the whole items together - varied between 2.27 and 4.93, with an average score of 3.80. In table. 6 some descriptive statistics on the distribution of the NEP scores of the respondents are presented.

Table. 6: Descriptive statistics for the NEP Score variable

	N	Min.	Max.	Mean	St. Dev.	Quartile 1	Quartile 2	Quartile 3
NEP Score	269	2.27	4.93	3.80	0.52	3.40	3.80	4.20

At least 75% of the participants had NEP score greater than or equal to 3.40 and so, in some sense, they showed a “positive” classification.

Considering the criteria described previously, an ecological classification category was attributed to each respondent and the distribution of the participants for each category is presented in table 7.

Table. 7: Scores into the categories of pro-ecological, mid-ecological and anti-ecological (categories adapted from Thomson, (2013)

	Anti-ecological NEP Score in [1,3]	**Mid-ecological NEP Score in]3,4]**	**Pro-ecological NEP Score in]4,5]**
% of respondents	*8.9%*	*53.2%*	*37.9%*

Most of the tourists who participated in this study are mid-ecological (53.2%) and less than 9% have a “negative” NEP score classification. However, only 37.9% of the visitors exhibit

true pro-ecological attitudes, as 62.1 % of the people fail to show these eco-centric beliefs, which is especially worrying when we are considering a sample of tourists.

4.3.4 Gender and NEP

An independent-samples t-test was conducted to compare the global NEP scores and the partial NEP scores for males and females. There were no significant differences in global scores for males (M=3.76; SD=0.53) and females (M=3.83; SD=0.52); t(266)=-1.06; p=0.288. In the theoretical dimensions of the NEP scale there were only significant differences for the partial scores in “Anti-exemptionalism”, with females having mean scores greater than male scores.

Table. 8: Gender according to NEP subscales

New Ecological Paradigm	*Gender*	*N*	*Mean*	*SD*	*t*	*g.l.*	*P*
Fragility of nature´s balance	Male	138	3.89	0.78	-1.46	294	0.14
	Female	158	4.02	0.69			
Limits to growth	Male	139	3.19	0.84	1.88	293	0.06
	Female	156	3.01	0.81			
Anti-anthropocentrism	Male	142	4.18	0.67	-1.12	294	0.26
	Female	154	4.27	0.70			
Anti-exemptionalism	Male	137	3.58	0.77	-2.21	290	0.03*
	Female	155	3.78	0.78			
Possibility of an ecocrisis	Male	136	3.90	0.69	-0.53	292	0.60
	Female	158	3.94	0.72			
Score (media)	Male	126	3.76	0.53	-1.07	267	0.29
	Female	143	3.83	0.52			

*** p<0.05**

4.3.5 Age and NEP

A one-way between-groups analysis of variance (ANOVA) was conducted to explore the impact of age on ecological awareness. Respondents were divided into four groups according to their age (group 1: 24 years or less; group 2: 25 to 34 years; group 3: 35 to 49 years; group 4: 50 years and above). There was a statistically significant difference at the p<0,05 level in the NEP scores for the 4 groups: F(3, 253) =3,041; p=0,03). Post-hoc comparisons using Bonferroni test indicated that the mean score for group 3 was significantly different from group 4 (table.9).

Table. 9: Age and Score of the NEP

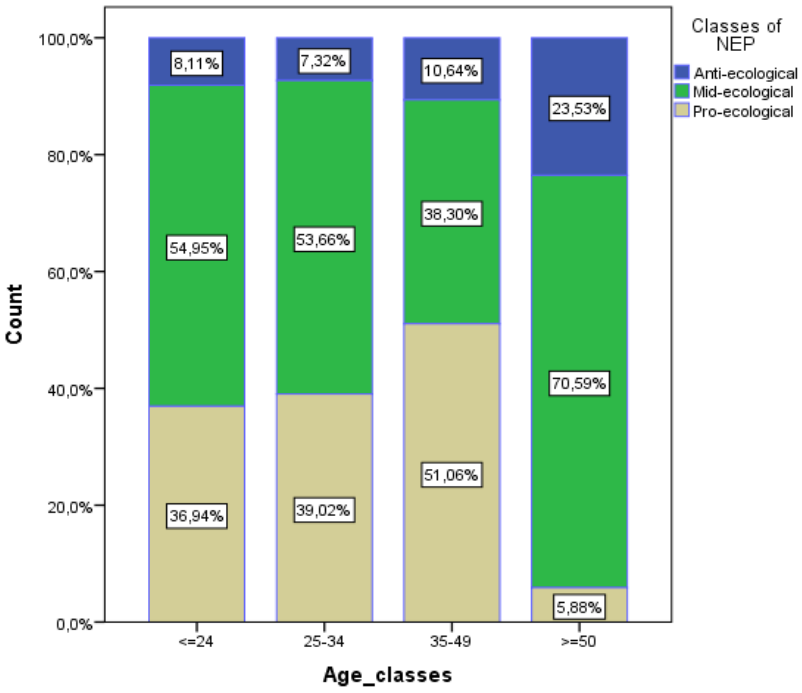
Age Score media	*Mean*	*SD*	*N*	*ANOVA (p)*	*Bonferroni (p)*
<= 24	3.79	0.51	111		35-49 to >= 50:
25-34	3.81	0.49	82	.030*	mean difference
35-49	3.91	0.58	47		of .44; p=.018
>= 50	3.47	0.52	17		

*** p<0.05**

The data of this sample suggests that there is a group of older tourists (50 years old or more) with less ecological awareness.

The study of this relationship was complemented with an analysis considering the NEP categories described previously (anti-ecological, mid-ecological and pro-ecological). A Chi-square test for independence indicated significant association between age and NEP categories ($\chi^2(6)=14{,}058$; $p=0{,}029$). In fact, in the participants with 50 years or more only 5,88% reached pro-ecological NEP scores. This is also the group with higher rate of anti-ecological scores. The group of respondents with 35 to 49 years old is the one with more pro-ecological scores (51.06%). For the groups with ages less than 25 and between 25 and 34 years old, the rate of pro-ecological scores are 36,94% and 39,02%, respectively.

Graph. 2: Age according to classes of the NEP



4.3.6 Education and NEP

To evaluate the effect of education on environmental attitudes, we considered two groups: participants with a University level degree (bachelor's degree, master's degree or PhD) and without such a degree (Elementary school (4th – 6th grade) and Secondary education (9th – 12 th grade). An independent-samples t-test was conducted to compare NEP scores of these two groups. There was a significant difference in the global NEP scores of respondents with a University level degree (M=3,90; SD=0,49) and those without this kind of degree (M=3,73; SD=0,53); t(267)=-2.56, p=.011. These results suggest that the education has a positive contribute in the ecological awareness of tourists.

4.3.7 Motivations and NEP

The relationship between the motivations of the visit to Berlengas and the ecological awareness was investigated using Spearman's rho coefficient. We considered in this analysis not only the global NEP scores but also the partial scores for the theoretical dimensions of the scale.

Table. 10: Motivations according to NEP subscales

	The wildlife of the island	***Activities and quality of services provided at destination***	***For being a World Biosphere reserve of UNESCO***	***For being the only place of interest in Peniche***	***Nature walks***	***Conviviality***
Fragility of nature`s balance	.151**	-.066	.237**	-.164**	.125*	.138*
Limits to growth	.046	-.052	.115*	-.106	-.046	-.043
Anti-anthropocentrism	.066	-.131*	.152*	-.219**	.093	.081
Anti-exemptionalism	.173**	-.090	.142*	-.157**	.133*	.091
Possibility of an ecocrisis	.193**	-.009	.186**	-.214**	.057	.098
Score (media)	.196**	-.088	.242**	-.238**	0.72	.092

**Correlation is significant at the 0.01 level.
*Correlation is significant at the 0.05 level.

In table.10, only the motivations for which there were significant correlations are presented. As there are significant positive correlations between the motivations “The wildlife of the island” and “For being a World Biosphere reserve of UNESCO” and most of the NEP scores considered. Hence tourists who gave more importance to these motivations tend to have higher NEP scores. This is also the tendency for the motivation “Nature walks” and “Conviviality”, in spite of the correlation being only significant for a minority of NEP theoretical dimensions.

There are significant negative correlations between the motivation “For being the only place of interest in Peniche” and most of the NEP scores analyzed. Therefore, participants who classified this motivation with high levels of importance tend to have lower NEP scores. This is also the tendency for the motivation “Activities and quality of services provided at the destination”, in spite of the correlation being only significant for the dimension “Anti-anthropocentrism”.

The results suggest that tourists with nature related motivations tend to be more ecological aware of the world.

4.3.8 Attributes that affect the decision of visiting Berlengas and ecological awareness and NEP

The relationship between the NEP scorers and the attributes that affected the decision of visiting Berlengas was investigated using Spearman’s rho coefficient.

Table. 11: Attributes according to NEP subscales

	Temperature	***Infrastructures***	***Wildlife***
Limits to growth	-.142*	-.143*	.053
Anti-exemptionalism	.028	-.041	.147*
Possibility of an ecocrisis	-.009	-.006	.136*
Score (media)	-.070	-.029	.150*

As it is represented in table.11, there is a significant positive correlation between the attribute “wildlife” and the majority of NEP scores. So, tourists who are more influenced by this attribute tend to have higher NEP classifications.

For the attributes “Temperature” and “Infrastructures” there is a significant negative correlation with one of the theoretical dimensions of the NEP scale, suggesting that tourists whose decision is more influenced by these attributes tend to have lower levels of ecological awareness.

4.3.9 Good practices and NEP

In order to compare NEP scores of tourists who consider having good practices (table.12) at destination and those who do not, the independent samples t-test was applied. There was a significant difference in the NEP scores of those who consider to have good practices (M=3.85; SD=0.51; N=205) and those who do not (M=3.64; SD=0.53; N=64); t(267)=2,808, p=0,005.

For those who said to have good practices, a list of practices related to sustainable tourism was presented and the respondents were asked which of them they had already done.

For each of these listed practices, the global NEP scores of tourists who had already done the activity and those who had not done it yet. There were significant differences for the activities “Consulting Agenda 21 for Travel industry and Tourism” (yes: M=3.64; SD=0.52; N=34; no: M=3.88; SD=0.49; N=161; t(193)=-2.59; p=0.01) and “Buy local products” (yes: M=3.89; SD=0.49; N=151; no: M=3.71; SD=0.55; N=48; t(197)=2.23; p=0.027). The NEP scores of those who have already bought local products at destination are higher that the NEP scores of those who had not done it yet. Curiously, the behavior for the activity “Consulting Agenda 21 for Travel industry and Tourism” is the opposite.

Table. 12: Good practices and NEP

		Score (media)					
		N	***Mean***	***SD***	***t***	***g.l***	***P***
Good environment practices at destination	Yes	205	3.85	0.51	2.80	267	.005*
	No	64	3.64	0.53			
Consulting Agenda 21 for Travel industry and Tourism	Yes	34	3.64	0.52	-2.59	193	.010*
	No	161	3.88	0.49			
Buy local products	Yes	151	3.89	0.49	2.23	197	.027*
	No	48	3.71	0.55			

*** p<0.05**

4.3.10 Activities and NEP

Independent samples t-tests were conducted to compare NEP scores of tourists that did or intended to do a certain activity of a list given in the questionnaire. There were significant differences in NEP scores of tourists doing snorkeling (M=4.00; SD=0.49; N=60) and those not doing snorkeling (M=3.74; SD=0.52; N=207); t(265)=-3.45, p=0.001. There were also significant differences between tourist who did or intended to do hiking (M=3.85; SD=0.53; N=178) and those who did not (M=3.68; SD=0.49; N=89); t(265)=-2.521, p=0.012. Tourists interested in hiking and snorkeling, activities in which the tourist is close to nature reveal a more ecological consciousness.

Table. 13: Activities and NEP

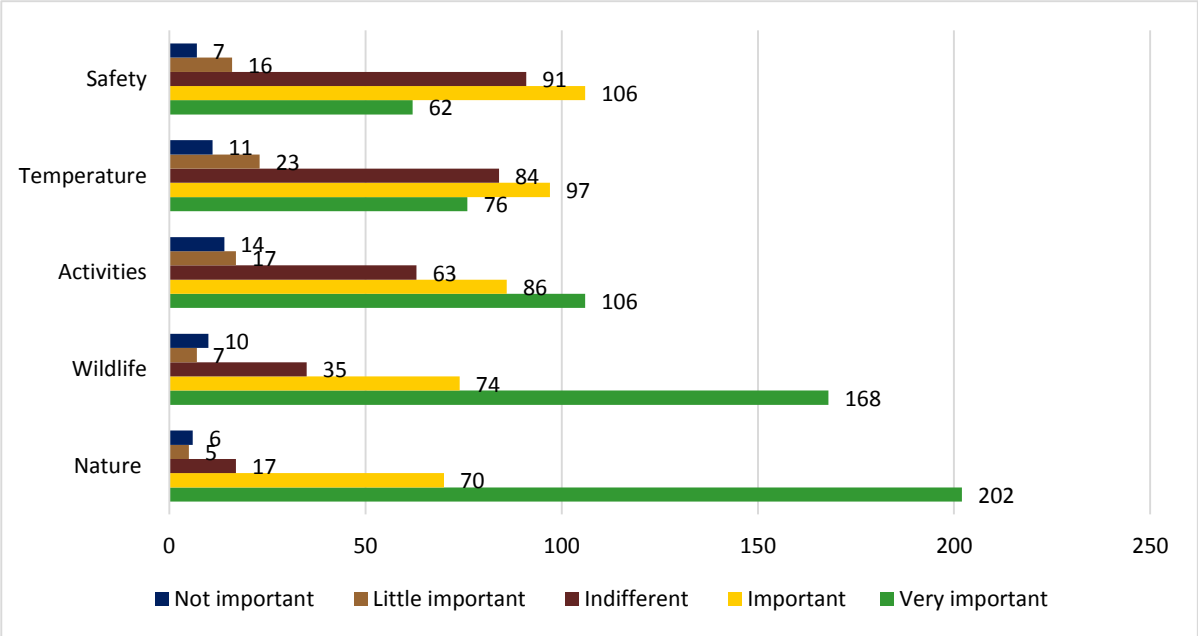
Activities		***Score (media)***					
		N	***Mean***	***SD***	***t***	***g.l***	***P***
Snorkeling	Yes	60	4.00	0.49	-3.44	265	.001*
	No	207	3.74	0.52			
Hiking	Yes	178	3.85	0.53	-2.52	265	.012*
	No	89	3.68	.049			

*** p<0.05**

4.4 Attributes that affect the decision of visiting Berlengas and ecological awareness

The participants were also questioned about the attributes that affected their decision to visit the island. They considered the nature (202) and the wildlife (168) as a “very important” factor of reinforcement of their decision of visiting the island. The “activities” also influenced the decision of a high number of tourists, with 192 participants considering it “important” or “very important”. And also in the graph.3 the temperature is considered for 173 participants “important” or “very important” and by 168 participants the safety is also “important” or “very important”.

