



QUANTITATIVE AND QUALITATIVE DATA ON PROTECTED AREAS IN ROMANIA

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Abstract Romania has one of the most important biodiversity at European level, both quantitatively and qualitatively. Much of this biological diversity is preserved within declared protected natural areas all over the country, which are heterogeneous both in terms of typology and content. Ecosystems/habitats diversity is complemented by the remarkable diversity of species. Romania has continuously participated to the international environment politics, signing and ratifying the most important conventions, resolutions, declarations and environmental agreements. Based on these aspects, the need arises to declare new protected areas to increase the area occupied by them at the national level. This is because we found in many parts of our country located natural areas, especially in the high mountain area requiring immediate and sustainable protection.

Key words:

Protected areas,
biodiversity, ecosystems,
habitats,
preserve

JEL Codes:

L83, Q20, Q57

1. Introduction

In accordance with the National Report on the State on Environment in 2012 developed by Ministry of Environment and Climate Changes and National Environmental Protection Agency, Romania's biodiversity is one of the most remarkable in Europe. It is important at global, regional, national and local level.

So, Romania is characterized by a high level of biodiversity, manifested both in terms of number of species, habitats and ecosystems that they form. As a consequence of its geographical position, Romania enjoys the existence of a unique biodiversity, both at the level of the ecosystems and species but also at genetic level.

The natural and semi-natural ecosystems cover 47% of the country. There were identified and characterized 783 types of habitats-13 coastal habitats, 143 specific to humid areas, 196 habitats specific to pastures and hay fields (approximately 2000 km² of grasslands have been included in the national system of protected areas), 206 forest habitats (31% of forests are included in the national network of protected areas), 90 specific habitats of dunes and rocky areas and 135 farmland habitats- in 261 areas analyzed through the country.

2. Qualitative elements on natural protected areas in Romania

Habitats in Romania are characterized by a specific composition of flora and fauna components and are influenced by different biocenoses or edaphic and climate factors. The influences of the arid climate from the east part and to the ocean in the west of the country and the climate differences between the plain and mountain relief imposed by altitude, have led to a large number of habitats. Another factor that determines the wide variety of habitats in Romania is represented by the chemical composition of rocks in the substrate (soil, subsoil).

Romania's territory includes in a relatively equal proportion, the three geographical units – plains, hills and mountains, with a great diversity of climatic and hydrological conditions which differentiates a number of about 52 eco-regions with a variety of terrestrial and aquatic ecosystems – specific to coastal and littoral areas of the Black Sea, grasslands, hills, mountains, lakes, streams and meadows, the dry or humid areas, including the ones specific to the Danube Delta. Here we find the largest compact area with reeds in the world and over 5,400 species of flora and fauna species and

30 types of ecosystems a ranked three in the world in terms of biodiversity (after Barrier Reef and the Galapagos Archipelago). Its swamps are a unique natural heritage, with high biodiversity and many species of birds (over 3,000 pairs of pelicans - representing over 80% of European livestock and 60% of total global pygmy cormorants).

Our country has a unique natural heritage composed of the Carpathians (65% of cross-Carpathian region), as well as one of the most important humid areas in Europe – the Danube Delta (the second largest in Europe). It should be noted that Romania holds 30% of carnivore species in Europe and also about 300 000 ha of virgin forests. According to the report "Study on estimating populations of large carnivores and the wildcat in Romania (Ursus arctos, Canis lupus, Lynx lynx and Felis silvestris) in order to maintain a favorable conservation status for setting the number of strictly protected animals which can be hunted in the 2012-2013 hunting season ", which can be accessed on the website of Ministry of Environment and Climate Change, in 2012 a number of 5786-6546 brown bears, wolves, between 2501 to 2932, Eurasian wildcat 1200 - 1435, and 10500-13000 wildcats, were estimated, representing a large number of the population of these species of large carnivores on the European continent.

Another important aspect is the presence in the group of mountains Retezat Godeanu-Țarcu the last intact forest landscape in the temperate climate of Europe.

