

MODELS OF PLANNING AND SUSTAINABLE DEVELOPEMENT IN PROTECTED NATURAL AREAS. CASE STUDY: RODNA MOUNTAINS NATIONAL PARK - ROMANIA VS. GARAJONAY NATIONAL PARK - SPAIN

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Abstract: Promoting sustainable development is essential in planning a geographical area in view of its touristic and economic exploitation, especially since in this case we deal with two protected areas of European interest and even global. This study aims to provide a comparative table between two mountain national parks in two EU countries, put in contrast, is presented as both private and common elements and a series of measures and suggestions for better preservation of this common heritage of humanity.

Key words: management, sustainability, protection, natural areas, conservation

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SOME CONSIDERATIONS ABOUT SUSTAINABLE DEVELOPMENT AND TERRITORIAL PLANNING

At the global level have been developed over 100 definitions of sustainable development, six of which are mentioned in the report „*Our Common Future*” the most complete of this defining sustainable development as „*development that allows the present needs without compromising the ability of future generations to meet their own needs*” (Brundtland Commission, 1987).¹

The inspirational and aesthetic values of fine examples of the beauty and bounty of nature lay behind the establishment of many national parks and other types of protected areas. More recently there has been increasing recognition of the range of the value of protected areas and of their contribution to meet the needs of society by conserving the world's natural and physical resources. These values range from protection of representative samples of natural regions and the preservation of biological diversity, to the maintenance of environmental stability in surrounding country. Protected areas can also facilitate complementary rural development and rational use of marginal lands, and provide opportunities for research and monitoring, conservation education, and recreation and tourism.

Most economic activities require the use of natural resources, leaving inevitably, and influence on terrestrial ecosystems. Excessive use of natural resources has led to a situation where many ecosystems can not restore or support and those who lose are all people who rely on them.

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¹ <http://worldinbalance.net/intagreements/1987-brundtland.php>, consulted at 25.07.2012

<http://istgeorelint.uroadea.ro/Reviste/Anale/anale.htm>

GENERAL FACTS ABOUT RODNA MOUNTAINS NATIONAL PARK AND GARAJONAY NATIONAL PARK

Rodna National Park

- location: situated in North of Eastern Carpathians, Romania, near the Romanian-Ukrainian border, between Maramures and Bistrita-Nasaud counties;
- establishment: since 1932 as National Reserve;
- since 1979 as Biosphere Reserve;
- since 1990 as National Park;
- surface: 46 399 hectares, 3,300 of which were declared Biosphere Reserve in 1979 (MNPMP, 2012);
- importance;
- mountains' geology and geomorphology but also to the presence of numerous fauna and flora species and glacial remains, many of them relict or endemic for the Romanian or even European territory (Beres, 1997).

Garajonay National Park

- location: In the centre of La Gomera Island, one of the islands in the Canary archipelago 400 km, west of the northwest coast of Africa and 30 km west of Tenerife Island, Canary Autonomous Region, Spain;
- establishment: since 1981 as National Park;
- since 1986 as Biosphere Reserve and World Natural Heritage Site (UNESCO);
- surface: 3,984 hectares of which all are integrated within the Biosphere Reserve ²
- importance:
 - „Laurel forest covers some 70% of this park, the presence of springs and numerous streams create a lush vegetation resembling that of the Tertiary period, which, owing to climatic change, has largely disappeared from southern Europe”. ³

ORGANIZATION AND MANAGEMENT

Rodna National Park

- the authorities responsible for the administration of the Park and for the management plan are The Administration of the Rodna Mountains National Park (APNMR), Ministry of Environment, Waters and Sustainable Development and National Woods Administration-ROMSILVA (MNPMP, 2012).

- the park consists of several areas with different degrees of protection, as follows:

1. Scientific reserves (access only for scientific research): Pietrosu Mare (3300 ha), Pietra Rea (409 ha) (MNPMP, 2012);
2. Strict protection areas (only research and education activities and ecotourism permitted): Lala - Bila (1361,9 ha), Corongiș (592,4 ha);
3. Full protection areas (special conservation areas) including pastures and forests. Through this management plan (2010) the full protection of PNMR has a total area of 26 172.9 ha, including the areas of careers Gușețel - 0.6 ha and Pietra Rea - 1.0 ha, where it is forbidden to restart work;
4. Sustainable conservation areas (buffer): Buffer zones, in the national parks called sustainable conservation areas, make the transition between areas with full protection and sustainable development, or external boundaries of the park. Its surface within RMNP is 14 558.1 ha;
5. Sustainable development zones: Sustainable development zones are areas where human activities are permitted, activities of investment / development, the priority of tourist interest, but with the principle of sustainable use of natural resources and preventing any significant adverse effects on biodiversity.