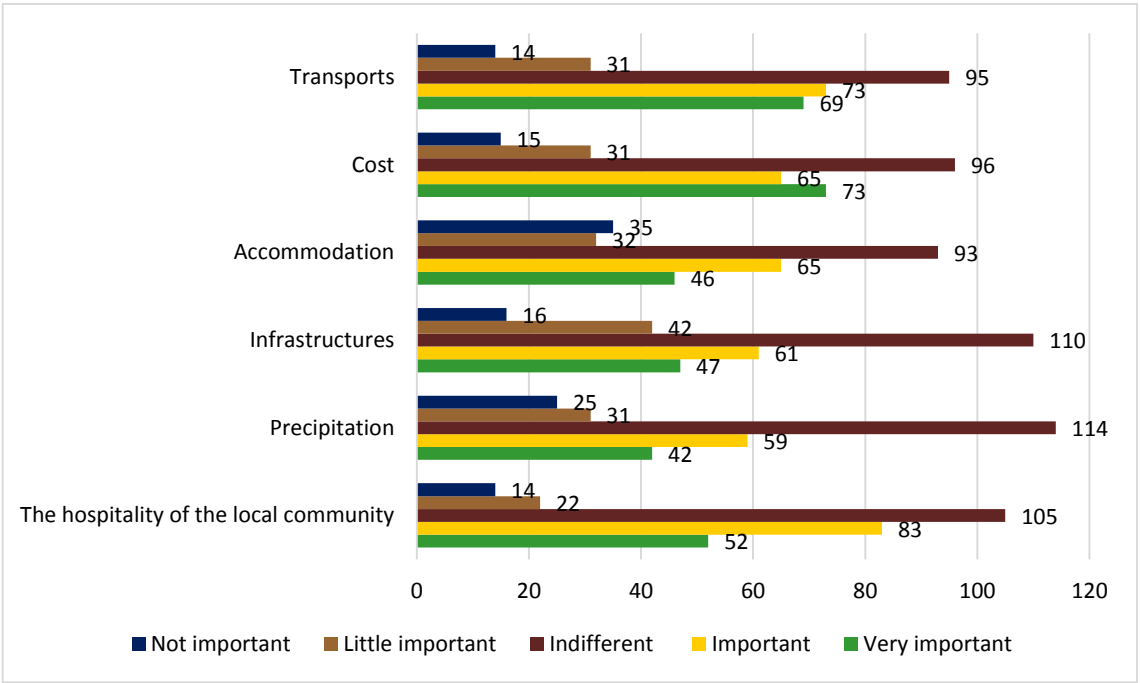
Graph. 3: The attributes that most affect the decision to visit the island of Berlengas



The accommodation was also not very much valued by the tourists, which probably reflects the fact that tourists usually travel by boat to the island and return in the same day.

As it is represented in graph.4, there are other attributes that did not affect the decision of the majority of the tourists participating in this survey, namely the infrastructures, which was considered by 168 tourist seen as an unimportant or indifferent attribute, precipitation, also seen as unimportant to indifferent by the most of the tourists (170), the hospitality of the local community (105), the transports (95) and the cost (96).

Graph. 4: The attributes that less affects the decision to visit the island of Berlengas

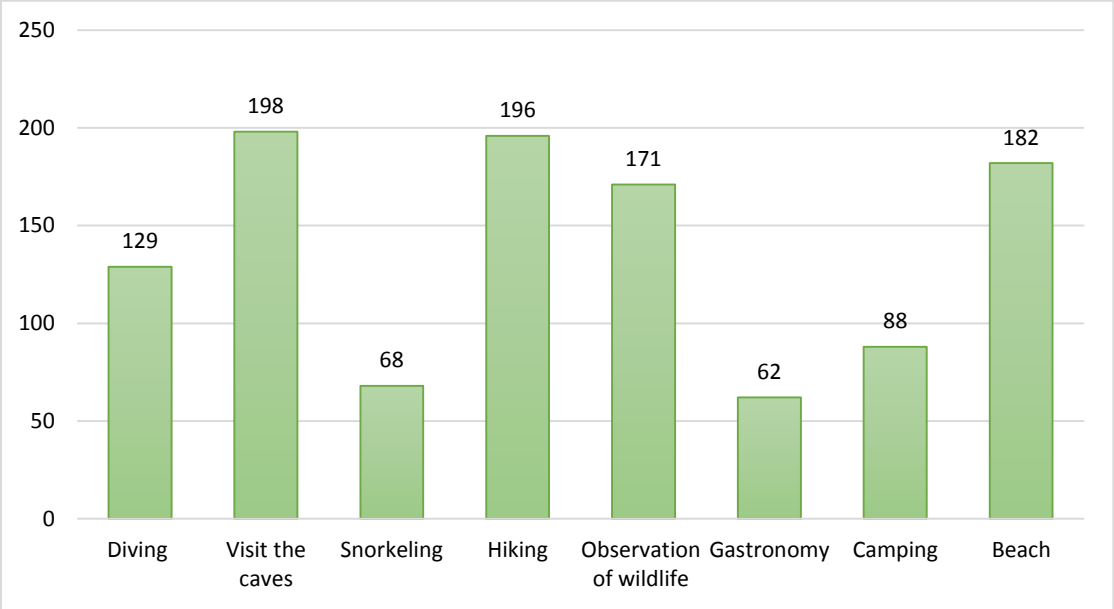


4.5 Activities

The activities that more tourists intended to practice or had already practiced during their visit to Berlenga (graph.5) were the visit of the caves, hiking on the signalized trails on the island, relaxing at the small beach and observing the wild life. Each of these activities was mentioned by more than 50% of the tourists.

Diving was an activity referred by 42% of the tourists and snorkeling was one of the activities that was less chosen by the tourists (22%). Gastronomy and camping are also activities referred by a lower number of participants. This is probably due to the fact that Berlenga has some limitations as far as gastronomy and camping infrastructures are concerned.

Graph. 5: The activities that the tourists want to practice or have practiced in the island of Berlenga

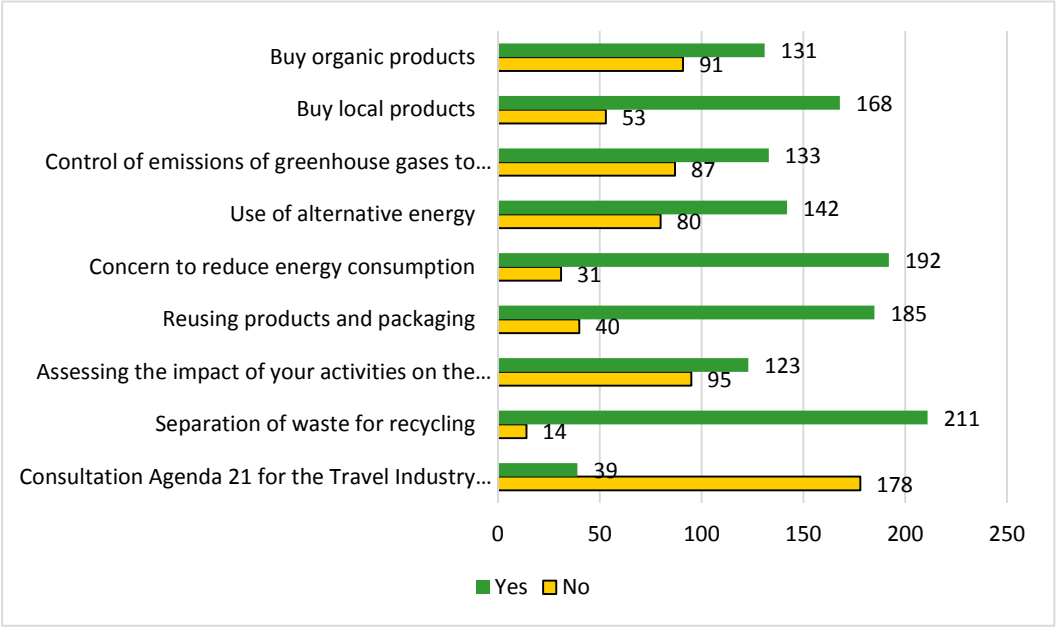


4.6 Good practices

Less than half of the participants (123) consider that they have good environmental practices at destination, while 173 consider that they do not. A list of practices of sustainable tourism was presented to these participants asking them if they had already done each of them. The results are presented in graph.6. The most “popular” good environment practices are the separation of waste for recycling, the concern to reduce energy consumption and reusing of products and packaging. There are other practices that were also performed by a relevant number of tourists, such as buying local and organic products and the control of emissions of greenhouse gases to the atmosphere. The less popular good environment practice is the

consultation of the Agenda 21 for the Travel Industry and Tourism, a helpful tool on the environment and development issues.

Graph. 6: Good practices of the tourist at the touristic destination



Chapter V

Discussion

In this work the NEP scale was applied to a sample of tourists visiting a protected natural reserve, the Berlengas. According to the sample studied, tourists visiting Berlengas are mostly Portuguese with less than 50 years old. More than 60% of the tourists who participated in this survey do not have a University level degree.

Reliability

In the context of our survey, the Cronbach alpha coefficient for the 15 items NEP scale was 0.748, suggesting that the NEP scale has a good internal consistency. According to Nunnaly, (1978), in most research studies, a Cronbach alpha coefficient greater than 0.70 is considered "acceptable". All items appear to be consistent: apart from the 6th NEP item, all items correlated with the total scale ranging from 0.278 to 0.463. Removal of the 6th item would increase alpha only by 0.01.

In Lück, (2010), the Cronbach's alpha coefficient of different studies with different populations was compared, all, with the exception of one study, showing coefficients large enough to support the consistency and, therefore, the use of the NEP. Yet, in the research studies considered in Lück, (2010), a 12-items NEP scale was used and thus one cannot directly compare the corresponding coefficients with the present results.

In Erdogan, (2009), the 15-items NEP scale was applied to Turkish undergraduate's students and in this case the alpha coefficient was rather low (0.53), indicating that the NEP scale has low consistency in the Turkish case. Curiously, in the Turkish case, the removal of the 6th item would also increase the Cronbach's alpha, which can also be a consequence of the arguments presented previously about the interpretation of this item.

In other study where the NEP scale was used on Nigeria population the reliability test was conducted to measure the internal consistency of the full NEP scale, and a Cronbach's alpha value was of 0.61 (Ogunbode, 2013). The 15-items NEP scale was also applied to Pennsylvania freshman and senior class undergraduates (Rideout, 2014) and the corresponding alpha coefficient was of 0.80, justifying the use of this NEP scale.

Dimensionality

The dimensionality of the NEP scale was also evaluated and for the sample studied two factors were extracted: one of the factors consisted mostly of the odd-numbered NEP items. These items correspond to statements for which high levels of agreement reveal high levels of ecological awareness. The other factor consisted of the even-numbered items, the DSP items, i.e., items for which high levels of agreement show a low ecological consciousness.

Analyzing other works in which the dimension of the NEP scale was studied, one realizes that the dimension varies in different contexts. But also the number of items considered in the scale varies among authors and even the number of points of the Likert-scale for the responses. Lück (2010) compared the dimension of the NEP scale in different works and the dimension of the scale varied between 1 and 4. In particular, in the studies in which the NEP scale was applied in the context of tourists: the dimension were 2 for a sample of visitors to national parks on the small Caribbean island of St John (Uysal, et al., 1994) and for a sample of participants in swim-with-dolphins tours in New Zealand (Lück, 2000) and the dimension was 3 for a sample of ecotourists in New Zealand (Higham, et al., 2000). There are some works in which the factors obtained coincide with the 5 theoretical dimensions described in table.1, and analyzed in this work. But, in many works, only some of these dimensions correspond to some of the factors extracted in the sample analyzed. In our sample, none of the factors coincides with the theoretical dimensions of scale, but one can recognize a pattern: one factor with the positively written items, as far as ecological awareness is concerned and negative written items.

Activities

Analyzing the motivation for visiting Berlengas (graph 2), we could accept our first hypothesis which was if the tourist main motivations for visiting Berlengas were associated with the natural assets of the Island such as fauna and flora. The results of our study in terms of consistency meet the trend suggested in the literature by researchers, such as, Acott, et al., 1998; Ballantine & Eagles, 1994; Barnes, 1996; Blamey, 1995a, 1997; Boo, 1990; Choegyal, 1991; Eagles, et al., 2002; Goodwin, 1996; Hill & Gale, 2002; Lawrence, et al., 1997; Norris, 1992; Skanavis & Giannoulis, 2010 and Ziffer, 1985, that ecotourism can be an alternative way to management equable the natural resources and satisfy the needs of the local

community, without ignoring the motivations and experiences of the tourist, relating conservation and education values.

Our study proves that tourists visiting the island of Berlenga know that it has several conservation statutes, such as World Biosphere Reserve of UNESCO, which motivates the visit to the island in order to see the natural environment and wildlife. However tourists are also motivated to visit the island for the nature walks, and for the conviviality. We can suggest that the mains motivations of the tourist to visit the island are related to nature which can be associated to nature-based tourism and to ecotourist. Many other findings also refer that the main motivation of ecotourists is nature. As Wight, (1996) and Wood (2002) argue "the main motivations for ecotourism are observation and appreciation of natural features and related cultural assets". Holden and Sparrowhawk (2002) state that "the main intrinsic motivations for ecotourists are learning about nature, being physically active and meeting people with a similar interest", while Ballantine and Eagles (1994) believe that "their prime motivation is to learn about nature in wild or undisturbed areas". In the study of Alaeddinoglu (et al., 2013) they found that in the Lake Van Basin Area in Turkey the motivations of ecotourists are exploring the nature, vision historical sites, experiencing new things, being with the local people to learn about their culture and visit the Lake Van Basin.