Romania has a huge speleological potential. We have a small country but full of underground holes. Even if we have no records of depth, certainly Romanian caves beauty can compare with those of France, Spain, and America. The explorations continue, hoping to find new goals, anxious to complete the map of our planet. In Romania there are about 12 500 inventoried caves, most small and medium usually located in remote areas in high mountain areas and their periphery, many with design options for tourism. Areas like Bicaz, Boilers of the Danube, The Natural Bridge Ponoarele, the karsts plateaus and caves in the Apuseni Mountains, Banat Mountains and Plateau Mehedinti are known not only nationally but also internationally. Among these the Cave Movile - the only ecosystem in the world that operates solely based on chemosynthesis and has an impressive diversity of over 35 unique species.

In the draft of National Strategy and Action Plan for Biodiversity 2013-2020 are presented in Romania the habitat types in number of 783 in 261 areas across the country.

Table 1. The main types of habitats in Romania and their share

The main types of habitats	Number	Share (%)
Coastal habitats	13	5,0
Wetlands	89	34,1
Grassland	196	75,1
Forests	206	78,9
Swamps	54	20,7
Rocky/ Sands	90	34,5
Agricultural	135	51,7

Source: National Strategy and Action Plan for Biodiversity Conservation 2013-2020-Draft-www.mediu.ro

In accordance with the National Report on the State on Environment in 2012 developed by Ministry of Environment and Climate Changes and National Environmental Protection Agency, due to its greatly diverse habitats, Romania has a very rich fauna hosting 105 mammal species, 19 amphibian species, 25 reptile species, 216 fish species, 410 birds' species.

Romania has become a member of several organizations and structural components from the network of environment protection and conservation: BIRDLIFE, ECONET, EMERALD, GREEN CROSS etc.

3. Quantitative elements on natural protected areas in Romania

Regarding the natural protected areas, among the Member States of the European Union, Romania has the largest bio-geographical diversity (five of the 11 European bio-geographical regions, such as Alpine, Continental, Pannonia and the Black Sea steppe), this being mostly in a good conservation status. Also, due to the geographical position of Romania, flora and fauna have Asian influences from the north, the Mediterranean and southern European continental components from the north-west.

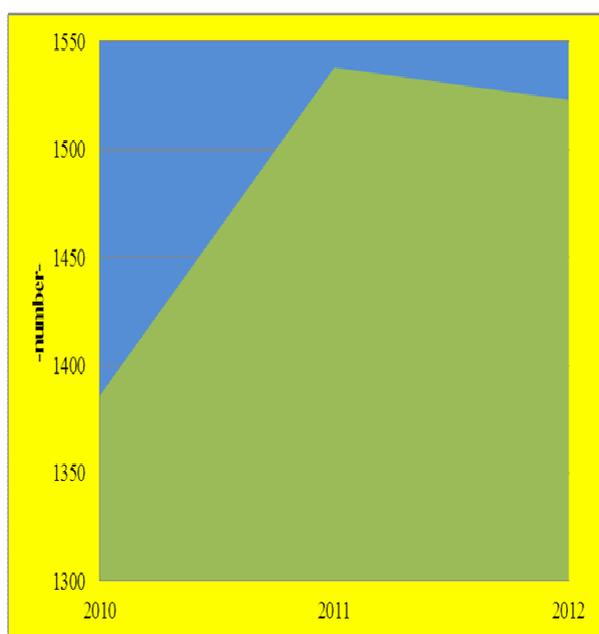
Table 2. The natural protected areas from Romania, during the period 2010-2012

Categories of natural protected areas	2010	2011	2012	Percentage in the total level of the year 2012
	-number-			(%)
Scientific reservations	79	64	44	2,89
National parks	13	13	13	0,85
Monuments of nature	230	206	206	13,53
Natural reservations	661	699	699	45,90
Natural parks	14	15	15	0,97
Biosphere reservations	3	3	3	0,20
Humid areas of international significance	5	8	12	0,79
Avifaunistic special protection areas	108	148	148	9,72
Sites of international significance	273	383	383	25,15
TOTAL	1386	1539	1523	100