In this category entering the rest of the area which is limited to outside by the national park boundaries and to the inside by the sustainable conservation area boundaries.

² www.lagomera.es, consulted at 25.07.2012

³ <http://www.unep-wcmc.org/medialibrary/2011/06/28/7f6c40dd/Garajonay.pdf>, consulted at 25.07.2012

Garajonay National Park

- „the authorities responsible for the administration of the Park and for the management plan are Municipal (six municipalities) in the Province of Santa Cruz, the Institute for the Conservation of Nature (ICONA) now within the Ministry of the Environment.

- the National Park comprises a forest which spreads into each of the island's municipalities; here is a buffer zone of 4,160 ha” .⁴

The Park has been zoned into (Bridgewater et al., 1994):

1. Reserve zone (covering 2035 ha and is split into three sectors) with restricted access;
2. Restricted Use zone (858 ha), allowing limited traditional access and use;
3. Moderate Use zone (891ha), where the environment has suffered some degradation and is used for recreation and education;
4. Special Use zone (110 ha) which consists of small and scattered areas mainly on the periphery, and is used for visitor facilities. An operative plan is available, detailing the specific objectives annually (ICONA, 1995);
5. In addition to the director, there is a park technician, four interpreters, six rangers, and two administrators (ICONA, 1995).

COMMON FEATURES OF RODNA AND GARAJONAY NATIONAL PARKS

1. Both are National Parks and Biosphere Reserves;
2. Both are focused on mountain areas;
3. Unique elements of flora and fauna at national or European level;
4. Structured in several areas with different levels of protection;
5. Are managed by its own administration under the coordination of the Ministry of Environment;
6. Are surrounded by residential areas with a significant artistic heritage;
7. Are in two European Union member states, therefore have common elements of protection legislation derived from European legislation;
8. Both promote ecotourism and eco-activities in order to ensure a sustainable development.

DIFFERENCES BETWEEN RODNA AND GARAJONAY NATIONAL PARKS

Rodna

1. Maximal altitude: 2303 m (Pietrosu Rodnei Peak);
2. Geomorphology and landscape: Predominant crystalline rocks and glacial relief;
3. Surrounded by lower mountains, mountain depressions and plateaus;
4. Placed within a continental area;
5. Continental mountainous climate;
6. Rich hydrological network, including glacier lakes and mineral springs;
7. Karst landscape and caves;
8. Coniferous forests dominated by elements of flora and fauna continental Dacian, Black Sea and Balkan;
9. Not yet a Heritage Site but due to its 36 endemic species (Botnariuc, 1983) of flora and fauna and a total of over 7000 (more than Danube Delta) is expected to be declared as one.

Garajonay

1. Maximal altitude: 1487 m (Pico Garajonay);
2. Geomorphology and landscape: Predominant volcanic rocks and volcanic relief;
3. Surrounded by slopes and volcanic plateaus;
4. Placed within an island area;
5. Subtropical humid climate;
6. Well developed hydrological network and hot springs (Garcia-Santos, et al. 2005);
7. No karst relief;

⁴ http://www.eoearth.org/article/Garajonay_National_Park%2C_Spain, consulted at 25.07.2012

8. *The essential feature is the Laurisilva canaria which occupies about 70% of the Park and is dominated by the fern and moss-floored forest of Canary laurel Laurus azorica, draped with lichen, the principal reason for the Park's World Heritage status;*⁵
9. World Natural Heritage Site since 1986.

SWOT ANALYSIS

Rodna National Park – SWOT Analysis

Strengths

- Natural rich diversity of ecosystems (more than 7000 species of plants and animals);
- Many landforms types due to the height of more than 1600 m from the base to top, geological diversity and external modeling agents, especially glacier forms. Grouping glacier complexes on a relatively small area creates a set of special landscape value (Gorduza, 1983);
- Natural wild landscapes scarcely touched by human activities. Remoteness from major urban centers has provided a relative protection in the human impact (Buta & Buta Ana, 1979);
- Rodnei Mountains Massif is available for pastoral activity, forestry, tourism, being crossed by numerous forest roads and radial paths, so very accessible;
- Rodna is one of Romania's important karsts massive and most important of the Eastern Carpathians;
- Close to very important ethnographic and cultural rural regions (Maramures, Bucovina, and Nasaud);
- Ecological education of young generations;
- Some visitors were aware of the park and its objectives, information taken mostly from the park website.