Studies such as Remacha (et al., 2011) concluded that reducing the size of visitors' groups not only helped to minimize the negative impacts on wildlife derived from leisure activities, but also allowed visitors to watch more wildlife, therefore, organizing visitors in small numbers is recommended in the design of activities directed to groups of people visiting natural areas. Therefore attracting ecotourists to visit the island of Berlengas seems to be a good sustainable strategy, because ecotourism is based on small groups of tourists and, besides having the environmental education component raisings awareness and understanding natural environments, subsequently encourages pro-environment attitudes and responsible environmental behavior. As we have seen, ecotourism also produces economic benefits that can contribute to conservation and sustainable use of natural areas directly and indirectly. Applying ecotourism principles, the island of Berlengas may develop a unique opportunity to become a worldwide known ecotourism destination, capable of provide experiences, activities, services in a sustainable way and involving the local community.

Although, it may be necessary to produce more information regarding the natural assets of the island, such as information on birds and flora, on nesting places and geological features. Currently, such information is not easily available to tourists or to tourist operators.

According to Teisl and O'Brien (2003), Dunlap and Heffernan (1975) classified recreation activities into three categories: consumptive, appreciative and abusive. According to Dunlap

and Heffernan (1975), appreciative activities "involves the enjoyment of the natural environment without modifying it," which are related with a preservationist orientation toward the environment, keeping the environment in its natural state. The activities that exist in the island of Berlengas all of them can be classified as appreciative activities and with a low-impact or middle impact (camping) as refers Wynn (2003).

NEP scores

Most of the tourists who participated in this study are mid-ecological (53.2%) and less than 10% have a “negative” NEP score classification. However, only 37.9% of the visitors exhibit true pro-ecological attitudes, as 62.1 % of the people fail to show these ecocentric beliefs, which is specially worrying when we are considering a sample of tourists who were about to visit a biosphere reserve where there are limitations to the numbers of visitors and these may not be conveniently controlled. Inadequate behavior of these visitors can, indeed, increase the negative impacts of visitation.

Although the minority of pro-ecological tourists in our sample, the mean scores verified is not low when compared with the results of other groups. We investigated the scores of other samples studied, selecting works using the same 15-items NEP scale and in the same 5-point Likert scale. The results are presented in table 4. Our data (mean NEP Score of 3,80) are consistent than those found by Ogundobe, 2013, which presented a mean NEP score of 2,95, Erdogan, 2009 with a mean NEP score of 3,50, Poursaeed, 2011 which found a mean NEP score of 3,42 and Liu (et al., 2010) with a mean NEP score of 3,45.

The mean scores on the NEP subscales on the responses of tourists indicated that the Anti-anthropocentrism NEP facet had the highest level of endorsement (table 8), which means the not acceptance of the idea that nature exists primarily for human use and has no inherent value of its own (Dunlap, et al., 2000). Anthropocentrism has often been referred to as “human domination” or “humanity’s right to rule over the rest of nature” (Dunlap, et al., 2000). This was also the dimension with higher scores in a sample of Physical Education and Sports Faculty Students (Ustun, et al., 2014).

In our sample the limits to growth NEP facet was the most weakly endorsed. The subscale limits to growth shows the lowest level of endorsement of the NEP, although it was still a positive classification. A low level of endorsement in this dimension corresponds to accepting the DSP idea that earth has plenty of natural resources if learning to use them, which means

that the human control over nature can create ways to develop sustainable natural resources by the way that mankind wants, for your own gains.

In the work of Ogundobe (2013) the participants also demonstrated less conviction regarding the existence of biological limits to economic growth, but in this case the highest level of endorsement of the NEP was the possibility of an ecocrisis.

Imram (et al., 2014), suggests that tourists were more inclined towards an egoistic stance towards the environment than other stakeholders, such as local people. Furthermore, they found out that tourists had inadequate exposure to knowledge and understanding about the environment and sustainable tourism principles and practices. Domestic tourists visiting the park were not exposed to tourism experiences that would potentially engage them in environmentally responsible behavior. Therefore, lack of awareness and information influenced their environmental orientations and consequently their environmental behavior. We believe that the same situation occurs presently with tourists visiting Berlenga. There is a total absence of information regarding the protected area, as well as regarding ecological behavior. The increase of such information, either by written documents (books, leaflets, etc.) and oral presentations (debates, informal classes, etc.) would improve the ecological attitudes and behavior of tourists, therefore deceasing their impact on the island.

In contrast to our findings for nature based tourist in Berlengas', ecotourism resorts seem to attract tourist that already have high level of environmental awareness and concern (Lee and Moscardo, 2005). As in all types of tourists accommodation is important for allowing the tourist to stay longer at a destination for better intensify the experience through the services and activities. However, in the study of Eagles (1992) confirms the statement of Boo (1990) by saying that the ecotourist do not require luxurious accommodations, food or nightlife, and that they are willing to accept and appreciate local conditions culture and food, because the ecotourist prefers a more intimate, adventure-type accommodations, such as cabins, lodges/ins, camping, bed and breakfast or ranches (Wight, 1996). For the ecotourist it is not important the characteristics of the accommodation but the "add-ons" (type, programs, activities, interpretation, and environmental sensitivity) will determine whether the accommodation is regarded as an extension of the ecotourism experience, worthy of a recommendation or return visit (Wight, 1996). So, satisfying experiences provided in ecotourism accommodation may lead to reinforcing visitors' favorable environmental attitudes and thus increase their interest in further ecotourism experiences. Regardless of the type of accommodation it is important to evaluate the internal aspects of the accommodation adopt practices, such as: environmentally sensitive infrastructures development, including sympathetic building and architecture; efficient use and conservation of natural resource (e.g.

water, energy); recycling; air quality and emissions and waste disposal and management, thus, at the beginning if the accommodation already have ecological practices is more effective the information or interpretation and opportunities for guests to become aware of environmental issues and action skills needed, and to apply these skills to taking environmental actions (Wight, 1993b). The implementation of such practices may favor the environmental attitudes of tourist visiting the location.

On the study of Lim (2002) the Couran Cove Island Resort, which is located on South Stradbroke Island off the Gold Coast in Queensland, Australia, has been concentrated on the need to co-exist with the fragile natural environment of South Stradbroke Island to achieve sustainable development. Planning initiatives take into account the building of accommodation, water and energy supply, liquid and solid waste disposal, pest management, community involvement and environmental education.

According to the same author (Lim, 2002), the island has an interpretive centre, at the resort that serves as a hub for information on all activities, including advice as to what visitors should and should not do, learning about the natural environmental, the maritime history, original occupants, fauna communities and implemented a range of environmental and cultural educational initiatives, such as, guided nocturnal and rainfall walks, interpretative beach walks and astronomy tours. Still refers (Lim, 2002), that the ecotourism management strategies of Couran Cove Island Resort includes encouraging visitors to play an active role in contributing to the health and viability of the environment, the employees are also provided with training to increase their awareness of the resort's natural and cultural heritage, and its eco-initiatives and also organizes special educational activities for schools, as part of community education on sustainable tourism. These ecotourism strategies can be a good role model to apply in the island of Berlenga and the creation of the new interpretation center in the island may play an important part for the development of such strategy.

Besides affluence and culture, other factors at individual level may be determinant in the determination of environmental awareness, such as gender, age and education (Ogunbode, 2013).

The following pages will discuss our second hypothesis, which was if the profile of the tourists that are more aware of nature conservation in the Island was characterized by a high level of education, age and gender;

Gender and NEP

There are many papers studying the relationship between gender and environment concern (Benckendorff, et al., 2012: Blaikie, 1992; Blocker and Eckberg, 1997; Bord and O`Connor, 1997; Casey and Scott, 2006; Steger and Witt, 1989; Stern, Dietz and Kalof, 1993; Sakellari and Skanavis, 2013, Scott and Willits, 1994; Tranter, 1996; Wolf-Watz, et al., 2011) which indicates that the female subjects are more concerned with the environment than male subjects and in other cases there is no difference between genders (Van Liere and Dunlap, 1980).

Some authors justify this kind of effect based on the idea that women are more compassionate, nurturing, protective and cooperative than men and that qualities extend to protective attitudes toward nature (Chodorow, 1974; Beutel and Marini, 1995). In that line of thinking, women believe that nature is an important "piece" for the humankind, especially when risk to health and personal well-being become linked to environmental issues, their levels of concern tend to surpass those of men (Bord and O`Connor, 1997).

Yet, gender had no effect in the global scores of tourists visiting Berlengas. There was only a significant difference between genders in the partial score for the dimension "Anti-exemptionalism". The subscale includes items 4 and 14 of the Dominant Social Paradigm (DSP) and the item 9 belonging to the NEP. This subscale assumes that people reject human exemptionalism which is based on the worldview that humans are exempt from the constraints of nature. In our sample female tourists had higher scores than male participants.

In the work of Ustun (et, al., 2014), there were also significant differences only for some subclasses of the NEP scale - "fragility of nature's balance" and "possibility of eco-crisis". In the sample analyzed by Ogundobe (2013) there were no differences of the NEP scores between male and female.

There are other studies in which females showed a more positive attitude towards the concern with the environment. In the study of Rideout (2014), where the sample was constituted by freshmen and senior class undergraduates of an independent liberal arts college, there was a significant effect of gender in the NEP scores. In the study of Casey and Scott (2006), about participants on urban and rural locations across Australia, there were also significant differences, with women reaching higher scores, corresponding to a higher concern for the environment than men. In the work of Blaikie (1992), where the sample was composed by university students and residents in Melbourne, it was verified that women had significantly higher scores than males. In this study the scale used to evaluate ecological

attitudes was wider and it was verified that the differences were more accentuated in items related to science and technology.

In the study of Zelezny (et al., 2000), there were also demonstrated that females have higher NEP environmental attitudes than males in 10 of the 14 countries, such as, Argentina, Canada, Costa Rica, the Dominican Republic, Mexico, Panama, Paraguay, Peru, Spain, and the United States and males had higher NEP environmental attitudes than females in 3 of the 14 countries (Colombia, Ecuador, and El Salvador) and males and females did not differ on NEP environmental attitudes in 1 of the 14 countries (Venezuela). However they find that significant gender differences in NEP environmental attitudes there was only in the United States.

Regarding gender differences, it has been referred in some works some tendency for women to be more environmentally concerned than men (Zelezny, et al., 2000; Olli, et al., 2001; Rideout, et al., 2005) and Johnson (et al., 2004) reported that in US women scored higher on the NEP scale than men. In contrast to most references, in the study of Bjirke (et al., 2006) men reached higher NEP scores than women. Cultural, social or economic aspects however may be more important than gender regarding ecological attitudes (Alibeli and White, 2011; Omoogun and Odok, 2013).

Age and NEP

In this work we found significant differences in the NEP scores according to groups' age. There were significant differences between tourists between 35 and 49 years and tourists with 50 years old or more, indicating that people with 35 to 49 years old have a more pro-ecological worldview than the elders (people with 50 and more years old). This difference may be caused by the effect of environmental education. Probably the elder tourists were less exposed to this kind of information.

Some authors have been studying the effect of age on environmental behavior and the results obtained suggest a complex relationship, as it has not been possible to establish consistent significant patterns in the correlation between age and environmental behaviors (Dietz, Stern, and Guagnano, 1998; Hines, et al., 1987; Schultz, et al., 1995; Van Liere and Dunlap, 1980; Gabriel and Silva, 2004).

Van Liere and Dunlap (1980) refer that "although there have been some exceptions, most studies have continued to find support for the NEP to be negatively related to age", arguing

that younger people are not as much integrated in a dominant social order which sees environmental concerns as limitations and threats and therefore are more open to embrace ecological ideas. This relationship was also verified in the work of Casey and Scott (2006), in which the NEP scale was applied to a sample of Australian university students.

Scott (1999) found high age to be a significant predictor of household recycling intensity, whereas Hallin (1995) detected a positive correlation between age and environmental behavior but a negative correlation between age and support for the new environmental paradigm.

Other studies are consistent with these findings. Moreover, Gabriel and Silva (2004), correlated age with education level, and found out that both were significant, being education positive and age negative. These results are also in accordance with our finding for the Berlengas' tourists. This means that the people with higher education have more pro-environmental attitudes then the elder people that probably have few qualifications then the younger people or the middle aged tourists.

Ballantine and Eagles (1994) discover that ecotourists tend to be middle age, have a relatively high incomes and level of education, and involved in the environmental cause.

There are also some studies where there was no significant influence of age on NEP endorsement, as in the Nigerian student sample analyzed by Ogundobe (2013). Yet, these data do not contradict our findings because Ogunbode (2013) divided the student sample into 3 categories: 18-25; 26-30 and above 30 years old and in our study was divided into 4 categories: $\leq$24; 24-34; 35-49 and ≥50 years old. Therefore the higher category of Ogunbode (2013) includes our third category; making it difficult to compare all the results.

Education and NEP

Among the sample of tourists visiting Berlengas, the participants with a university level degree (bachelor, masters or PhD) scored significantly higher than those without such a degree, suggesting that literacy level influences the ecological attitudes.

Higher education is generally positively associated with environmental concern, since people who studied for longer are more exposed to information and are more able to understand it, to critically analyze it and question it (Arcury and Christianson, 1990; Dunlap, et al., 2000; Eckersley, 1989; Hill and Gate, 2009; Howell and Laska, 1992; Imram, et.al., 2014;

Ogunbode, 2013, Van Liere and Dunlap, 1980; Wolf-Watz, 2010). However, there are some studies with different conclusions: some in which there are no significant a relationships between these two characteristics (Blaikie, 1992; Ray, 1975) and some in which a weak negative correlation between literacy and environmental concern (Tranter, 1996).

Blaikie (1992) summarizes the findings of Van Liere and Dunlap (1980), when after reviewing 21 studies, conducted between 1968 and 1978, in which some social-demographic characteristics and environmental attitudes were analyzed, concluding that "age and education are consistently (albeit moderately) associated with environmental concern, and thus we have confidence in concluding that younger and well-educated persons tend to be more concerned about environmental quality than their older and less educated persons".