Source: Romania in numbers 2011, National Institute of Statistics, Bucharest, 2011; The National Report of the State of the Environment for 2011, 2012, The Ministry of Environment, The National Environmental Protection Agency, Bucharest, 2013

Although in 2012 there was an increase of 137 in the number of nationally protected areas, compared to 2010, the largest increase in the recent years, the authorities in the field do not make an effort in protecting and preserving the natural potential exception only in the last year building roads crossing various protected areas and bringing serious damage to the flora and fauna in these areas. The greatest increase was the number of sites of international significance, from 273 in 2010 to 383 in 2012.

Figure 1. The number of the natural protected areas from Romania, 2010-2012



Other positive developments are seen in the natural reserves (+38 areas), Humid areas of international significance (+7 areas), Avifaunistic special protection areas (+40 areas). Negative developments can be identified for scientific reservations (-35 areas) and monuments of nature (-24 areas).

The declaration of the new natural park Cefa (lies on the border with Hungary and Romania and has 5003,80 ha), its importance and value of the existing resources within its territory, is a step in the preservation of natural areas in our country.

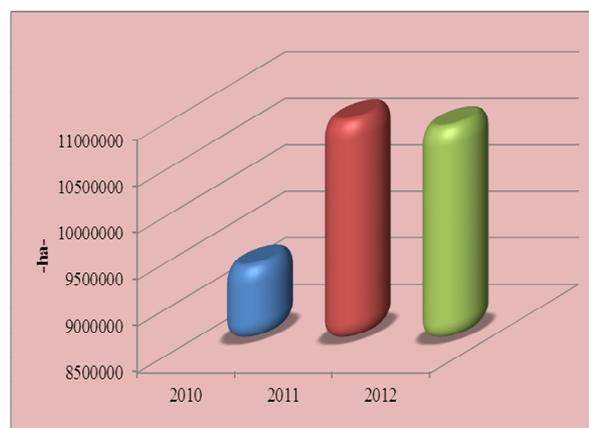
Table 3. The surface of natural protected areas from Romanian during the period 2010-2012

Categories of natural protected areas	2010	2011	2012	Percentage in the total level of the year 2012
	Surface -ha-			
Scientific reservations	310536	218145	24654	0,23
National parks	316271	319495	316872	2,94
Monuments of nature	84448	15406	15413	0,14
Natural reservations	273056	346933	347320	3,22
Natural parks	763894	772803	772810	7,16
Biosphere reservations	664446	664446	664446	6,16
Humid areas of international significance	616571	680858	804497	7,45
Avifaunistic Special protection areas	2988713	3694394	3698732	34,27
Sites of international significance	3284092	4152152	4147368	38,43
TOTAL	9302027	10864632	10792112	100

Source: Romania in numbers 2011, National Institute of Statistics, Bucharest, 2011; The National Report of the State of the Environment for 2011, 2012, The Ministry of Environment, The National Environmental Protection Agency, Bucharest, 2013

In terms of Occupied Areas, the Natural Protected Areas in Romania registered an increasing trend with 1490085 ha during the analyzed period, the largest being the Sites of international significance (+863276 ha) and Avifaunistic Special protection areas (+710019 ha).

Figure 2. The surface of natural protected areas from Romanian, 2010-2012



In 2012, the Natural monuments are occupying the smallest area (15413 ha) as they are represented by species of flora and fauna mainly, such as the chamois, garofita Pietrei Craiului, Edelweiss etc..

Of the three Reservations of Biosphere from Romania, the Danube Delta occupies 580000 ha (declared in 1990) and is in direct coordination of the Ministry of Environment. Retezat occupies 38 047 ha (declared in 1979) and Pietrosul Mare (Rodnei) - 47304 ha (declared in 1979). These latter two are considered national parks in terms of surface as they fit in this category also. It should be noted that the surface of Rodna and Retezat national parks coincides with the reservation of biosphere.

