

## EVALUATIONS AND PROPOSALS CONCERNING THE MANAGEMENT OF THE NATIONAL PARK APUSENI MOUNTAINS FOR THE SUSTAINABLE DEVELOPMENT

### EVALUĂRI ȘI PROPUNERI PRIVIND MANAGEMENTUL PARCULUI NAȚIONAL MUNȚII APUSENI ÎN VEDEREA DEZVOLTĂRII DURABILE

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**Abstract:** The paper presents the evaluation of the actual needs for initiating certain management actions in the National Park Apuseni Mountains, explains the current problems, weak and missing points for each management theme. The paper also considers the evaluations of biodiversity and landscape conservation, the evaluation of tourism activities and their influences on the environment.

**Rezumat:** Lucrarea servește la evaluarea nevoilor actuale de a întreprinde anumite acțiuni de management în zona parcului, explică problemele curente, punctele slabe și lacunele pentru fiecare temă de management. Lucrarea va lua în studiu evaluarea conservării biodiversității și a peisajelor, evaluarea activităților de turism și influențele acestora asupra mediului.

**Key words:** park, management, biodiversity, landscape  
**Cuvinte cheie:** parc, management, biodiversitate, peisaj

#### INTRODUCTION

The Apuseni Natural Park is located in the west part of Romania, in the central-north-western part of the Apuseni Mountains, being placed partly in the southern part of Bihor Mountains and in the northern part of Vlădeasa mountains. Geographically speaking, it is situated between 46°26' – 46°45' N lat și 22°32' – 23°5' E long.

The Apuseni Natural Park has a surface of 76.064 ha, territorially being placed in 3 counties: Cluj (40,15%), Bihor (31,92%) și Alba (27,92%).

From territorial-administrative point of view the Apuseni natural Park is placed in 25 villages.

Short description of the management purpose, goals and objectives

The Apuseni Natural Park is a protected area declared with the purpose of protecting the landscape and ecological and cultural diversity, on a representative sample from the national territory of Romania and Apuseni Mountains.

The principles from the basis of the elaboration of this plan are those of the adaptable ecosystemic management, these principles ensuring an integrated approaching of the general problematic of protection, conservation and development in the same time in order to analyse and apply in time the most efficient management measures.

The purpose

Generally speaking, due to the importance of the cortex and and some cortex phenomenon, characteristic to this area, the great Romanian researcher Emil Racovița proposed the construction of an national park since the 4th decade of the XXth century, in the current area of Apuseni natural park.

Starting with the '50's, as a result of other major discoveries in exploring the endocortex, the scientific value of Bihor mountains` cortex is fundamented with much more tenacity and the importance and in the same time the necessity of protecting this area is

growing.

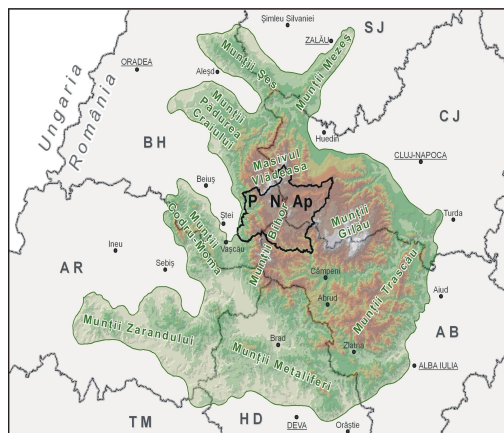


Figure 1. The location map of Apuseni Natural Park

Another element of the area's importance was emphasized in the last decades, this being one of the latest natural regions from Europe of wooded cortex of such dimensions. Much more, this area hosts plants founded here in the southeast point of their habitat in the northern hemisphere, due to the microclimate conditions made by the cortex configuration. The microhabitats, characteristic to the cortex areas determined the evolution of a great number of troglodiant endemites.