These conclusions are also consistent with our findings. Trained employees with a higher knowledge about the history, cultural and natural environment of the destination are valorized by the tourist when they decide on participating in a tour (Filby, et al., 2014). Studies have shown that guides have significant influence over the visitors' behavior (Skanavis and Giannoulis, 2010) As result, the visitor s' impact on the environment is minimized, management strategies are properly explained and safety messages are supported (Reisinger and Steiner, 2006).

According to Black (et al., 2001) refers that "training has been instrumental in increasing the awareness of environmental and sociocultural impacts caused by ecotourism." Such awareness can minimize the impact behavior and can increase environmental knowledge and influence conservation views and behaviors by both visitors and residents.

In the study of Filby (et al., 2014), the results reinforce that education is wanted by participants, that they expect interpretation as part of their tour, and indicates that tour leaders are central to the tourist experience. This means that it is expected that the tour leaders are capable of providing information about the site that they were motivated to visit. For example, the Port Philip Bay in Australia, where the main attraction are the dolphins, the guide tour can use as a vehicle to trigger positive action by tourists (e.g., join a dolphin/conservation group, or a dolphin stranding/rescue group) post dolphin-swim trip to encourage pro-conservative behaviors (Filby, et al., 2014).

Environment education should be carried out not only among tourists at the destination but also among kids in school through outdoor education programs, wherein environmental issues should be incorporated, starting to develop a more deep environmental awareness and sustainable behavior. As Benckendorff (et al., 2012) says that "is it is important to develop educational experiences that build upon existing knowledge and that take existing

values and attitudes into account", and refers that tourism students are likely to accept educational programs on the environmental dimension of sustainability.

The profile of the tourist in our study can be related to the ecotourist. According to Eagles and Cascagnette (1995) ecotourist has a higher level of education and income, is more environmentally aware and active than the general tourists and usually travels in small groups or alone.

Motivations and NEP

According to Pizam, Neumann, and Reichel (1979), travel motivation refers to a set of needs that cause a person to participate in a tourist activity. In this survey a list of motivations was provided and tourists evaluated the level of importance of each motivation in their visit. This list included motivations related to nature (the fact of Berlengas being a world biosphere reserve by UNESCO, the wildlife of the island, nature walks) and the motivations "activities and quality of services provided at the destination", "conviviality" and "for being the only place of interest in Peniche".

Our results also allow us to prove our third hypothesis, confirming that the motivation for the development of nature activities are in fact related to the environmental attitude of tourists. We found out that there were positive significant associations between the importance given to nature related motivations and the NEP scores (in the global scores and/or in some partial scores). In the opposite side there is the motivation "For being the only place of interest in Peniche" which correlates negatively with NEP scores.

As one would expect, tourists with more ecological awareness tend to be more attracted by the natural characteristics of Berlengas. Wight (2002) refers that with the increased awareness of global environmental threats, people tend to develop a deeper appreciation for nature and therefore intend to spend more of their leisure time visiting natural areas.

Luo and Deng (2008) also mention, as Eagles and Higgins (1998) do, that those who hold positive environmental beliefs are more likely to have a desire of learning and experiencing nature (cf. Eagles and Higgins 1998) or have an intention to pursue an environmentally friendly behavior associated with NBT.

Based on these arguments, Luo and Deng (2008) claim that part of the ecotourism market consists of the "made ecotourists", who are general tourists but who can be transformed into

ecotourists (Ryel and Grasse 1991). This transformation can be achieved through “nature-based environmental learning, education and experience”, which may contribute to motivate the intention of a more “hands-on eco-tourism experiences” having also a positive effect on enjoyment (Luo and Deng, 2008; Orams, 1997).

In the study of Eagles (1992) ecotourists are most interested in the attraction motivations of wilderness, water, mountains, parks, and rural areas. In rank order, ecotourists are interested in the following living features: tropical forests, birds, trees and wildflowers, and mammals. Based on this argument Eagles (1992) proved on his study that ecotourists are traveling to learn about nature within wilderness, to be with others they can learn from and with, and to be with people that share an appreciation of the richness of nature.

Kaltenborn, (et al., 2011): A higher degree of ecocentrism was associated with a stronger interest in experiencing nature in general, interest in wilderness and ecosystems and local culture. A higher degree of ecocentrism was also associated with more support for controlling tourism activities and the development of tourism infrastructure.

According to Driver (2008) is important to comprehend the motivations of tourists for visiting natural areas for establishing appropriate planning objectives to optimize outdoor recreation activities. The travelers that have a “green motivation” (Deci and Ryan, 1985, 2000) are usually positively correlated with environmental behavior, such as, recycling, purchasing and energy conservation behaviors (Pelletier, Tuson, Green-Demers, and Noels, 1998).

In many protected areas and also in the case of Berlengas, it is important to know the motivations and the environmental attitudes of the tourists, so to identify activities associated with these motivations and behaviors., In that way it is possible to facilitate the initiation and sustaining of visitors' ecologically friendly behaviors in natural environments (Kill et al.2014).

Attributes that affect the decision of visiting Berlengas and NEP

In the questionnaire presented to tourists a list of attributes was given and tourists evaluated how much each attribute affected their decision of visiting Berlengas. This list included attributes related to nature, services, infrastructures, meteorological conditions, costs and hospitality of the local community.

The attributes which correlated significantly with the global NEP score or with some partial NEP score were “wildlife” (positive correlation), “temperature” (negative correlation) and

"infrastructures". The two latter associated significantly only for a dimension of the NEP. The positive correlation of the NEP scores with the attribute "wildlife" supports the previous conclusions that tourists with more ecological awareness tend to be driven by the natural characteristics of Berlengas, which include wildlife. In fact, through our study we were able to prove that many tourists visit Berlengas' island due to wildlife, and prefer nature related attractions such as walks and bird watching. The same was observed in other protected areas, such as Serengueti (Kaltenborn, et al., 2011).

Good practices at destination and NEP

Tourists who consider having good environmental practices at destination had NEP scores significantly higher than those who do not consider having such practices. As one would expect, the participants with ecological behavior reached higher NEP scores, revealing their environmental consciousness in their practical life, including as tourists.
Because these tourists are more aware of environmental practices, they are willing to spend more money on green products (Laroche, et al., 2011) and do activities with educational and ecological purposes that support the preservation of the conservation of the natural environment and wildlife. Therefore, the development of activities and the promotion of traditional and green products in the island of Berlengas probably will have great benefit guaranteeing long-term sustainability of the island.

Also, in the study of Kafyri (et al., 2012) made in two small Greek islands, both the Greeks population and foreign people reveal high levels of pro-environmental intentions. However the Greeks are more aware of nature conservation in the islands, assuming several good practices, such as, consuming organic vegetables, preference for local products, avoiding swimming pools to reduce water consumption and support the local economy which is an important prerequisite of ecotourism development.

Activities and NEP

Our results also allow us to prove our forth hypothesis, confirming that the tourist activities in the destination were associated with the Environmental Attitude of tourists. In fact, there were significant differences in the NEP scores of tourists interested in hiking or snorkeling and those who did not.

There are some studied on the environmental attitudes of outdoor recreationists. According to Teisl and O'Brien (2003), Dunlap and Heffernan (1975) classified recreation activities into three categories: consumptive (e.g., hunting and fishing), appreciative (e.g., hiking, camping, and nature photography), and abusive (e.g., all-terrain vehicle riding, snowmobiling, and mountain biking) and found that various indicators of environmental concern tend to be higher in the context of appreciative activities (such as hiking, camping) than in consumptive activities. As hiking and snorkeling are appreciative activities, our results corroborate their findings. Surprisingly, there were no significant differences in the NEP scores of tourists interested and not interested in diving. This can be considered an appreciative activity, at least when it is done in Berlengas, since the appreciative activities involve to enjoy the natural environment without changing it and this should be the case, as Berlengas island is a protected natural reserve.

According to Wolf-Watz (2010), "pro-environmental groups prefer non-extractive activities with small environmental impact (biking, bird-watching, walking, skiing, kayaking etc.), while negative correlations between environmentalism and participation were identified for hunting and snowmobiling as representations of extractive and motorized recreation activities."

There are some studies that suggested a positive association between participation in outdoor recreation activities and pro environmental behavior (e.g., Cordell, et al., 2001; Jewell, 2000; Theodori, Luloff, and Willits, 1998). According to Jewell (2000) environmental concern and appreciative leisure participation have been found to be significant predictors of pro-environmental behaviors.

In the study of Cordell (et al., 2001) through the comparison of the 10 items NEP scale and the participation of outdoor recreation activities, divulges four type of respondents: the people that considers humans are not above nature and believes that an environmental crisis is possible are associated with the activities of walking and surfing, the people that agrees that humans are not above nature, but not believe in the environmental crisis are associated with the activities of swimming, motor boating, driving off road, canoeing, and downhill skiing, the people that consider that humans are above nature and an environmental crisis is possible are associated only with hiking and the people that agrees that there is no environmental crisis are associated with hunting.

Comparing other protected areas

There are several examples of protected areas that through appropriate management and planning managed to conserve and protect the natural environment and wildlife that can be seen as a role model for our case study, in the island of Berlengas.

The case of **Škocjan Caves Park** which is the only tourist attraction in Slovenia on the global list of natural and cultural heritage of UNESCO as the case of the Berlengas that is Biosphere Reserve of UNESCO. According to the authors (Jurinčič and Balažič, 2010) there are two aspects considered determinant for calculating the carrying capacity of the Škocjan Caves Park: The first aspect was evaluating the tourist demand for eco-tourism products and alternative products that could be appropriate for the concerning area and analyzed the evaluation of the suitability for each tourist product in the protected area. The second aspect was taking into consideration the protection regimes, which were different in different parts of the park: the protection area the cave system had the most strict protection regime while the rest of the area are a mild one, that way allowing a more effective management and control within the area and, thus, it was possible to control the maximum load for the most protected area.

The management plan applied to the Škocjan Caves Park can be adapted to the Berlengas. Instead of allows such a high number of different boats disembarking tourists at the island, reaching up to 1000 people daily, during the summer season, which is causing irreversible damage to the habitats, to flora and fauna,, there could be developed a plan for eco-tourism products and alternative products that can be appropriate for the concerning area and analyzed the evaluation of the suitability for each tourist product in the area. There is already a restrict access to sensitive areas, but there is a need to develop clear information for the tourist explaining the reasons for such restrictions. Most of the times communication/information is one of the key factors to successfully manage a protected areas. Without such information it's hard to come to an understanding and with tourists and tourist operators that work within the protected areas.

In the case of Berlengas, overcrowding happens due to many tour operators transport to many tourists to the island, without any restriction. This, causes a tremendous negative impact on the island and the some discomfort on the tourist there are not enough tourist infrastructures or activities on the island for all those tourists. Nowadays is difficult to change the mentalities of the tour operators because their revenue is dependent on this transportation that occurs only during the summer period.

Other example of protected area like the Berlenga Natural Reserve that is facing the detraction of the natural environment because of the overcrowding (especially tourists) that jeopardized the natural resources of the destination for using in the excessive way the tourism activities is the Ayers Rock-Mt. Olga National Park in the Northern Territory of Australia (Ovington, et al., 1974), where most people visited the National Park in the winter months of August and September when the number of visitors increases from about 100 to over 1 000 per day. About The tourists were motivated to visit the park because it was inaccessible and is required o a long travel to get there. Consequently the tourism movement in and the around the park was most of the times done by coach, which have an extremely negative impact on the natural environment. The most important lesson to be learnt from the Ayers Rock-Mt. Olga National Park is the threat of casual destruction of attractiveness, cultural and scientific qualities in national parks through failure to implement planned development in which tourism is understood as one of many uses and is allowed to exceed the carrying capacity of the Park as happens in The Berlengas Biosphere Reserve. A natural area, namely an island, is very sensitive and the loss of environment quality may arise from unsustainable tourism from the understandable tendency of tourists to concentrate at the more interesting or beautiful localities, from the establishment of tourist facilities within national parks and natural areas, from excessive noise, pollution and other environmental problems.

For example, in this study, Jurado (et al., 2013), shows that a low level of authenticity of a destination and a high level of noise are two of the most important factors influencing the social carrying capacity. Many tourists were dissatisfied with noise levels in Costa del Sol (Mediterranean).

Other examples of protected areas that is damaging the natural attractions and resources, because also the overcrowding is in the parks of Krakow Highland in Poland and the Peak District National Park in United Kingdom (Biderman and Bosak, 1997).

Both of the protected areas suffer from overcrowding in the most attractive places, which causes many impacts and reduces the value of local scenery and traditions. The erosion is one of the major problems, once destroyed the vegetation restores gradually or not at all. The destruction of vegetation is caused by trampling which is visible along the busiest footpaths. Hikers, mountain-bikers and horse riders are major sources of vegetation destruction. The same type or erosion can be seen in the Berlengas Biosphere Reserve, where the overcrowding and trampling is removing the thin layer of soil and destroying vegetation that is also very sensitive and regenerates gradually or not all.

In the two parks (Krakow Highland and the Peak District National Park) the attitudes of local people to protected areas are usually negative.

The target groups in the two protected areas (were: visitors; local population; and the general public. The visitors that came to look for leisure and tourism were the main target of environmental education in most protected areas. The local population presented major challenges for both parks because have low environmental awareness, which makes access to them very difficult.

In Berlengas, during most of the year there is no resident population, but during the summer some fisherman and their families stay on the island. These are people with low level of qualifications, therefore, they are not very sensitive to the value the natural environment in the island and the importance to preserve it. Conflict between locals and tourist may occur, due to lack of facilities and services.

It is essential that the both tourists and local people have the knowledge and motivation to preserve the natural environment and species, by knowing why it is fundamental to preserve them. Yet, reaching the sensitiveness of the people through information about environmental awareness is a hard challenge that most of the natural areas face today.

According to our study, the tourists have mid-ecological awareness but certainly that doesn't mean that they are ecotourists. They are considered nature tourist because, according to Ziffer (1989), nature tourists are grounded in the behavior and motivation of the individual and in our study the results show that in fact most of the tourist visit the island of Berlenga to see the wildlife and to involve in the natural environment but don't behave according to the principles of ecotourism. According to Horwich (1993) and Wight (1993a) ecotourism must have preservation and education purposes, such as, volunteering with a conservation association and consumption of local products, supporting local communities and donating money for conservation.

