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SMARTPARKS - NEW CONCEPTS ON NATURE CONSERVATION AND MANAGEMENT IN SMALL ISLANDS

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ABSTRACT

Due to their geographical framing as well as their morphological and ecological characteristics, small islands including ultraperipheral European regions and the SIDS (Small Island Developing States) are more vulnerable to certain phenomena that, in a serious and potentially irreversible way, threaten and compromise their sustainable development, with particular emphasis on their biodiversity. The planning and management systems of the Protected Areas have consequently to be adjusted to their specific context, so that they can ensure maximum effectiveness in space organization and fulfillment of inherent objectives. The core objective of the SMARTPARKS Project consists of the conceptual development (as well as future enforcement and validation through the development of a case study) of a Planning and Management System for the Protected Areas in Small Islands – Island Parks (applicable to the Ultraperipheral European Regions and the SIDS – Small Island Developing States) that can be integrated in Territorial Management Instruments in force on any island, archipelago or country and that takes into consideration all specificities of these insular ecosystems correcting or perfecting the insufficiencies or flaws already pointed out to traditional planning systems of Protected Areas.

RESUMO

Pelo seu enquadramento geográfico e pelas suas características de natureza morfológica e ecológica, as pequenas ilhas, entre as quais se incluem as regiões europeias ultraperiféricas e os SIDS (Small Island Developing States), são mais vulneráveis a determinados fenómenos que ameaçam e comprometem, de modo grave e potencialmente

irreversível, o seu desenvolvimento sustentável, com especial destaque para a sua biodiversidade. Os sistemas de planeamento e gestão de Áreas Protegidas têm, consequentemente, de ser ajustados ao seu contexto específico, de modo a assegurarem a máxima eficácia da organização e regulamentação do uso e gestão do espaço na concretização dos objectivos inerentes.

O objectivo central do Projecto SMARTPARKS consiste no desenvolvimento conceptual (e na sua posterior aplicação e validação através do desenvolvimento de um caso de estudo) de um Sistema de Planeamento e Gestão de Áreas Protegidas em Pequenas Ilhas – Parques de Ilha (aplicável às Regiões Europeias Ultraperiféricas e aos SIDS - Small Island Developing States), que possa ser integrado nos Instrumentos de Gestão Territorial vigentes em qualquer ilha, arquipélago ou país, e que tenha em consideração todas as especificidades destes ecossistemas insulares, corrigindo ou aperfeiçoando as insuficiências ou falhas já anteriormente apontadas aos tradicionais sistemas de planeamento de Áreas Protegidas.

INTRODUCTION

Due to their geographical framing as well as their morphological and ecological characteristics, small islands including ultra peripheral European regions and the SIDS (Small Island Developing States) are more vulnerable to certain phenomena that, in a serious and potentially irreversible way, threaten and compromise their sustainable development, with particular emphasis on their biodiversity.

Climate variability and changes, the proliferation of invasive exotic species, the increasing growth of tourist activity, natural catastrophes, the overexploitation of natural resources as well as the pollution and residue management are the main threats to sustainable development, to nature conservation and to small island biodiversity maintainability (Rietbergen, 2008).

Several case studies of "gap analyses" (Langhammer *et al*., 2007) have demonstrated that the geographical boundaries of protected areas rarely comprehend all main areas of greater biodiversity and therefore do not guarantee their total preservation and protection (Rodrigues *et al*., 2004), although they have played a very important role in the conserva-

tion of natural values and in biodiversity maintainability.

The effectiveness of Protected Areas regarding the associated goals of nature conservation and biodiversity maintainability has been widely studied and questioned. An even more central and core-based role of these spaces in the protection and preservation of biodiversity has been demanded (Hockings *et al.*, 2005).

The planning and management systems of the Protected Areas have consequently to be adjusted to their specific context (small islands in this case), so that they can ensure maximum effectiveness in space organization and fulfillment of inherent objectives. One of the reasons for this exact non-overlap between Protected Areas and Biodiversity Hotspots is the fact that the paradigm orienting the demarcation, classification, planning and management of Protected Areas has changed throughout the last decades. It was primarily dominated, according to Phillips (2003), by the concept of wilderness (protectionism elapsing from the landscape and ecological importance of the area, from the enforcement of such principles as non-disturbance and non-intervention by humans in the ecosystem), being considered "islands".