Weaknesses

- Dumps from closed mines (currently). This activity was gradually closed, between 2004 - 2007, so that the surface fleet remained only traces of the economic activities;
- After 1989 the Borsa OS, even on the surface of Mare Pietrosu scientific reserve, were illegally cut large areas of forest, giving a look desolate area;
- Following the restitution according to Law 1/2000 municipalities have drawn up management plans for forest areas they hold, but some of them are consistent with the MO 552/2003;
- One problem is that recent studies of forest-pasture pastoral municipalities in Bistrita-Nasaud dates from 1986, and for forest management plans, pastoral Borsa municipality was established in 1994, their updating is required;
- Currently, most of the local population still lacks a clear picture of the activities, scope of the park and knows its objectives especially those related to biodiversity conservation. The park is part of the population perceived as a restriction for some of their economic activities.

Opportunities

- Awareness is higher in rural schools and high schools in the area because there have been several awareness and information campaigns organized by APNMR. Only in 2005 there were a total of 10 seminars attended by 235 guests, 19 meetings on environmental education with a total of 1300 participants, 2 press conference attended by 35 representatives from the media;
- Schools are open for partnership with the park, either because of material needs and innovative support, either because the need for environmental education in schools. There are a number of eight Darwin clubs in eight schools in established communities bordering the park;
- Environmental education of children has an effect on the family and wider social community. The benefits are to promote awareness of sustainable use of resources, biodiversity conservation, increase the number of tourists in the area, transforming students and teachers in Darwin clubs coordinators „ambassadors" of the Park;
- European funds for conservation and sustainable development projects such as ecotourism, ecologic agriculture and traditional crafts.

⁵ <http://www.unep-wcmc.org/medialibrary/2011/06/28/7f6c40dd/Garajonay.pdf>, consulted at 25.07.2012

Threats

- Cutting of forests that have the effect of increased turbidity avalanche and mountain streams during periods of heavy rainfall;
- Poaching and other economic harmful activities for the environment like mining or wood exploitation;
- One effect is felt by some caves their devastation (P. Schneider's Baia, P. Cobasel) in order to extract the „*flower of mine*“ commercial;
- One can say that in some areas there is overgrazing and pasture drastically reduce biodiversity, there is invasion of species not consumed by animals (pig hair - *Nardus stricta*), reduce forage species in pastures, there is competition for food with wild animals , thus disturbing wildlife activity;
- Sheepfolds near or within the park area, affecting the natural ecosystems and landscape;
- Piles of sawdust stored in particular along the flowing waters, are evidence of deforestation and are a permanent source of pollution.

Garajonay National Park - SWOT Analysis**Strengths**

- A remarkable natural heritage. The Park harbors one of the largest continuous areas of laurisilva forest (Banares & Barquin, 1984);
- The Park lies within a Conservation International-designated Conservation Hotspot, a WWF Global 200 Eco-region, a WWF/IUCN Centre of Plant Diversity and a Birdlife-designated Endemic Bird Area;
- *Historically, several measures have been taken to preserve Garajonay's ecosystem: a ban on grazing (1942) and tree felling (1964); prohibiting collection of dead leaves that protect soil; and protection of birds by Royal Decree No.3181 of 1980 (MAEE, 1985);*⁶
- The budget available for the sustainable development of local communities (over 2 mil. Euro);
- Accessibility by air, and sea from the continent;
- Good environmental education of the locals.

Weaknesses

- Following European colonization, the forest cover changed dramatically. According to the 1879 entry in the Register of Public Property forest cover totaled 11,385 ha. Assuming these figures to be accurate, forest cover has been reduced by about 65% in just over 100 years, mainly by encroachment for agriculture and grazing, timber plantations and fire;
- There are several settlements located at the Park's boundary including El Cedro, Meriga, Epina, Las Hayas, El Cercado, and Igualero. Local people continue to use certain Park areas that are traditionally associated with annual fiestas or pilgrimages;
- Berber population (Guanche) and its culture has disappeared in the last decades due to a lack o interest of the local authorities.