Positives and negatives impacts of tourism in Berlengas

Negatives impacts

The high number of visitors in a short period of time, especially in July and August, introduces enormous pressure on basic infrastructures, including water supply, sanitation and removal of residues and thus on the quality of life and local health. Besides these

aspects, there are also the impacts resulting from the intensive use of the paths as well the pollution by the boats.

The excess of visitors causes discomfort due to for shortage of place for fruition of the natural values and increases difficulty of access to available services. Al these effects greatly decrease the satisfaction and quality of the visit.

Positive impacts

Currently, the positive impacts of tourism are restricted to the level of creating business opportunities (increment of yield) from the small and scarce recreational infrastructures and shopping existing on the island and the maritime tourism operators that transport tourists and promote other activities such as boating, diving and sport fishing.

On the natural aspect of tourism, visiting the island may allow the education of tourists on the important natural values of the archipelago and on the proper attitudes towards the environment. The growth of tourism in the area and the increasing importance for tourism in Portugal, also creates opportunities for the development of scientific and nature conservation projects in the archipelago.

In the future, there may occurs some upgrading of the tourist facilities of the resources and therefore, obtain higher dividends. To achieve this objective and, at the same time, preserve the nature, further actions on environmental education/sensitization must take place.

Thus tourism can partly be the engine of self-sustainability and valorization of the island.

One way to achieve this is the increase of financing to nature conservation actions and to the improvement of infrastructures and services in the archipelago and that can be achieved by guarantying a direct percentage of the fees charged to tourists and that a percentage of the touristic activities profit are returned to implement such actions. Having a financial return from the visit it will be possible: qualify / maintain the basic infrastructure providing better support to visitors and minimizing the impacts on environmental quality, conserve and manage the natural heritage (habitats, species) and built in which would otherwise be difficult to intervene, improve the monitoring activity, develop the environmental information/ education activities. Therefore, beyond the satisfaction of visitors and local businesses, there will be available funds to invest in heritage preservation actions.

Chapter VI

Conclusion

The island of Berlenga works as a brand of the region's tourism, with high attractiveness for national and international tourist related with highly sensitive natural environment. That way it is important to combine, through sustainable management and planning, the natural resources and the impact of visits in the island through creating educational and conservation awareness inculcated on the products, services, activities and residents on the island of Berlenga. To accomplish that our study suggests that ecotourism can be a crucial tool of promote in long-term the sustainability of the island. However, most organizations that presently are involved in the management of the island of Berlenga are still not oriented for ecotourism and for sustainable tourism, although ecotourism and sustainability are definitely the key factors for the preservation of the island.

It seems that the original and revised NEP scales, like several related mechanisms, are products of a certain controlled space and time with respect to their theoretical content and construction of issues in selected statements. Consequently, using the NEP scale in different cultures may be difficult, because of the variance of the reliability and the dimensionality. Through analyze of the 15 items NEP scale, we proved that there was a good consistency reliability (0.748) that is important to give credibility in our study.

The challenge is to convert the paradigm of tourism. This means that a change from nature based tourism to ecotourism is needed. In our results we found that is a fact that the tourist visits the island of Berlenga for the natural environment and wildlife that is related to the activities such as, visit the caves by boat, observation of the wildlife, hiking and beach, that are the most practiced by tourist in the island. For the fact that the tourist are motivated to visit the island to get involved into the natural area doesn't mean that they have pro-environmental awareness. We found out that, according the categories adapted from Thompson, (2013), most tourists are merely mid-ecological (53.2%) and only 37.9% of the tourists are pro-ecological; 8.9% are even anti-ecological. In this way, nature and wildlife motivations don't seem to be enough for people to truly support nature conservation and to develop environmental behavior. But, we also proved that more educated tourists are more ecological aware, thus more educated tourists may tend to have less impact on the tourist destination.

Therefore, what needs to be done for the island of Berlenga to become a role model of sustainability for other touristic destinations with protected areas?

The first step is to recognize the park as an island for ecotourism. In order to do that, planning and managing the supply of services and activities must be oriented to sustainability and nature conservation, along with education.

The second step is to educate local stakeholders, namely local tourism operators into the practices and principles of ecotourism. They must be aware of the advantages of preserving the natural environment and wildlife that will create job opportunities, more revenue and better life conditions. In this way, if we have a local community more educated and motivated towards the same goal - ecotourism –I t will help to avoid conflict between local people and tourists. Thus tourists will have a better experience capable of creating positive emotions and the desire of to return to Berlenga.

The last step is to educate the tourist for the environmental awareness through the activities and the services provided in the destination.

In order to change the existing paradigm of tourism it is suggested that tourism in Berlengas should focus on the promotion of activities targeted to potential ecotourists - characterized in our study by high NEP tourists that are attracted to environmental dimensions of Berlengas.

Tourism activities should be of low impact, based on the environmental assets but, more importantly, associated with Education and Conservation values.

There is no doubt that the tourists that visit the island of Berlenga have some level of concern for the environment. However it seems that each individual ecological worldviews depends on their knowledge and understanding of ecological processes. Therefore, there is a need for more effective studies about the ecological beliefs that detail the behaviors in which individual motivations of nature and environmental issues are formed by their personal, social, and economic conditions. Through effective compatible methods of environmental education and sensitization, adapted to the reality of the island, one could encourage positive ecological attitudes and behavior.

An important management measure to guarantee sustainability of the island of Berlenga is through the definition of the carrying capacity, that is, the number of simultaneous users that can use and take advantage of Berlengas' natural resources, landscape, bathing, fishing and other tourist activities without endangering their natural heritage and cultural values.

So, in the case of Berlengas it is important to focus in four items that are determinant for calculating the carrying capacity:

- Define Berlengas as an area for ecotourism and develop ecotourism products and alternative products that can be appropriate for the area and evaluate the suitability for each tourist product. In that way it is possible to focus just in one specific type of tourist (ecotourist), promoting an unique experience when they visit the island;
- Identify the most sensitive areas of the island, signalizing them and giving proper and clear information for the tourist and tourism operators;
- Introducing a reservation (booking) system, that restricts the number of visitors allowed, each time in the island. There can be a system of incentives to transfer excess of visitants to other low season periods;
- Promote the participation of local inhabitants, encouraging them to get involved in tourism activities, namely by offering hospitality and accommodation facilities, implementing various events, making the tourist feel special for having the opportunity to experience the island.

Berlengas' tourists are not considered ecotourist because the island doesn't offer yet the appropriate type of services and activities and the local community is not related to ecotourism. Consequently the island of Berlenga is known for be World Biosphere Reserve of UNESCO, and the tourists know and are motivated to go there to see the natural environment and the wildlife, but there is no implementation of measures concerning the principles of ecotourism. As we are trying to demonstrate through our study, it is important for the island of Berlengas to be a recognized as ecotourism destination.

Once defined the specific sustainable tourist (ecotourist), it is possible to create services and activities that will meet the needs of such tourists and in that way make the destination more profitable and eco-friendly. There are forms of education that can be used on the Berlenga Biosphere Reserve such as:

- Public interpretation events:
    - Encourage the visitors to get involved in the activities, specially created for a specific target group, providing a better experience and greater environmental awareness. In that way, it is possible to preserve the natural environment and species on the island and, at the same time, satisfy the needs of the tourist, when they are motivated to visit the island of Berlenga.
- Site Interpretation**:**
    - The trails should have interpretation signs and wayside exhibits supported by several guidebooks and leaflets.
- Publications**:**
    - Guidebooks and other printed documents that focus on the natural environment and species of the island and the importance of its preservation;

- Cooperation with schools**:**
    - Implement education plans for schools, adequate to different student ages and teachers;
- Private Stewardship and Local Initiatives.

Therefore the island of Berlenga presents a unique opportunity to become an ecotourism destination if some measures are implemented such as the definition of the tourism carrying capacity, sustainable managing and planning, along with education plans. This protected area has the potential to become a world reference destination capable of producing profit and benefits for the local community, preserve and conserve the natural environment and wildlife and create quality experiences for ecotourists and nature-based tourists through the development of activities and services, with the involvement of local community.

It is expected that this thesis can contribute to the implementation of a tourism strategy for the Berlengas protected area that can, at the same time, minimize the potential conflict between the nature conservancy and tourism activities but also that can directly or indirectly provide economic, social and environmental benefits to the local communities.

Bibliography

Acott, T. G., La Trobe, H. L., & Howard, S. H. (1998). An evaluation of deep ecotourism and shallow ecotourism. Journal of Sustainable Tourism, 6 (3), 238–253.

Arcury, T. A., & Christianson, E. H. (1990). Environmental worldview in response to environmental problems: Kentucky 1984 and 1988 compared. *Environment and Behavior,* 22, 387-407.

Agardy, M.T. (1993). Accommodating ecotourism in multiple use planning of coastal and marine protected areas. *Ocean & Coastal Management* 20 (3), 219-239.

Alaeddinoglu, F., Turker, N., Can, S., & Ozturk, S. (2013). Basic characteristics, motivations, and activities of ecotourists: A case of Lake Basin area, Turkey, *International Journal of Social Science*, 6 (3), 91-107.

Augar, N., & Fluker, M. (2014). Towards Understanding User Perceptions of a Tourist-Based Environmental Monitoring System: An Exploratory Case Study. *Asia Pacific Journal of Tourism Research,* pp. 1-13.

Alibeli, M. A. & White, N. R. (2011). Gender and Environmental Concerns in the Middle East. *Perspectives on Global Development and Technology*, 10 (1), 156-171.

Amado A, Gafeira C, Teixeira A,& Preto A. (2007). *Plano de ordenamento da Reserva Natural das Berlengas - Relatório para discussão pública*, Instituto de Conservação da Natureza e da Biodiversidade.

Araújo, S.M. (2012). *Tracking sources of fecal pollution in Berlenga Island*, master's thesis, University of Aveiro.

Ballantine, J. L. & Eagles, P. F. J. (1994). Defining Canadian Ecotourists. *Journal of Sustainable Tourism*, 2 (4), 210-215.

Barnes, J.L. (1996). Economic characteristics of the demand for wildlife-viewing tourism in Botswana. *Development Southern Africa,* 13 (3), 377-397.

Beckendorff, P., Moscardo, G., & Murphy, L. (2012). Environmental attitudes of generation y students: foundations for sustainability education in tourism. *Journal of Teaching in Travel & Tourism*, 12 (1), 44-69.

Beck, U., & Grande, E. (2010). Varieties of second modernity: the cosmopolitan turn in social and political theory and research. *British J. Sociology*, 61, 409-443.

Belleville, B. (1992). Diver funded marine parks protect reefs and tourism. *Rodale's Scuba Diving, Nov/Dec* 1992, 36-8.

Bertzky, B., C. Corrigan, J. Kemsey, S. Kenney, C. Ravilious, C. Besan¸con, & N. Burgess. (2012). *Protected Planet Report 2012: Tracking Progress towards Global Targets for Protected Areas.* Gland, Switzerland and Cambridge, UK: UNEP-WCMC, IUCN.

Beutel, A., & Marini, M. (1995). Gender and values. *American Sociological Review,* 60, 436–448.

Biderman, A. & Bosak, W. (1997). Environmental education in protected areas as a contribution to heritage conservation, tourism and sustainable development. In: *National Parks and Protected Areas: Keystones to Conservation and Sustainable Development*, ed. J.G. Nelson & R. Serafin, 93–102. NATO ASI Series, Ser. G, *Ecological Sciences*, Volume 40. Berlin, Germany: Springer, 292.

Bjerke, T., Thrane, C., Kleiven, J. (2006). Outdoor recreation interests and environmental attitudes in Norway. *Managing Leisure*, 11, 116–128.

Black R, Ham S, & Weiler B. (2001). Ecotour Guide training in less developed countries: some preliminary research findings. *Journal of Sustainable Tourism*, 9 (2), 147–156.

Blaikie, N. (1992). The nature and origins of ecological worldviews: An Australian study. *Social Science Quarterly*, 73, 144–165.

Blamey, R.K. (1995a). *The Nature of Ecotourism*. Canberra: Bureau of Tourism Research.

Blamey, R.K. (1995b). The elusive market profile: Operationalising ecotourism. Paper presented at the *Geography of Sustainable Tourism Conference,* University of Canberra, ACT, Australia, September.

Blamey, R.K. (1997). Ecotourism: The search for an operational definition. *Journal of Sustainable Tourism* 5 (2), 109–130.

Blangy, Sylvie & Megan Epler Wood. (1992). *Developing and implementing ecotourism guidelines for wildlands and neighboring communities*. In *Ecotourism: A Guide for Planners and Managers*. Edited by Kreg Lindber.

Blocker, T., & Eckberg, D. (1997). Gender and environmentalism: Results from the 1993 General Social Survey. *Social Science Quarterly*, 78, 841–858.

Boo, E. (1990). Ecotourism: *The Potentials and Pitfalls, Vol. 2 Country Case Studies.* World Wildlife Fund, Washington, D.C.

Bord, Richard J., and James O'Connor. (1997). The Gender Gap in Environmental Attitudes: The Case of Perceived Vulnerability to Risk. *Social Science Quarterly*, 78 (4): 586-93.

Buckley, R.C. (1994). A framework for ecotourism. *Annals of Tourism Research*, 21 (3), 661–665.

Buckley, R.C. (2003). Ecological indicators of tourist impacts in parks. *Journal of Ecotourism*, 2, 54–66.

Buckley, R.C. (2010). Conservation tourism. *Oxfordshire, UK*: CAB International.

Butler, R.W. (1990). Alternative tourism: pious hope or Trojan horse?, *Journal of Travel Research,* 3 (1), 40–45.

Carina, L. (2007). The new ecological paradigm revisited: anchoring the NEP scale in environmental ethics. *Environmental Education Research*, 13, 329-347.

Castellani, V., Sala, S. (2012). Carrying capacity of tourism system: assessment of environmental and management constraints towards sustainability. In: Kasimoglu, M.M. (Ed*.), Visions for Global Tourism Industry e Creating and Sustaining Competitive Strategies*. InTech, Rijeka, Croatia, 295-316.

Casey, P. J., & Scott, K. (2006). Environmental concern and behavior in an Australian sample within an ecocentric-anthropocentric framework. *Australian Journal of Psychology,* 58, 57–67.