Of the 13 national parks, Domogled-Cerna Valley has the biggest concerning the occupied area, followed by Rodna Mountains and Retezat. The smallest national park is Buila-Vânturarița.

Romsilva is the administrator of 12 from the 13 national parks.

Of the 15 declared natural parks in Romania, Maramureș Mountains have supremacy in terms of area occupied by natural parks in Romania, 133419 ha. Meanwhile, Cefa is the smallest natural park from Romania, with a surface of 5003 ha.

Romsilva is the administrator of 11 from 15 natural parks of the country.

Also, Romsilva has in his custody, through Forest Reservations, over 200 natural monuments in forests.

4. Current state of tourism in natural protected areas in Romania

In general, *the landscape is in a good state of preservation*, being altered in some areas by human activities such as deforestation, motorized access in scientific reservations, and poaching, grazing and intensive construction of holiday homes. To these interventions it is added the mentality of Romanian people against the concept of protected area, the type of behavior to be taken when traveling inside a national park, the attitude towards ownership of land located within a national park. Even if the land is owned by local people in the scientific reservations, they do not understand, being educated in this regard to work towards protecting the biodiversity, the sense of ownership is much stronger than the conservation and transmission in its current form the tourism resources in these areas. One reason may be the communist area when the ownership was dispossessed for a long time and therefore this feeling increased. However, the lack of public awareness campaigns regarding the impact of their actions on the environment causes such behavior. Analyzing the conflicts in natural protected areas of our

country, we see the predominance of poaching with major effects on the number of chamois copies and motorized access and camping areas for tourists, illegal dumping of garbage in the scientific reservations. Solving these problems requires significant financial resources to control and prevent such actions, for the reconstruction of affected areas such as the dumps are stored, the presence of rangers in the key points on the trails, installing multiple boards in high traffic areas of tourists, because most of them were destructed. Finally, the application of the existing legislation on the environmental protection may reduce the number of offences in the mountains of Romania.

That part of the total national parks and natural pasture which is represented in terms of ownership, belonging to municipalities, arises major disputes in this area such as deforestation, building approvals data for various holiday homes even inside or on the edge of the park, construction of roads inside the park etc. These pastures belong to local communities, the resident population using them for grazing animals in summer. To avoid the intensive use of these natural resources, we must find alternatives for local communities to obtain revenues.

In the Management plans of protected areas, even if it states that hunting and fishing are prohibited, although there were found poaching actions, the consequence being the reduction of the number of valuable species, threatened or endangered species and even with extinction, which is requiring actions for repopulation. To this state also contributed the large number of dogs from the sheepfolds in the area. In addition, it was reported the construction of numerous roads by illegal poachers, sometimes in areas of scientific research reserves, which prohibited any activity, much less the construction of access roads used by locals and tourists to access the sightseeing in the park or pasturing, for walks on weekends or even for different enduro competitions. All these vehicles bring serious damage to the flora and fauna in the park, pollution (gas, waste, fireplaces, intensive collection of flora etc.) resulting with irreversible effects on the biodiversity.

Also, the natural parks and natural caves are often destroyed in order to extract „mine flowers” and turning them into commercial objects. To all these it is added the household garbage dumped at the edge of glacial lakes and sheepfolds located near the rivers, gathering berries, herbs, muscles and mushrooms.

5. Conclusions

We can anticipate a positive development of tourism in protected areas and an increase in the interest of

such travel. Obviously, the quantitative developments will be accompanied by a series of qualitative changes. The most important may be nominated:

- the increased demand for tourism in protected areas, motivated by the role of these areas in the conservation of natural ecosystems in most countries of the world;
- the diversification of the offer, starting from the fact that the protected areas offer numerous opportunities to spend the holidays, responding to more and more varied needs;
- improve the services offered both in terms of content of holidays and also comfort;
- the active participation, motivated by the need for involvement in the conservation, awareness and promotion of protected areas;
- the promotion of the environmental impact forms (the ecotourism, rural tourism, green tourism, etc.) and the activities with an educational role.