Opportunities

- A genetic rescue program for plants at risk of extinction was initiated in 1984 (ICONA, 1985), and was followed in 1991 by a plan to revive some of these species. A research program made a thorough inventory in those areas that have experienced some degradation, as well as studying the flora, fauna, hydrology and climate;
- Administration is carried out by a management board comprising representatives from local government, universities and ecologists, their duties being circumscribed in law;
- Management objectives, as identified in the management plan, enacted by Decree 1531 in 1986 by the Ministry of Agriculture, Fisheries and Food, include: restoration of degraded areas; conservation of genetic resources; eradication of introduced species, especially pine and eucalyptus; fire prevention; interpretation and education.

⁶ <http://www.unep-wcmc.org/medialibrary/2011/06/28/7f6c40dd/Garajonay.pdf>, consulted at 25.07.2012

Threats

- Mass tourism, approximately 450,000 visitors enter the Park annually, though most only stay for the day;
- The southern and western sections of the Park continue to be threatened by deforestation, forest fires, and grazing. More than 500 ha of natural vegetation have been replaced by commercial plantations of exotic species such as Canary and Monterey pine;
- There are also small populations of feral cats, dogs and rats, and introduced species such as rabbits and parrots;
- A low level of local participation in the Park planning and management;
- Existence of some urban areas around the park with a fast growing population and therefore increasing anthropogenic pressure;
- Possible natural disasters due to its location and climate.

PROPOSALS TO IMPROVE THE MANAGEMENT OF PARKS AND SUPPORT THEIR SUSTAINABLE DEVELOPMENT

- Preserving the uniqueness of the landscape;
- Conservation and biodiversity protection;
- Sustainable development of the local settlements by promoting environment friendly activities and non aggressive tourism forms (ecotourism, cultural tourism, leisure tourism, rural tourism, education activities);
- Community involvement in park activities;
- Park image transmission within the neighbor area and abroad;
- Study and promoting traditional methods of land use;
- Exchanging experiences on sustainable management of natural resources;
- Cooperation to solve problems related to natural resources;
- A clear and strict legislation on environmental protection;
- A higher level of responsibility and environmental education especially among youngsters.

CONCLUSIONS

Since the first national park was created at Yellowstone in the USA in 1872, over 8500 protected areas have been established worldwide. Virtually all countries have seen the wisdom of protecting areas of outstanding importance to society, and such sites now cover over 5% of Earth's land surface.⁷

Nowadays, unfortunately, many protected areas are only on papers and are facing real problems as pollution, overexploiting, demographic pressure and local authorities, local communities and international organisms should cooperate and taking active measures before some species disappear or ecosystems being irreversibly damaged. Rodna and Garajonay National Parks are an example in this way of protecting, conserving the nature and the local cultural heritage by promoting sustainable activities and so to ensure that the next generations will enjoy the same heritage and to valorize the nature not as a national economic resource but as a world patrimony that belongs to all humanity. Both National Parks are facing its own threats, Rodna - mining and pasturing exploitation, Garajonay - mainly tourism pressure, but a good management could provide economic sustainable development of local communities and a good natural conservation. Anyway, Garajonay National Park is a UNESCO site and enjoys of a better protection both of international and European institutions and the local community, which is involved more actively in its protection, because they became aware of its importance for a sustainable development than any other economic activity. Rodna is still a new establishment and it's facing the lacunas of legislation and a lack of education of the local communities that are more interested in fast economic benefices, like wood exploitation, than to ensure a long term development by promoting ecotourism, ecologic agriculture and traditional crafts.

⁷ http://www.yale.edu/sangha/CICB/CICB_HTML/CICB_TH3.htm, consulted at 25.07.2012

Aknowlegments

This study aims to present the sustainabile development strategy and management inside and around a protected natural area by analyzing two case studies, two natural parks from two European Union member states. We have chosen comparable situation of two mountain national parks and geographical features but with different management and different way of exploitation in order to analyze the situation „in the mirror” and to better stress the positive and negative aspects of each case. This study also wants to stress the contribution of the local authorities and the local community in preserving the natural environment and to develop and maintain traditional activities and promoting a sustainable tourism.

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