Ceballos-Lascurain, H. (1996). *Tourism, Ecotourism, and Protected Areas*. Gland: IUCN.

Cengiz, T. (2007). Tourism, an Ecological Approach in Protected Areas: Keragol-Sahara National Park, Turkey*. International Journal of Sustainable Development & World Ecology,* 14, 260-267.

Chodorow, N. (1974). Family structure and feminine perspective. In M. Rosaldo&L. Lamphere (Eds.), *Women in culture and society* (41–48). Stanford, CA: Stanford University Press.

Choegyal, L. (1991). Ecotourism in national parks and wildlife reserves. Paper presented at the *PATA 40th Annual Conference*, Bali, Indonesia, 10–13 April, 93–102.

Chougule, B. (2011). Environmental carrying capacity and ecotourism development and ecotourism development. *International Journal of Economic Issues*, 4 (1), 45-54.

Cordell, H. K., C. J. Betz, & G. T. Green. (2001). Recreation and the Environment as Cultural Dimensions in Contemporary American Society. *Leisure Sciences*, 24, 3–41.

Coria J., & Calfucura, E. (2012). Ecotourism and the development of indigenous communities: The good, the bad, and the ugly. *Ecological Economics*, 73, 47–55.

Cristureanu, C., (2006). *Strategii şi tranzacţii în turismul internaţional.* C.H. Beck Publishing House, Bucharest, 163.

Deci, E. L., & Ryan, R.M. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior.* New York, NY: Plenum.

Deci, E. L., & Ryan, R.M. (2000).The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, 11, 227–268.

Denis, Hodis D., & Pereira, Luis N. (2014). Measuring the level of endorsement of the New Environmental Paradigm: a transnational study. *Dos Algarves: A Multidisciplinary e-Journal*, 23, 4.

Dietz, T., Stern, P. C., & Guagnano, G. A. (1998). Social structural and social psychological bases of environmental concern. *Environment and Behavior,* 30, 450–471.

Driver, B.L. (2008).What is outcomes-focused management?. In: B. L. Driver (Ed.), *Managing to Optimize the Beneficial Outcomes of Recreation* (19–37).State College, PA: Venture Publishing.

Dudley, N. (2008). *Guidelines for Applying Protected Area Management Categories.* Gland, Switzerland: IUCN.

Duffy, Rosaleen. (2002). *A Trip Too Far: Ecotourism, Politics and Exploitation*. Detroit: Earthscan/James & James.

Dunlap, R. E, & R.B. Heffernan. (1975). The New Environmental Paradigm: a Proposed Instrument and Preliminary Results. Journal of Environmental Education, 9, 10-19.

Dunlap, R. E., & Liere, K.D. Van, (1978). The new environmental paradigm: a proposed measuring instrument and preliminary results. *The Journal of Environmental Education*, 9, 10-19.

Dunlap, R. E., Liere, K. D. Van, Mertig, A. G., & Jones, R. E. (2000). Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale, *Journal of Social Issues,* 56 (3), 425–442.

Dunlap, R. E. (2008). The New Environmental Paradigm Scale: From Marginality to Worldwide Use. *The Journal of Environmental Education,* 40 (1), 3–18.

Draper, D., Rossello´ -Graell, A., Garcia, C, Tauleigne Gomes, C., & Sergio, C. (2003). Application of GIS in plant conservation programmes in Portugal, *Biological Conservation* 113, 337–349.

Eagles, P. F. (1992). The Travel Motivations of Canadian Ecotourists, *Journal of Travel Research,* 31 (2), 3-7.

Eagles, P. F., & Cascagnette, J. W. (1995). Canadian ecotourists: Who are they? *Tourism Recreation Research,* 20 (1), 22–28.

Eagles, P., & Higgins, B. (1998). Ecotourism market and industry structure. *in Ecotourism: A Guide for Planners and Managers* (Vol. 2) ed. by K. Lind- berg, M. Epler Wood & D. Engeldrum, 11–43,Vermont, The Ecotourism Society.

Eagles, P. F., S. F. McCool, & C. D. Haynes. (2002). Sustainable tourism in protected areas; guidelines for planning and management. World Conservation Union (IUCN). Available online at: http://cmsdata.iucn.org/downloads/pag_008.pdf

Eckersley, R. (1989). Green politics and the new class: selfishness or virtue?. *Political Studies* 37, 205–223.

Ecotourism Australia (2015). Retrieved on August 10, 2015 from the World Wide Web: http://www.ecotourism.org.au

Erdogan, N. (2009). Testing the new ecological paradigm scale : Turkish, *African Journal of Agricultural Research*, 4 (10), 1023–1031.

Filby, N.E., Stockin, K.A., & Scarpaci, C. (2015). Social science as a vehicle to improve dolphin-swim tour operation compliance?. *Marine Policy*, 51, 40-47.

Fleury-Bahia, G., Marcouyeux, A., Renard, E., & Roussiau, N. (2014). Factorial structure of the New Ecological Paradigm scale in two French samples. *Environmental Education Research*, 21 (6), 821-831.

Gabriel, R. & E. Silva. (2004). *Metodologia para Avaliar as Atitudes face ao Ambiente*. Actas do II Congresso de Estudos Rurais. Angra do Heroísmo.

Goodwin, H. (1996). In pursuit of ecotourism. *Biodiversity and Conservation,* 5 (3), 277–291.

Guimarães, R. C. & J. S. Cabral, 2007, *Estatística,* McGraw-Hill, Lisboa.

Hallin, P-O. (1995). Environmental concern and environmental behavior in Foley, a small town in Minnesota. *Environment and Behavior,* 27 (4), 558 – 78.

Hewlett, D., Fyall, A. and Edwards, J. (2004). Beyond the Rhetoric of Visitor Management in Transboundary Protected Areas: The Case of Peneda-Geres, *International Journal of Tourism Research,* 6 (6), 381-395.

Higham, J., Kearsley, G., & Kliskey, A. (2000). Wilderness perception scaling in New Zealand: An analysis of wilderness perceptions held by users, non-users and international visitors. In D. Cole, S. McCool, W. Borrie, & J. O'Loughlin [Comps.], *Wilderness Science in a Time of Change Conference – Volume 2: Wilderness within the context of larger systems.* 23–27 May 1999. Missoula, MT: USDA Forest Service.

Hill, J. & Gale, T. (2009). *Ecotourism and Environmental Sustainability: Principles and Practices.* Britain, 261.

Hines, J. M., Hungerford, H. R., & Tomera, A. N. (1987). Analysis and synthesis of research on responsible environmental behavior: A meta-analysis. *Journal of Environmental Education*, 18, 1–18.

Hofmeister-Tóth, Kelemen, Piskóti, & Simay. (2008). *Examining the Differences Between the Environmentally Conscious Consumer Behavior in China and Hungary*. Convinus University of Budapest, Hungary.

Holden, A. & Sparrowhawk, J. (2002). Understanding the motivations of ecotourists: the case of trekkers in Annapurna, Nepal. *International Journal of Tourism Research*, 4 (6), 435–446.

Howell, S. E., & Laska, S. B. (1992). The changing face of the environmental coalition: A research note. *Environment and Behavior*, 24 (1), 134-144.

Honey, M. (1999). *Ecotourism and Sustainable Development: Who Owns Paradise?* Washington, DC: Island Press.

Horwich, R. H. (1993). Ecotourism and Community Development: A View from Belize. In K. Lindberg and D. Hawkins (eds), *Ecotourism: A Guide for Planners and Managers* (152- 168). North Bennington, VT: The Ecotourism Society.

Hvenegaard, G. T. & Dearden, P. (1998). Ecotourism Versus Tourism in a Thai National Park. *Annals of Tourism Research,* 25 (3), 700-720.

Imran, S., Alama, S. and Beaumont, N. (2014). Environmental orientations and environmental behaviour: Perceptions of protected area tourism stakeholders*. Tourism Management*, 40 (5), 290-299.

IUCN. (1994). *Parks for Life: Action for Protected Areas in Europe.* Gland.

Jewell, T. D. (2000). *Outdoor leisure and environmentalism among college students*. Unpublished master's thesis, The Pennsylvania State University, University Park College, PA.

Johannes, R. E. (1984). Traditional conservation methods and protected marine areas in Oceania, In J. McNeely & K. Miller (eds.) *National Parks, Conservation, and Development.* Washington, DC: Smithsonian Institute Press.

Johnson, C. Y., Bowker, J., & Cordell, H. K. (2004). Ethnic variation in environmental belief and behavior: an examination of the new ecological paradigm in a social psychological context. *Environment and Behavior,* 36, 157–186.

Jurado, E.N., Damian, I.M., & Fernandez-Morales, A. (2013). Carrying capacity model applied in coastal destinations*. Annals of Tourism Research*, 43 (1), 1-19.

Jurinčič, I., & Balažič, G. (2010). *Determining the carrying capacity of the Škocjan Caves Park for the implementation of sustainable visitor management.* Tourism and Quality of Life, Encuentros.

Kafyri, A., Hovardas, T. & Poirazidis, K. (2012). Determinants of Visitor Pro-Environmental Intentions on Two Small Greek Islands: Is Ecotourism Possible at Coastal Protected Areas?. *Environmental Management*, 50, 64-76.

Kaltenborn, B. P., Nyahongo, J. W, & Kideghesho, J. R. (2011). The attitudes of tourists towards the environmental, social and managerial attributes of Serengeti National Park, Tanzania. *Tropical Conservation Science,* 4 (2), 32-148. Available online at: www.tropicalconservationscience.org

Kelly, C., Pickering, C.P. & Buckley, R.C. (2002). Impacts of tourism on threatened plant taxa and communities in Australia. *Environmental Management and restoration*, 4, 37–44.

Kil, N., Holland, S., & Stein, M.T.V. (2014). Structural relationships between environmental attitudes, recreation motivations, and environmentally responsible behaviors*. Journal Outdoor Recreation and Tourism*, 7/8, 16–25.

Kim, H., Borges, M., & Chon, J. (2006). Impacts of environmental values on tourism motivation: The case of FICA, Brazil. *Tourism Management*, 27 (5), 957-967.

Kiper, T. (2011). The Determination of Nature Walk Routes Regarding Nature Tourism in North-Western Turkey: Şarköy District. *Journal of Food, Agriculture & Environment*, 9, 622-632.

Kostova, Z., Vladimirova, E., & Radoynovska, B. (2011). The environmental concern of nine-grade students from a secondary professional school*, Bulgarian Journal of Science and Education Policy*, 5 (1), 178–218.

Kruger, O. (2005). The role of ecotourism in conservation: Panacea or Pandora's Box? *Biodiversity and Conservation*, 14, 579–600.

Kutay, K. (1989). The new ethic in adventure travel. *Buzzworm, 4*, 31–36.

Laarman, J.G. & Gregersen, H.M. (1996). Pricing policy in natural-based tourism. *Tourism Management* 17 (4), 247–254.

Laroche, M, Bergeron, J, & Barbero-Forleo, G (2001), Targeting Consumers Who are Willing to Pay More for Environmentally Friendly Products, *Journal of Consumer marketing*, 18(6), 503-520.

Lascurain, C. (2001). *Integrating biodiversity into the tourism sector: Best practice guidelines.* Technical report to UNEP/UNDP/GEF/BPSP, Mexico City 2001.

Lawrence, T.B., Wickins, D. & Phillips, N. (1997). Managing legitimacy in ecotourism. *Tourism Management* 18 (5), 307–316.

Lee, W., & Moscardo, G. (2005). Understanding the impact of ecotourism resort experiences on tourists' environmental attitudes and behavioural intentions. *Journal of Sustainable Tourism,* 13 (6), 546–565.

Libosada, C.M., Jr. (2009). Business or leisure? Economic development and resource protection-concepts and practices in sustainable tourism. *Ocean and Coastal Management*, 52 (7), 390–394.

Lim, C. (2002). The Socioeconomic Importance of Eco-Resort Management Practices. *International Environmental Modelling and Software Society*, 496-501.

Lindberg, K. & McKercher, B. (1997). Ecotourism: A critical overview. *Pacific Tourism Review* 1 (1), 65–79.

Liu, J., Ouyang, Z., & Miao, H. (2010). Environmental attitudes of stakeholders and their perceptions regarding protected area-community conflicts: a case study in China. *Journal of Environmental Management*, 91 (11), 2254-2262.

Lück, M. (2000) Ecotourism in natural settings: A view into value systems and on-site experiences of visitors to New Zealand eco-attractions, sites and tours. In Ladkin (ed.) Research into consumer behaviour and value systems of ecotourists; tourists choice, behaviour, motivations, and attachments; visitors to nature based destinations; adventure tourism and channel relationships in the tourism industry. *International Journal of Tourism Research* 2, 211–28.

Lück, M. (2010). The "New Environmental Paradigm": Is the scale of Dunlap and Van Liere applicable in a tourism context? *Tourism Geographies*, 5 (2), 228–240.

Luo, Y., & Deng, J. (2008). The new environmental paradigm and nature-based tourism motivation. *Journal of Travel Research*, 46, 392-402.

Marôco, J. (2014). *Análise estatística - Com o SPSS Statistics*, 6 edição. Report Number.

Maggi, E. & Fredella, F. L. (2011). The carrying capacity of a tourist destination. The case of a coastal Italian city, ERSA *conference papers ersa10p576, European Regional Science Association.* Available at: http://wwwsre.wu.ac.at/ersa/ersaconfs/ersa10/ERSA2010finalpaper576.pdf

Mason, P. (2003). Tourism Impacts, Planning and Management. *Routledge*, 55-57.

McNeely, J.A. & Thorsell, J. (1989). Jungles, mountains and islands: how tourism can help conserve natural heritage. IUCN: Gland, Switzerland.

Nistoreanu,P., (2003). *Ecotourism in tourism rural,* Second reviewed edition, ASE Publishing House, Bucharest.

Norris, R. (1992). Can ecotourism save natural areas? *National Parks,* 66 (1–2), 30–34.

Nunnally, J. C. (1978). *Psychometric theory* (2 Edition), McGraw-Hill. New York.

Ogunbode, C. A. (2013). The NEP scale: measuring ecological attitudes/worldviews in an African context. *Environment, Development and Sustainability*, 15 (6), 1477–1494.