According to OUG 57/2007, Art. 5 alin. 2 and Anexe 1, concerning the regime of the protected natural areas, the conservation of the natural habitats of wild flora and fauna, the goal of the Apuseni natural park is "the protection and conservation of some landscaping ensembles in which, the interaction in time between human and nature actions created a distinguished area with a great landscaping and/or cultural value, having very often a great biological diversity".

The major objectives of the management are:

- maintaining an harmonious interaction between the local human communities and nature by protecting the terrestrial and aquatic landscape and continuing the traditional using of the fields, the construction practices and the social and cultural manifestations;
- maintaining and stimulating the way of life as well as the traditional economic activities based on the sustainable usage of the resources, the traditional culture;
- maintenance of the ecosystems' diversity, the species and the landscape;
- the elimination, where is necessary, and the prevention of using the field and the activities which, are inappropriate as intensity and/or character;
- the insurance of the opportunities for the visiting public, through projection of the recreation and touristic activities, such way that it equals the essential qualities of the area
- the encouragement of the scientific and educative activities which, contribute to the well-being of the local communities, the growth and the consolidation of the public support for the existence and well-functioning of the protected area;
- to provide the natural resources and quality services for the local communities.

## MATERIAL AND METHOD

The research material is contained of the management subjects which, make the plan and the method is contained of the analysis and the evaluation of the actual needs for taking

some management actions in the park, explains the current problems, the weak points and the lakes for each subject.

The evaluation of the habitats and biodiversity` conditions

The Apuseni natural park combines ecosystems of a great value from the biodiversity` conservation point of view with the variety of the cortex phenomenon and the traditional activities, it demanded the making of the natural park which, has as goal its protection and conservation.

Among the mountainous ecosystems, the most important is the wooded cortex one, common in this area, hosting plant species and protected animals at national as well as international level. Numerous caves and other cortex elements give a unique note, having a special value from a scientific as well as touristic point of view.

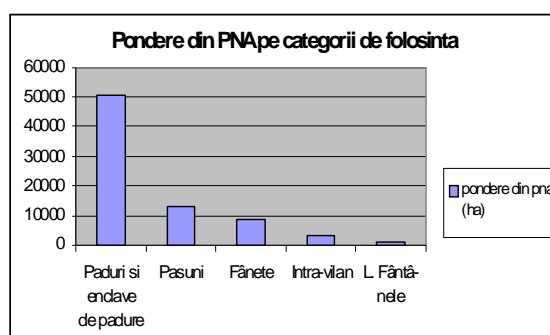


Figure 2. The percentage of the surfaces from Apuseni natural park on usement categories

Although the touristic potential of Apuseni Natural Park is one of the most important in Romania, it is not well-emphasized, yet. This delay is caused mostly by the fact that the local communities are not aware of the quality and the ecologic value of the area, the lack of an adequate infrastructure, of some various services given to demands, as well as a low investments and payment capacity of the local communities.

The tourism is one of the activities which, can use the resources of the local communities for their and the citizens well-being and well-functioning. In the same time, if it's not responsible, the tourism can be a destructive factor for the local resources and the community itself. In this way, an important indicator is the fact that tourism development on an international level has grown in the last decades due to northern and western countries prosperity.

Evaluation of the recreation and tourism activities

There are about 200.000 tourist who, yearly visit Apuseni natural park (40% of them are strangers). Taking into consideration the great variety of relaxing activities possibilities and the multitude of touristic interests sites this number is extremely small, especially that, almost half of the tourists are the ones who visit Bears Cave located at the edge of the park although, compared with other parks in Romania, the number is much higher. The restricting factor for the number of visitors is due especially to a low quality of the access roads, the small capacity of the infrastructure accommodation and meals and, still, an old development of the visiting services (guidance, subject trips, adventure programmes, etc).

Also, a big number of visitors are concentrated all year long in Chiscau - Bear Cave area and, in winter time, in Vartop holiday village area where, the facilities for practicing alpine skiing are. In Alba and Cluj counties area the cultural tourism and the agro tourism have a higher percentage.