This position has gradually changed towards the so-called "new paradigm" that privileges the compatibility between human activity and the objectives of conservation and consequent appearance of new economic and cultural development opportunities associated to the protected areas, among which Ecotourism, Ecological Restoration of Ecosystems, the integration of protected areas in conservation networks, their full integration in Territorial Management Systems, and also the synergetic involvement of stakeholders and local population in achieving those same objectives.

It should also be highlighted the new emphasis given by IUCN (at the World Conservation Congress in Barcelona, 2008) to the concept of "geodiversity" and the need to promote and ensure the "geoconservation" in the policies regarding the planning and management of protected areas (Lima, 2007). This has been a clearly discriminated concept in what concerns the conception and enforcement of management instruments in

protected areas. Due to their geological and morphological specificity, small islands and their respective protected areas are fertile in shapes and geological locations that should be preserved and protected at the same level as the biodiversity.

For all these reasons it is fundamental to associate and integrate the planning and management of the Protected Areas Network into the planning and management of the island itself following a predominantly ecosystemic approach (SCBD, 2004) that considers the Protected Area as an integrating part indissociable from the Island's Ecological Structure and its Biophysical System (Vieira, 2007), reflecting the direct and indirect effects of the planning policies and territorial management measures enforced in the entire island.

It is fundamental to promote the synergy between the Management and Planning Systems in order to guarantee an effective planning that is associated to an effective management of Land, Coast and Sea Protected Areas of small islands, ensuring not only the conservation but also the appreciation of Island Park.

In what way should the Management and Planning System of Protected Areas in small islands (Island Park) be structured and operated so that it can face the threats and challenges that fall upon the already fragile and vulnerable insular ecosystems compromising the Sustainable Development of these Islands?

This is the central problem which the SMARTPARKS Project intends to solve.

The core objective of this project consists on the conceptual development of a planning and management system for protected areas in small islands, that can be integrated in territorial management instruments in force in any island, archipelago or country, and that takes into consideration all specificities of these insular ecosystems, correcting or perfecting the insufficiencies or flaws already pointed out to traditional planning systems of protected areas.

METHODOLOGICAL APPROACH AND EXPECTED OUTCOMES

The research team proposed for the SMARTPARKS Project shows the central need of multidisciplinarity for the development of the proposed project

joining scientific know-how with practical experience and also combining very experienced researchers with other quite promising youngsters giving, right from the start, all guarantees of rigorous and high quality work.

The team is led and composed by core elements that contributed to a radical change in the territorial planning paradigms in the Autonomous Region of the Azores (constituted by 9 small islands) through the accomplishment of the following events:

- Promotion of Lakes and Hydrographic Basins' Planning in the Autonomous Region of the Azores (through the research project "Classification of Azorean Lakes and Management Models of Hydrographic Basins", 2002-2005, Project POCTI 42554/ GEO/2001 that supported the elaboration of the Arrangement Plan of the Hydrographic Basin and Lake of Sete Cidades, pioneer in Portugal);
- Promotion of the Planning and Integrated Management of the Coastal Zone of 4 more small islands of the Autonomous Region of the Azores (through the elaboration of Coastal Zone Management Plans of the islands of S. Maria, Graciosa, Corvo e Flores);
- Promotion and Planning of the Integrated Management of Azorean Protected Areas, by creating the Regional Network of Protected Areas of the Autonomous Region of the Azores, its reclassification according to the IUCN Categories, creating the pioneer representation of "Island Park";
- Promotion of the Planning and Integrated Management of Protected Marine Areas of the Azores by creating the Azorean Marine Park and its future integration in the Regional Network of Protected Areas of the Autonomous Region of the Azores creating the pioneer representation of "Marine Park".

The multidisciplinary approach required to correspond efficiently to this challenge and reach all project goals is assured by SMARTPARKS team members' scientific knowledge and their practical experience in all strategic and thematic domains:

- Small Islands Land Planning and Management (Calado *et al*., 2007; Porteiro *et al*., 2007)
- Protected Areas Planning (Calado *et al*., 2009)