Olli, E., Grendstad, G., & Wollebaek, D. (2001). Correlates of environmental behaviors: Bringing back social context. *Environment and Behavior*, 33, 181–208.

Omoogun, A. C., Odok Anthony O. (2013). Influence of Gender and Environmental Awareness on Attitude of People towards Forest Conservation in Ekuri Communities in Akamkpa Local Government Area of Cross River State. *Journal of Public Administration and Governance*, 3 (2).

O'Neill, M. (1991). Naturally attractive, *Pacific Monthly*, September, 25.

Ovington, J.D., Groves, K.W., Stevens, P.R. & Tanton, M.T. (1974). Changing scenic values and tourist carrying capacity of National parks: An Australian example. *Landscape Plann*, 1, 35-50.

Orams, M. (1997). The effectiveness of environmental education: Can we turn tourists into ''greenies''? *Progress in Tourism and Hospitality Research*, 3, 295–306.

Pallant, J. (2007): *SPSS survival manual. A step by step guide to data analysis using SPSS.* Buckingham: Open University Press.

Pelletier, L. G., Tuson, K. M., Green-Demers, I., & Noels, K. (1998).Why are you doing things for the environment?: The motivation toward the environment scale (MTES). *Journal of Applied Social Psychology,* 28, 437–468.

Pestana, M.H., & Gageiro, J.N. (2008*). Análise de dados para ciências sociais:* A complementaridade do SPSS (5ª ed.). Lisboa: Ed. Sílabo, Lda.

Pizam, A., Y. Neumann, & A. Reichel. (1979). Tourist Satisfaction: Uses and Misuses. *Annals of Tourism Research,* 6, 95-107.

Poursaeed, R. (2011). Investigation of Environmental Attitude and Behavior of Farmers in Ilam Province's by Using New Ecological Paradigm (NEP) Scale. *International Journal of Agricultural Science and Research*, 2, 1.

Queiroga H, Leão F, & Coutinho M. (2008). Candidatura *das Berlengas a Reserva da Biosfera da UNESCO*, Câmara Municipal de Peniche.

Queiroz, R. E., Ventura, M.A., Guerreiro, J.A., & Cunha, R.T. (2014). Carrying capacity of hiking trails in Natura 2000 sites: a case study from North Atlantic Islands (Azores, Portugal). *Journal of Integrated Coastal Zone Management,* 14 (2), 233-242.

Ray, J. J. (1975). Measuring environmental attitudes. *Australian and New Zealand Journal of Sociology*, 11, 70 – 71.

Reisinger, Y., & C. Steiner. (2006). Reconceptualizing Object Authenticity. *Annals of Tourism Research*, 33, 65–86.

Remacha, C., Pérez-Tris, J., & Delgado, J. A. (2011). Reducing visitors group size increases the number of birds during educational activities: Implications for management of nature-based recreation, *Journal of Environment Management*, 92, 1564-1568.

Richardson, J. (1997). The National Ecotourism Accreditation Program: A little ripple that will influence the general tourism industry. *Tourism and Hospitality,* 9-14.

Rideout, B. E., Hushen, K., McGinty, D., Perkins, S., & Tate, J. (2005). Endorsement of the new ecological paradigm in systematic and e-mail samples of college students. *Journal of Environmental Education*, 36, 15–23.

Rideout, B. E. (2014). The liberal arts and environmental awareness : Exploring endorsement of an environmental worldview in college students, *International Journal of Environmental & Science Education,* 9, 59–76.

RNB, Reserva Natural das Berlengas. (2007). *Relatório do Plano de Ordenamento para discussão pública da RNB*. Instituto da Conservação da Natureza e da Biodiversidade.

Rodrigues NV, Maranhão P, Oliveira P, Alberto J (2008). *Guia de Espécies Submarinas, Portugal – Berlengas*. Edição Instituto Politécnico de Leiria. Portugal.

Romão, J.M. (2009). Património geológico no litoral de Peniche: geomonumentos a valorizar e divulgar, *Geonovoas* n.º 22, 21-33.Saarinen, J. (2006). Traditions of sustainability in tourism studies. *Annals Tourism Research.* 33 (4), 1121-1140.

Ryel, R., & T., Grasse. (1991). Marketing Ecotourism: Attracting the Elusive Ecotourist. *In Nature Tourism: Managing for the Environment*, edited by T. Whelan. Washington, DC: Island Press.

Saarinen, J. (2006). Traditions of sustainability in tourism studies. *Annals of Tourism Research,* 33 (4), 1121–1140.

Sakellari, M., Skanavis, C. (2013). Sustainable tourism development: Environmental education as a tool to fill the gap between theory and practice, *International Journal of Environment and Sustainable Development*, 2 (4),313-323.

Santonocito, S. D. (2009). Sustainable Tourism and Carrying Capacity in the Mediterranean Area Focus on Sicily. *3rd International Scientific Conference*, 24/25/26 October 2009, 387-398.

Sa-Sousa, P., Almeida, AP., Rosa, H., Vicente, L., & Crespo, EG. (2000). Genetic and morphological relationships of the Berlenga wall lizard (Podarcis bocagei berlengensis : Lacertidae) *Journal Of Zoological Systematics And Evolutionary Research*, 38 (2), 95-102.

Sayan, M.S., & M. Atik. (2011). Recreation Carrying Capacity Estimates for Protected Areas: A Study of Termessos National Park. *Ekoloji,* 20 (78), 66-74.

Scheyvens, R. (1999). Ecotourism and the empowerment of local communities. *Tourism Management*, 20, 245–249.

Schultz, P.W., Oskamp, S., Mainieri, T. (1995). Who recycles and when: a review of personal and situational factors. *Journal of Environmental Psychology* 15, 105–121.

Scott, D., & Fern K. Willits. (1994). Environmental attitudes and behavior: A Pennsylvania study. *Environment and Behavior*, 26, 239-260.

Scott, D. (1999). Equal opportunity, unequal results: determinants of household recycling intensity. *Environment and Behavior*, 31, 267–90.

Skanavis C., & C. Giannoulis. (2010). Improving Quality of Ecotourism Through Advancing Education & Training of Greek Eco-tour Guides: The Role of Training in Environmental Interpretation, *Tourismos: An International Multidisciplinary Journal Of Tourism,* 5 (2), 49-68.

Steger, Manny A., & Stephaniel, W. (1989). Gender Differences in environmental orientations: A comparison of publics and activists in Canada and the U.S. *Western Political Quarterly,* 42, 322-348.

Stern, P.C., Young, O.R. & Druckman, D. (1992). *Global environmental change: understanding the human dimensions*. National Academy Press. Washington.

Stern, P. C., Dietz, T., & Kalof, L. (1993). Value orientations, gender, and environmental concern. *Environment and Behavior*, 25, 322 – 348.

Sun, C-J, Lebrun, A-M, Bouchet, P., Wang, J-R, Lorgnier, N., & Yang, J-H. (2015). Tourists' participation and preference-related belief in co-creating value of experience: a nature-based perspective. *Service Business*, Springer, 1-24.

Tauleigne Gomes, C., Draper, D., Rosse1ló-Graell, A. (2001). Données sur la végétation halophile; l'archipel des Berlengas (Estremadura, Portugal), *Bocconea*, 537-542.

Tauleigne Gomes, C., Draper, D., Marques, I. & Rosselló-graell, A. (2004). *Flora e Vegetação do Arquipélago das Berlengas. Componente Vegetal do Plano de Ordenamento da Reserva Natural das Berlengas*. ICN - Ministério do Ambiente, do Ordenamento do Território e do Desenvolvimento Regional.

Teisl, M. & O'Brien, K. (2003). Who cares and who acts? Outdoor recreationists exhibit different levels of environmental concern and behavior. *Environment and Behavior,* 35 (4), 506–522.

Theodori, G. L., Luloff, A. E., & Willits, F. K. (1998). The association of outdoor recreation and environmental concern: Reexamining the Dunlap-Heffeman thesis. *Rural Sociology*, 63 (l), 94 108.

Thomson, J. (2013), *New Ecological Paradigm Survey 2008: Analysis of the NEP results*, Waikato Regional Council Technical Report 2013/11. New Zealand.

TIES - The International Ecotourism Society (2015). Retrieved on September 05, 2015 from the World Wide Web: https://www.ecotourism.org/what-is-ecotourism

Tosun, C. (1999). Towards a typology of community participation in the tourism development process. *International Journal of Tourism and Hospitality*, 10, 113-134.

Tosun, C. (2000). Limits to community participation in the tourism development process in developing countries. *Tourism Management*, 21, 613-633.

Tranter, B. (1996). The social bases of environmentalism in Australia. *Australian and New Zealand Journal of Sociology*, 32, 61 – 85.

UNEP- PAP/RAC. (1997). *Guidelines for carrying capacity assessment for tourism in Mediterranean coastal areas*. PAP-9/1997/G.1. Priority Actions Programme Regional Activity Centre: Split.

UNEP. (2007). *User's manual on the CBD guidelines on biodiversity and tourism development*. Available online at: https://www.cbd.int/doc/programmes/tourism/tourism-manual-en.pdf

UNESCO. (2000). *Solving the puzzle: the ecosystem approach and biosphere reserves*. UNESCO, Paris.

UNWTO (2004). *Tourism Congestion Management at Natural and Cultural Sites.* Madrid: World Tourism Organization.

Ustun U.D, Kalkavan A, Gumusgul O. (2014). An Investigation of Students' Attitudes on the Environment: The Influence on Participation in Outdoor Recreation, *Fourth International Conference on Sport And Society,* Chicago, USA.

Uysal, M., Jurowski, C., Noe, F.P. & McDonald, C.D. (1994). Environmental attitude by trip and visitor characteristics. *Tourism Management*, 15, 284–94.

Valentine, P.S. (1992). Review: Nature-based tourism. In B. Weiler and C.M. Hall (eds*) Special Interest Tourism* (105–127). London: Belhaven Press.

Van Liere, K. D., & Dunlap, R. E. (1980). The social bases of environmental concern: A review of hypotheses, explanations, and empirical evidence. *Public Opinion Quarterly*, 44, 181 – 197.

Vicente, L. (1987). Contribuição para o conhecimento do Etograma de uma população insular de Lacerta lepida (Daudin, 1802) (Sauria, Lacertidae), *Análise Psicológica*, 2 (VI), 221-228.

Wearing, S. and Neil, J. (2009) *Ecotourism: Impacts, Potential and Possibilities (Second edition).* Chapter 4: *Ecotourism and Protected Areas: Visitor Management for Sustainability*, 74-76. Butterworth Heinemann, Oxford and Melbourne.

Weaver, D. (2001). *Ecotourism*. Brisbane: John Wiley & Sons.

Wight, P. (1993a). Sustainable Ecotourism: Balancing economic, environmental and social goals within an ethical framework. *The Journal of Tourism Studies,* 4 (2*),* 54-66.

Wight, P. (1993b). Ecotourism: Ethics or eco-sell? *Journal of Travel Research,* 31 (3*)*, 3-9.

Wight, P. (1996). North American Ecotourists: Market Profile and Trip Characteristics, *Journal of Travel Research,* 34 (4), 2-10.

Wight, P. (2001). Integration of Biodiversity and Tourism: Canada Case Study. Paper presented at the *International Workshop Integrating Biodiversity and Tourism, UNEP/UNDP/BPSP/GEF*, Mexico City, March, 29–31.

Wight, P. (2002). Planning for Resource Protection and Tourism Management in Protected Areas: a Practical Perspective. In Wall, G. (Eds), *Tourism: people, Places Products.* Department of Geography, University of Waterloo, Waterloo, ON, Canada.

Wilhelm-Rechmann, A., Cowling, M., R., & Difford, M. (2014). Responses of South African land-use planning stakeholders to the New Ecological Paradigm and the Inclusion of Nature in Self scales: Assessment of their potential as components of social assessments for conservation projects. *Biological Conservation*, 180, 206-213.

Williams, P. (1990). Ecotourism management challenges. In *Fifth Annual Travel Review Conference Proceedings 1990: A Year of Transition*, Travel Review: Washington, DC.

Wolf-Watz, D. (2010). *Outdoor recreation and environmentalism. Social and spatial perspectives.* Licentiate thesis. Karlstad University Studies, 26.

Wood, M. E. (2002). Ecotourism: P*rinciples, Practices and Policies for Sustainability*. North Bennington, VT: The International Ecotourism Society.

WTO - World Tourism Organization. (1999). *Global code of ethics for tourism*. Proceedings of Thirteenth session of General Assembly: Santiago, Chile.

WTO - World Tourism Organization. (2005). *Tourism's Potential as a Sustainable Development Strategy*. World Tourism Organization, Madrid, Spain.

Wunder, S. (2000). Ecotourism and economic incentives - an empirical approach. *Ecological Economics*, 32, 465–479.

WWF - World Wildlife Fund. (2000). *Tourism Certification: An Analysis of Green Globe 21 and Other Tourism Certification Programs*. London, England: World Wildlife Fund–United Kingdom.

Wynn, S. (2003). Zambezi River: wilderness and tourism research into visitor perceptions about wilderness and its value. In A. Watson, & J. Sproull [Comps.], *Science and stewardship to protect and sustain wilderness values: Seventh World Wilderness Congress symposium.* 2–8 November 2001, Port Elizabeth, South Africa, Proc. RMRSP- 27. Ogden, UT: US Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Yu, D. W., Hendrickson, T. & Castillo, A. (1997). Ecotourism and conservation in Amazonian Perú: short-term and long-term challenges. *Environmental Conservation* 24, 130-138.

Zacarias, D.A., Williams, A.T., & Newton, A. (2011). Recreation carrying capacity estimations to support beach management at Praia de Faro, Portugal. *Journal of Applied Geography* 31, 1075-1081.

Zal, N. & Breda, Z. (2010). Tourism in protected areas: Observations from Kuscenneti national park. *Anatolia: An International Journal of Tourism and Hospitality Research*, 21, 73-87.

Zelezny, L. C.,& Yelverton, J. A. (2000). Feminine identity, collectivism, and environmental attitudes and behaviors. Paper presented at the *meeting of the Western Psychological Association*, Portland, OR.

Ziffer, K.A. (1989). *Ecotourism: The Uneasy Alliance*. Washington, DC: Conservation International and Ernst & Young.

