

APUSENI NATURE PARK – A PARK FOR NATURE AND PEOPLE

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Abstract: *Apuseni Nature Park – a park for nature and people.* The aim of the paper is to present some general features about one of the richest and most interesting, from natural point of view, protected area from Romania. The mixture, sometimes until intimacy, between the natural factor and the anthropic one determine the appearance of one of the most interesting natural areas not just for Romania but for Europe also.

Key words: Apuseni Nature Park, protected area, human factor

Introduction

The varied landscape in the Western part of Romania and the Eastern part of Hungary contains distinctively valuable ecosystems from the point of view of the biodiversity conservation. Among these, an important part is to be found in the ecosystems in Apuseni Mountains, Romania.

Apuseni Nature Park is part of the Apuseni Mountains which have the smallest surface among all Romanian Carpathians and the lowest altitude (highest altitude at 1,848 m), but they have a complex geologic richness, which gives them an extraordinary variety of landscapes, a remarkable hydrological system, various soils and a rich flora and fauna.

Due to the importance of the karst, the setting up of a national park in the present nature park area was proposed since the 1930s. In the last decades, the importance of the area was further stressed by the fact that this is one of the last few remaining areas with large scale forested karst of such dimension in Europe and some plant species have here their Southern-most distribution limit, which is due to the climate conditions created by the karst relief. Before designating the park, a number of 52 nature reserves and nature monuments had been declared on this territory in the last century. Apuseni Nature Park have been established by law in the year 2000, with a total surface of 75,786 hectares, covering territories from three counties, Bihor, Cluj and Alba.

Geology and geomorphology

The park surface covers important territories from 2 mountain groups Bihor Mountains and Vlădeasa Mountains situated in central area of Apuseni Mountains.

In ANP, the rocks are proportionally distributed as follows: limestones 58.2%, sandstones and conglomerates 22.3%, crystalline schist 17.4% and magmatic rocks 2.1%.

Limestone and dolomite rocks prevail in the Bihor Mountains, with the Padiș Plateau (1,250m) as a subunit. The relief is characterised by a sequence of high and gentle crests and narrow plateaus, as a result of long erosion, formed during several geological stages. The surface karst so called “exokarst” includes forms such as the endoreic basin of Padiș – Cetățile Ponorului, karren plains Bătrâna – Călineasa, chaotic sink hole plateaus Lumea Pierdută and Groapa de la Barsa, deep pans Băileasa, karst valleys Gârdișoara – Gârda, canyons Ordâncușa, Galbena, defilés like Arieșul Mare, and, not at last, two of the deepest sink holes of Europe: Cetățile Ponorului and Coiba Mare.

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Fig. 1. Map of Apuseni Natural Park (source: Apuseni Natural Park Administrations)

The underground karst so called “endokarst” includes over 1,500 caves and potholes with special morphogenetic characteristics, this area being one of the most important one from this point of view at national level. Some of the karst superlatives are listed below:

- Valea Rea Cave – 20 km length, over 35 minerals described as components of some speleothemes place this cave among the top 10 caves of this kind on Earth, the greatest underground water fall in perfect vertical position of Romania 82 m high, diameter: 10 m.
It is the largest cave of Romania entirely developed in dolomites.
- V5 Pothole - this is the deepest cavity of Romania (level difference: - 642 m), development: >10 km. It includes the largest underground unitary space of our country (Paul Matos hall) of 1,200,000 m³ and 415 m in length.
- De sub Zgurăști Cave - this cave hosts the largest permanent underground lake of Romania, 65 m long, 20 m wide, 12 m deep.
- Pârâul Hodobana Cave - this is the most gallery-made (labyrinthine) cave of Romania and one of the most labyrinthine in the world. The cave has 22,142 m of mapped galleries, situated at an extension of over 820 m.
- Tăuz Karst Spring - syphon no. 2 is the deepest explored underground passage of Romania with a depth of -85 m.
- Cetățile Ponorului Cave - this cave has the highest cave entrance of Romania: 76 m.
- Scărișoara Glacier - the largest underground glacier of Romania with an ice volume of about 75,000 m³.
- Sighistel valley - the highest density of caves in Romania (200 caves on a surface of 10 km²)

Hydrology

The hydrological network belongs to the basins of Crișul Negru, Someșul Mic and Arieșul Mare valleys.

Crișul Negru basin has a surface of 158.8 km², 44.2% of the park and covers the western side of the park. Someșul Mic basin covers a surface of 40.5 km², 11.3% of the park and is represented by two large streams: Someșul Cald and Belișul which unite in the Fântânele reservoir with a surface of 826 ha and 225-250 million m³ of water volume.

The third hydrographic basin from the park, Arieșul Mare basin, has a surface of 160 km², 44.5% from the park. Arieșul Mare river springs from the Vârtopeș pass and has as main tributary streams: Cobleș, Gârda Seacă and Popasul brooks and Albac river.

Climate

The climate is typical mountain one, wet and cold, average anual temperature is 3°C.

Apuseni Mountains represent one of the rainiest regions of our country. In the high area of Apuseni there are over 1,400 mm of rainfalls. This is due to the clouds brought by western winds from the Pannonian Plain which are precipitating here.