- Protected Areas Management (Gil, 2007; Porteiro *et al*., 2007; Gil, 2005)
- Integrated Coastal Zone Management (Veloso-Gomes *et al*., 2008; Calado *et al*., 2007; Botelho *et al*., 2004)
- Marine Spatial Planning (Botelho *et al*., 2008)
- Biophysical Characterization and Assessment (Gil, 2007; Gil, 2005; Borges, 2003)
- Biodiversity Assessment (Dionísio *et al*., 2007; Gil, 2005)
- Geodiversity and Geological Patrimony (Lima, 2007)
- Landscape Planning and Ecology (Fernandes *et al*., 2006)
- Environmental Impact Assessment (Fernandes, 2000)
- Environmental Strategic Assesment (Calado *et al*., 2003)
- Hydrological Resources Assessment (Gonçalves *et al*., 2008; Porteiro *et al*., 2007)
- Natural Hazards (Borges, 2003)
- Ecological Economics and Ecoservices Evaluation (Cruz *et al*., 2011)
- Public Participation (Silva, 2004)
- Public Perception (Rego *et al*., 2009)
- Geographic Information Technologies: GIS and Remote Sensing (Gil, 2007; Gil, 2005; Julião, 2001)

The innovation associated to the methodology to develop within the scope of the SMARTPARKS Project will be settled according to the following strategic axes:

- Assumption of "Small Islands" as unique and particular ecosystems whose management of Natural Heritage and Biodiversity Maintainability requires specific approaches and methodologies;
- Association and integration of the planning and management of the Protected Areas Network into the planning and management of the island itself following a predominantly ecosystemic approach (CBD, 2004) that considers the Protected Area as intrinsic and indissociable part of the Island's Ecological Structure and its Biophysical System, reflecting the direct and indirect effects of the planning policies and territorial management measures applied to the entire island;
- Adoption of the so-called "new paradigm" (Phillips, 2003) that privileges the compatibility between human activity and the objectives of conservation and consequent appearance of new economic

and cultural development opportunities associated to the protected areas, among which Ecotourism, Ecological Restoration of Ecosystems, the integration of protected areas in conservation networks, their full integration in Territorial Management Systems, and also the synergetic engagement of stakeholders and local population in achieving those same objectives;

- Reinforcement of the effectiveness of Protected Areas regarding the associated nature conservation and biodiversity maintainability objectives as well as the introduction of assessment methods for this effectiveness (Hockings *et al*., 2005) among which the "gap analysis" (Langhammer *et al*., 2007);
- Integration, within the planning policies and management measures to implement, of mitigation strategies and strategies to fight the greatest threats hanging over Small Island ecosystems (CBD, 2009): Climate Changes and Variability, Proliferation of Invasive Exotic Species, accelerated Growth of touristic activity, natural Catastrophes, Overexploitation of natural resources, Pollution and residue management;
- Integration of the "geodiversity" concept and the need to promote and ensure the "geoconservation" in the planning and management policies of protected areas (Lima, 2007).
- Integration and promotion of Public Engagement in all stages of the Planning and Management System of Protected Areas on Small Islands;
- Integration of the economic assessment and valuation concept of services rendered by the ecosystems (ecoservices) to support the promotion of stakeholder involvement and public engagement, as well as to support the cost-benefit analysis regarding planning policies and management measures to implement;
- Creation of a Geographical Information Decision Support System that assists the development of all stages of the Planning and Management System of Protected Areas on Small Islands (Island Parks).

The presentation of a proposal regarding the Planning and Management System of Protected

Areas on Small Islands (Island Parks) will be based on the study, conception and methodological development of each of the following 5 tasks:

1) Island Parks Characterization, Assessment and Diagnosis;
2) Island Parks Ecosystems Services Assessment and Valuation;
3) Island Parks Land Planning;
4) Island Parks Management and Monitoring Strategies;
5) Environmental Strategic Assessment of Island Parks Planning and Management.

If the project succeeds, the Planning and Management System to be developed is expected to contribute to a better and functional management of the protected areas, adapted to islands' specificities. Through public participation approaches, the project is also likely to contribute to a general increasing of acceptance level in relation to protected areas and to the engagement of stakeholders to the management measures.

CONCLUSIONS

The planning and integrated management of the protected areas that constitute the Island Park must take into consideration the use that man did of the territory, whether in the past or present, the current or predictable future impact, as well as the necessary means to achieve an optimal use of the space without compromising the objectives of nature conservation and biodiversity maintainability (and reinforcement).

Therefore, effective, positive and proactive planning and management means to understand which measures and actions are necessary to make the space sustainable, giving it a positive orientation inside the community, as well as in any project that may be carried out within the adjacent areas.

It is hence fundamental to promote the synergy between the Management and Planning Systems in order to guarantee an effective planning that is associated to an effective management of Land, Coast and Marine Protected Areas of small islands, ensuring not only the conservation but also the appreciation of Island Park. SMARTPARKS Project will try to answer to this challenge.

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