Appendix

IPL
escola superior de turismo e tecnologia do mar
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THE IMPACTS OF CLIMATE CHANGE INFLUENCE THE AMBITION OF DEMAND FOR A SUSTAINABLE DEVELOPMENT OF TOURISM IN BERLENGAS

The purpose of this questionnaire is to realize the extent to which climate change may affect tourist destination, knowing that it can have serious repercussions on the natural landscape and wildlife if no mitigation or adaptation measures are taken in the destination so that sites that rely solely on tourism does not fade.

Have you been to Berlengas in the last 2 years? Yes ☐ No ☐ Intends to go there? Yes ☐ No ☐

Part I

1. Sex: Male ☐ Female ☐ **2. Age:** _____

3. With whom did you travel? With the family ☐ With friends ☐ On excursion ☐ Companion ☐

Alone☐Other ☐ Which? _____

4. Place of residence:

Where are you from? (Country) _____

5. Literacy levels:

No formal schooling ☐ Elementary school (4th grade) ☐ Basic school (6th grade) ☐

Basic school (9th grade)☐ Secondary education ☐ Bachelor's degree ☐Master's degree☐ Ph.D. degree ☐

Part II

The New Ecological Paradigm (NEP) - Natural resources are limited and delicate, so the possibility of human growth is limited and the human effort to overcome nature can lead to problems for all mankind.

1. **Agree or disagree with the following statements (1- "Strongly agree"; 2- "Mildly agree"; 3- "Unsure"; 4- "Mildly disagree"; 5- "Strongly agree").**

	1	2	3	4	5
1.We are approaching the limit of the number of people the earth can support.					
2. Humans have the right to modify the natural environment to suit their needs.					
3. When humans interfere with nature it often produces disastrous consequences.					
4. Human ingenuity will insure that we do not make the Earth unlivable.					
5. Humans are seriously abusing the environment.					
6. The Earth has plenty of natural resources if we just learn how to develop them.					
7. Plants and animals have as much right as humans to exist.					
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations.					
9. Despite our special abilities, humans are still subject to the laws of nature.					
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated.					
11. The Earth is like a spaceship with very limited room and resources.					
12. Humans were meant to rule over the rest of nature.					
13. The balance of nature is very delicate and easily upset.					
14. Humans will eventually learn enough about how nature works to be able to control it.					
15. If things continue on their present course, we will soon experience a major ecological catastrophe.					

Part III

1. How do you see climate change? Positively ☐ Unsure/indifferent ☐ Negatively ☐

2. The factors that are going to affect the tourism industry on a 5-year and 15- to 30-year time scale. Agree or disagree with the following statements (1- "Strongly agree"; 2- "Partially agree"; 3- "Unsure"; 4- "Partially disagree"; 5- "Strongly agree").

5 years	**1**	**2**	**3**	**4**	**5**
The climate change can be considered as a new structural factor in the global economy.					
The climate change may change the form of promotion of destinations of Sun & Sea and Winter.					
The climate change may be associated with direct or indirect consequences for human health.					
The climate change will affect agricultural and forestry systems due to rising temperatures.					
The climate change will alter the migration patterns and seasonal activities of marine and terrestrial species.					
The climate change transforms negatively the sustainable development of a destination.					
The climate change influence the motivation of tourists in visiting certain tourist destinations.					
The climate change aggravates social inequality.					
The climate change will allow the emergence of new technological ideas, more efficient and less polluting.					
15 a 30 anos	**1**	**2**	**3**	**4**	**5**
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The climate change influence the motivation of tourists in visiting certain tourist destinations.					
The climate change aggravates social inequality.					
The climate change will allow the emergence of new technological ideas, more efficient and less polluting.					

3. Do you think that it is possible to use climate change for the benefit of local tourism? Yes ☐ No ☐

If yes, how? On a scale from 1 to 5 (1- "Strongly agree"; 2- "Partially agree"; 3- "Unsure"; 4- "Partially disagree"; 5- "Strongly agree").

	1	**2**	**3**	**4**	**5**
Increase promotion of four-season tourism (decrease seasonality issues).					
Develop new tourism products.					
Develop new target markets.					
Restrict access to tourists in the most sensitive areas.					
Further develop beach tourism.					
Promote elements of destination using "see it before it's gone" marketing.					

4. What are your motivations that lead you to visit the island of Berlenga? On a scale from 1 to 5 (1 - "not important"; 2- "little important"; 3- "indifferent"; 4- "important"; 5- "very important")

	1	**2**	**3**	**4**	**5**
The wildlife of the island.					
Activities and quality of services provided at destination.					
The hospitality of the local community.					
For being a World Biosphere Reserve by UNESCO.					
For being the only place of interest in Peniche.					
Nature walks.					
Conviviality.					

5. Do you know the wildlife of Berlenga? Yes ☐ No ☐

6. Do you know the iconic specie of Berlenga (Airo)? Yes ☐ No ☐

Have you seen it?
Yes ☐ No ☐

7. In your opinion what are the attributes that affect your decision to visit the Berlengas?
(Mark in maximum 5 with a X being, 1 - "not important"; 2- "little important"; 3- "indifferent"; 4- "important"; 5- "very important")

	1	2	3	4	5
Nature.					
Safety.					
The hospitality of the local community.					
Temperature.					
Precipitation.					
Transports					
Infrastructures.					
Activities.					
Accommodation.					
Wildlife.					
Cost.					

8. What activities did you practice or want to practice in Berlengas?

Diving ☐ Visit the caves ☐ Snorkeling ☐ Hiking ☐ Observation of wildlife ☐ Gastronomy ☐ Camping ☐ Beach ☐ Neither ☐ Others ☐ Which?_____

9. Do you have good environmental practices at destination?
Yes ☐ No ☐

If yes, what are the practices of sustainable tourism that you have already done?

	Yes	No
Consultation Agenda 21 for the Travel Industry and Tourism.		
Separation of waste for recycling.		
Assessing the impact of your activities on the environment and local development (ecological footprint).		
Reusing products and packaging.		
Concern to reduce energy consumption.		
Use of alternative energy.		
Control of emissions of greenhouse gases to the atmosphere.		
Buy local products.		
Buy organic products.		

IPL escola superior de turismo e tecnologia do mar instituto politécnico de leiria

OS IMPACTOS DAS ALTERAÇÕES CLIMÁTICAS INFLUENCIAM A AMBIÇÃO DA PROCURA DE UM DESENVOLVIMENTO SUSTENTÁVEL DO TURISMO NAS BERLENGAS

O objetivo deste questionário é perceber até que ponto as alterações climáticas podem afetar o destino turístico, sabendo que podem ter repercussões graves na paisagem natural e na vida selvagem caso não sejam tomadas medidas de mitigação ou adaptação no destino, para que os locais que dependem exclusivamente do turismo não desvaneçam.

Já esteve na Berlenga nos últimos 2 anos? Sim ☐ Não ☐ Tenciona lá ir? Sim ☐ Não ☐

Parte I

1.Sexo: Masculino ☐ Feminino ☐ **2. Idade:**_____

3: Com quem viaja? Com a Família ☐ Com Amigos ☐ Em excursão ☐ Companheiro(a) ☐

Sozinho(a)☐Outra ☐ Qual?_____

4.Local de residência:

Portugal: Código Postal: ☐ ☐ ☐ ☐ Estrangeiro: (País) _____

5.Nível de instrução:

Instrução Primária incompleta ☐Ensino Básico elementar (4.º classe/antigo 5.ºano) ☐
Ensino Preparatório/Antigo 1.º ciclo (6.ºano) ☐ Ensino Secundário/Antigo 2.º ciclo (9.ºano)☐
Ensino Secundário/Curso profissional (12.ºano) ☐Licenciatura/Frequência Ensino Superior☐ Mestrado ☐
Doutoramento ☐

Parte II

O Novo Paradigma Ecológico (NEP) **–** Os recursos naturais são delicados e limitados, portanto, a possibilidade de crescimento humano é limitado e o esforço humano para sobrepor à natureza pode levar a problemas para toda a humanidade.

1.Concorda ou discorda com as seguintes afirmações, sendo 1- "Discordo totalmente"; 2- "Discordo parcialmente"; 3- "Indiferente"; 4- "Concordo parcialmente"; 5- "Concordo totalmente"

	1	2	3	4	5
1.Estamos a aproximar-nos do limite do número de pessoas que a Terra pode suportar.					
2.O Homem tem o direito de modificar a natureza de acordo com as suas necessidades.					
3.A ação do Homem na natureza produz frequentemente consequências desastrosas.					
4.A capacidade inventiva do Homem permitirá sempre a vida no planeta Terra.					
5.O Homem está a abusar severamente do ambiente.					
6.O planeta Terra será sempre rico em recursos naturais se os aproveitarmos bem.					
7.Tal como a espécie humana, todas as espécies animais e vegetais têm o direito de existir.					
8.A natureza conseguirá ultrapassar sempre os efeitos negativos da industrialização.					
9.Apesar das capacidades especiais do Homem, este ainda está sujeito às leis da natureza.					
10.A tão falada "crise ecológica", associada ao mundo humano, tem sido muito exagerada.					
11.A Terra pode ser comparada a uma nave espacial, em que os recursos e o espaço são limitados.					
12.O Homem foi criado para controlar a Natureza.					
13.O equilíbrio da natureza é muito frágil e facilmente alterável.					
14.O Homem acabará por conhecer o funcionamento da natureza suficientemente bem para a controlar.					
15.Se as coisas continuarem como até aqui, uma catástrofe ecológica será inevitável.					

Parte III

1. Como encara as alterações climáticas? De forma positiva ☐ Indiferente ☐ De forma negativa ☐

2. Existem fatores que vão influenciar a indústria turística numa escala de tempo de 5 anos e 15 a 30 anos. Concorda ou discorda com as seguintes afirmações, numa escala de 1 a 5 (sendo 1- "Discordo totalmente"; 2- "Discordo parcialmente"; 3- "Indiferente"; 4- "Concordo parcialmente"; 5- "Concordo totalmente").

5 anos	1	2	3	4	5
As alterações climáticas podem ser consideradas como um novo fator estrutural da economia mundial.					
As alterações climáticas podem mudar a forma de promoção dos destinos de Sol & Mar e Inverno.					
As alterações climáticas podem ser associadas a consequências diretas ou indiretas à saúde humana.					
As alterações climáticas afetam os sistemas agrícolas e florestais com a subida das temperaturas.					
As alterações climáticas alteram os padrões de migração e atividades sazonais das espécies marinhas e terrestres.					
As alterações climáticas transformam de forma negativa o desenvolvimento sustentável de um destino turístico.					
As alterações climáticas influenciam a motivação do turista em visitar certos destinos turísticos.					
As alterações climáticas agravam a desigualdade social.					
As alterações climáticas possibilitam o surgimento de novas ideias tecnológicas mais eficientes e menos poluidoras.					
15 a 30 anos	**1**	**2**	**3**	**4**	**5**
As alterações climáticas podem ser consideradas como um novo fator estrutural da economia mundial.					
As alterações climáticas podem mudar a forma de promoção dos destinos de Sol & Mar e Inverno.					
As alterações climáticas podem ser associadas a consequências diretas ou indiretas à saúde humana.					
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As alterações climáticas agravam a desigualdade social.					
As alterações climáticas possibilitam o surgimento de novas ideias tecnológicas mais eficientes e menos poluidoras.					

3. Acha que é possível utilizar as alterações climáticas a favor do turismo local?

Sim ☐ Não ☐

Se sim, como? Numa escala de 1 a 5 (sendo 1- "Discordo totalmente"; 2- "Discordo parcialmente"; 3- "Indiferente"; 4- "Concordo parcialmente"; 5- "Concordo totalmente").

	1	2	3	4	5
Tornar a época alta mais ampla.					
Desenvolver novos produtos turísticos.					
Desenvolver novos mercados-alvo.					
Restringir o acesso aos turistas nas zonas mais sensíveis.					
Desenvolver ainda mais o turismo de praia.					
Promover elementos do destino, utilizando campanhas de marketing como "See it before it`s gone".					

4.Quais são as suas motivações que o (a) levam a visitar a ilha da Berlenga? Numa escala de 1 a 5 (sendo 1- "nada importante"; 2- "pouco importante; 3- "importante"; 4- "bastante importante"; 5- "muito importante")

	1	2	3	4	5
A fauna e a flora endémicas da Berlenga.					
Atividades e qualidade dos serviços prestados no destino.					
A hospitalidade da comunidade local.					
Por ser uma Reserva Mundial da Biosfera pela UNESCO.					
Por ser o único local de interesse na região de Peniche.					
Passeios de natureza.					
Convívio.					

5.Conhece a fauna e a flora da Berlenga? Sim ☐ Não ☐

6.Conhece a espécie emblemática da Berlenga (Airo)?

Sim ☐ Não ☐

Já a viu?

Sim ☐ Não ☐

7.Na sua opinião quais são os atributos que afetam a sua decisão para visitar as Berlengas?

(Assinale no máximo 5 com uma X, sendo 1 – "nada importante"; 2- "pouco importante"; 3- "importante"; 4- "bastante importante"; 5- "muito importante")

	1	2	3	4	5
Natureza.					
Segurança.					
A hospitalidade da comunidade local.					
Temperatura.					
Precipitação.					
Transportes.					
Infraestruturas.					
Atividades.					
Alojamento.					
Vida Selvagem.					
Custo.					

8.Que atividades praticou ou deseja praticar nas Berlengas?

Mergulho ☐ Visita às grutas ☐ Snorkeling ☐ Passeios pedestres ☐ Observação da fauna e flora ☐ Gastronomia ☐ Campismo ☐ Praia ☐ Nenhuma ☐ Outras ☐ Quais?_____

9.Tem boas práticas ambientais no destino?

Sim ☐ Não ☐

Se sim, Quais são as práticas de sustentabilidade do turismo que já realizou?

	Sim	Não
Consulta da Agenda 21 para o Sector das Viagens e do Turismo.		
Separação de resíduos para reciclagem.		
Avaliação do impacto da sua atividade no ambiente e no desenvolvimento local (pegada ecológica).		
Reutilização de produtos e embalagens.		
Preocupação em reduzir o consumo de energia.		
Utilização de energias alternativas.		
Controlo das emissões de gases de efeito de estufa para a atmosfera.		
Compra produtos locais.		
Compra produtos biológicos.		