Flora, Fauna and specific habitats

Here can be found over 1550 species of plants, over 1200 invertebrate species and over 120 vertebrate species identified so far. As for the cavedwelling fauna, there have been identified 78 species. Due to the specific conditions in the diverse ecosystems existing within the Apuseni Mountains Natural Park, there has been identified a large number of endemic species, such as: the Transylvanian lilac (*Syringa josikaea*), the sconite (*Aconitum calibrotroon* ssp *skarisorensis*), the cottage pink (*Dianthus julii wolfii*), the violet (*Viola*

josi), many types of mouse ear (*Hieracium bifidum* ssp *biharicum*, *H. sparsum* ssp *porphiriticum*, *H. kotschyianum* etc.), *Edraianthus kitaibelii*, a plant here described for the first time and *Melampyrum biharensis*.

Vegetation layer has an mosaic like structure, spruce and beech forests in alternance with hayfields and vast pastures. On small surfaces in some clearings on the mountains plateaus, small scale agriculture is practiced by locals using plant species well adapted to mountain climate conditions like potatoes, barley, etc.

The inversion of temperature within the so called „closed depressions” as small valleys on karst plateau, determine the presence of spruce on their bottom, while on the neighbouring tops there grows deciduous trees, a typical example for this being Padiș karst basin.

Due to some special microclimate conditions, in some places there grows a Northern type vegetation at an unusually Southern altitude along with which there grow some alpine species which grow here at an uncommon low altitude, the most known example being *Syringa josikaea*.

A distinctive places depending on the abundancy of water are the peat bogs from the high areas, generally located in the spruce forests, developed either on a siliceous substratum in almost horizontal areas (Valea Izbuclor), either in karstic areas where the bottom of the dolines is waterproffed by clay (Padiș, Barsa, Onceasa). Here can be found a carnivore plant named sweet grass (*Drosera rotundifolia*), a protected plant, but also mugo pine (*Pinus mugo*) a small coniferous which normally grows on the top of the mountains.

The most important vertebrates species are: brown trout (*Salmo trutta fario*), rainbow trout (*Salmo irideus*), brook trout (*Salvelinus fontinalis*), grayling (*Thymallus thymallus*), bullhead (*Cottus gobio*), viper (*Vipera berus*), wall lizard (*Podarcis muralis*), slow worm (*Anguis fragilis colchicus*), smooth snake (*Coronella austriaca*), Aesculapian snake (*Elaphe longissima*), ring ouzel (*Turdus torquatus*), crossbill (*Loxia curvirostra*), nutcracker (*Nucifraga caryocatactes*), hazel grouse (*Tetrastes bonasia*), raven (*Corvus corax*), lesser spotted eagle (*Aquila pomarina*), golden eagle (*Aquila chrysaetos*), buzzard (*Buteo buteo*), kestrel (*Falco tinnunculus*), red-footed falcon (*F. vespertinus*), goshawk (*Accipiter nisus*), chamois (*Rupicapra rupicapra*), that had been introduced into the upper basin of Crisul Pietros – Boga valleys, wolf (*Canis lupus*), lynx (*Lynx lynx*), bear (*Ursus arctos*), roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*), wild boar (*Sus scrofa*), wild cat (*Felis silvestris*) and polecat (*Mustela putorius*).

Out of the total of 29 bats species identified in our country, 19 live in ANP, according to Vertebrates Red List of Romania, two species of bats (*Myotis dasycneme* and *Myotis daubentonii*) are considered critically endangered, another 8 species are endangered, the other 6 are vulnerable.

The specific micro-habitats of karst areas have caused the evolution of a large number of endemic, cave-dwelling species, most of them can be found only here.

Local communities

The park includes administrative surfaces of 16 communes and properties belonging to 25 communes. As for the number of communities on the ANP territory, 53 localities and 3 holiday villages are included entirely, and another 8 localities, situated on the parks borders, are included partly. More than 10 000 inhabitants are living and working here.

The socio-economic situation make this park one of the most inhabited one in Romania and one of the most difficult to be managed according to the diversity of human activities on his territory.

The human communities natives to the Apuseni include the Moti, a group nationally important in their keeping of customs and local traditions.

The architectural heritage of the native people, are represented by monuments of the so-called “*wood civilization*”, monuments that together with the natural ones realize an organic part of the unique landscape of the Apuseni Mountains, a landscape that is both natural and humanized through spirituality or through the mark of some creative talents.

It has to be stressed that ethnic unity has led to the maturation and persistence of the spiritual behavioural and mentality-related communion.

Park management

The park includes through its internal zonation different management categories, starting with the most restrictive ones (scientific reserves, category I of IUCN), where human activities are totally excluded, up to the most permissive management category of protected areas in Romania (nature park, category V of IUCN), in which the development of traditional communities living in harmony with nature is promoted.

The visitors are provided with recreation possibilities and tourism, integrated in the traditional life style of the local communities.

The park administration does not own any land in the park, and its role is to analyse, plan, supervise and control the park area. Apuseni Nature Park Administration is a sub-unit of the National Forestry Administration – Bihor Forestry Directorate

The management plan of the park was elaborated in the period of 2005-2006 for an integrated planning of the actions needed to preserve biodiversity, karst and landscape, as well as the local cultural values.

Conclusion

On the EU map of European bioregions (ETC 2002), the Apuseni mountains are an easily visible, distinct sub-region. In fact, the Apuseni mountains constitute an important link between two major biogeographical regions in Europe: the Carpathian mountains as part of the European Alpine region and the Pannonian region, represented for instance by the national parks of Hortobagy and Körös-Maros in eastern Hungary.

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