In addition to these general or particular trends, there can be others, specific to each geographical area, country, region or type of habitat.

Keeping in Romania stable and viable populations of large carnivores can be a source for restocking in other areas of Europe where the species are endangered.

Increased investment for infrastructure development (road, rail and river, tourism, energy production and transport etc..) without appropriate measures to minimize /eliminate impacts on biodiversity can be considered an activity with an impact on biodiversity, in the context of the current economic development.

A serious problem is related to the construction of wind farms that can affect populations of migratory species (birds and bats) if the location is inappropriate, due to the lack of detailed maps in terms of species migration corridors and areas with wind potential. A special case is represented by Dobrogea, an area with high wind potential at the same time it is crossed by the main migration routes of birds who are nesting in the Delta or are transiting this area.

In order to mitigate the negative effects of human actions on the protected areas from Romania, there are required some actions, such as the involvement of volunteers in the management of protected areas in Europe, providing an alternative education and helping to improve the access to those who, regardless of age, acquire new skills in the field of nature protection. There is a need to improve the infrastructure in these parks by building visitor centers and information points, installation of information boards. Also, several initiatives were undertaken in schools close to national and natural parks that need to be repeated to obtain

favorable results and involvement of pupils and students in preserving the biodiversity in parks. Finally, the action is to prevent the degradation of the landscapes through the co-participation of custodians, the mountain gendarmerie, police and the representatives of the forest districts.

Local communities are the first by themselves and in their interest to work and help the development of tourism in protected areas, bringing many benefits to the communities. Among these benefits there are listed:

- minimizing the negative impact on the nature and culture, impact which could destroy the protected area;
- educating the tourists about the importance of preservation;
- highlighting the importance of the responsible operators, to cooperate with the population and local authorities in order to satisfy the community needs;
- providing funds for the conservation and management of protected areas;
- the increased need for zoning the regional tourism and planning the flows of tourists for the natural areas which will become eco touristic destinations;
- the need for social and environmental studies and also long-term monitoring programs to assess and minimize the impact;
- struggle to maximize the economic benefits of the host country, community and local businesses and especially of local people from natural protected areas;
- ensuring that the tourism development does not exceed a certain limit of social and environmental change determined by the researchers in collaboration with the residents;
- using infrastructure developed in harmony with the natural and cultural environment, minimizing the use of fossil fuels and conserving the vegetation and local fauna.

In addition to its negative effects, tourism can contribute to a raise of the living standards and the local community, being an importance source of income, the administrators of touristic areas facing an attraction of workforce involved in the conservation projects and management of the natural sites.

It can be considered that the presented confirm the existence of a valuable potential and some steps already taken in the process of setting up an integrated system of protected areas.

At the same time, the detailed analysis have confirmed, in many cases, a superficiality in managing these areas, reflected in the fact that either are not

approved and therefore not operational or the lack of implementation capacity of the administration's (human, organizational, financial etc.) to create the management plans, monitoring and continuously adapting them.

In the draft of the National Strategy and Action Plan for Biodiversity 2013-2020 there are provided the following general lines of action in the medium term, for the period 2013-2020:

1. Stopping the biodiversity decline represented by the genetic resources, species, ecosystems and landscapes and restoration of the degraded systems by 2020;
2. Integrating the biodiversity conservation into all sectoral policies by 2020;
3. Promoting knowledge, traditional practices and innovative methods and clean technologies that support measures for the conservation of biodiversity in support of sustainable development by 2020;
4. Improve communication and education of biodiversity by 2020.

Therefore, in terms of protected areas there must be ensured the consistency and effective management of the national network of protected areas in parallel with the sustainable use of the biodiversity components available nationwide. To this we add the necessity of establishing an institutional structure, with regional branches which have the object of coordinating the management of protected natural areas.

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