Taking into consideration that the two access roads in the middle of the park are about to be renewed (until the summer of 2007 crossing the park on the access county road was an real adventure) we can anticipate an explosion of the visitors` number which, might increase 2 to 5 times only in the first few years. The quantity and quality increase of the accommodation capacity in the areas of sustainable development of the human activities in the park in the same time with the development of the services and increase of the touristic offer (much more tour-operators become interested in Apuseni natural park area) will be crucial for a good organization of touristic activities.

## **RESULTS AND DISSCUTIONS**

Threats concerning the landscape and biodiversity

In Apuseni Mountains we can found a mosaic of habitats in different threat stages from the less affected to the most degraded ones.

The main threats which can affect the biodiversity of the park, habitats and the landscape are:

Damage of the landscape

The landscape in Apuseni Mountains was for hundreds of years affected by the human intervention. The mosaic of forests pastures and dispersed villages modified a little in time, in spite of some repeated interventions in the past on a low scale and which, are considered now as traditional and sustainable utilizations of the ground. This balance between human and nature changed a lot after 1920 and then, again, in the last 15 years when, exploitation of the forest took dramatic proportions (often being illegal) and the management of the pastures was damaged.

Nowadays, there are new threats of the landscape because of the new techniques of exploitation the wood and the multiple ways of development of the modern public infrastructure (public and forest roads, high voltage lines, cell phones pillars, etc), holiday houses, touristic facilities (pensions, summer camps, camping's in wild areas, ski centres, etc). Not their unique appearance makes real problems in Apuseni area but, the abundance, speed and the intensity of this investment which, might lead in a few years to the massive damage of the typical characteristics of the landscape.

Extra exploitation of the forests

The exploitation of the forest resources is basically made respecting the forest regime. It is possible that certain exploitations to affect areas with a special value from biodiversity point of view, in certain areas being also affected the function of forest protection. Such an example is the forest located in the hydrographical reception basin of Molhas from Izbuc the exploitation which could endanger the hydrographical regime of the swamp` habitats included in nature 2000.

In some locations from Apuseni Natural Park, several clear cuttings had been performed before the forests reached the optimum level and the forestations, which followed those clear cuttings, were not always executed according to the forest regime. Similarly, the cuttings and the extraction of the cut trees have been and still are performed, in some places, with inadequate and ancient equipments, which destroy the soil and the aesthetics of the scenery. The illegal cuttings, which have been and still are practised in some areas of Apuseni Natural Park, can lead to the exceeding of the production capacity of the forest areas.

The practice of receiving in inappropriate conditions of the parqued floor after exploitation is also a threat of biodiversity of the forest ecosystems. If leaving the stubs and the branches in the forest after exploitation, can be a positive aspect, leading to the increasing of organic material quantity as support for many species which, are dependent on the existence of the deadwood, the rests often left near the platforms after loading and transportation of the

bolts are abandoned along the roads ore, worse, thrown in dolines ore in river beds. Besides the side effects which, they have upon cortex microhabitats from the bottom of the dolines (relatively difficult to quantify), as well as on the river beds and the aesthetic aspect of the landscape, sometimes, this remainings, carried by the waters boosted by rain, also cause economical damage, destroying roads, bridges and increasing the destruction process.

Tabelul 1.

The main characteristics of the forest stock structure

Characteristics	Species										TOTAL
	FA	MO	BR	GO	CA	PIN	PAM	DR	DT	DM	
Composition (%)	57	23	6	4	3	1	1	1	4	-	100
Production class	III <sub>3</sub>	III <sub>3</sub>	III <sub>0</sub>	III <sub>3</sub>	IV <sub>5</sub>	III <sub>2</sub>	III <sub>1</sub>	III <sub>0</sub>	III <sub>4</sub>	III <sub>2</sub>	III <sub>3</sub>
Consistency	0.73	0.7	0.7	0.79	0.71	0.8	0.82	0.77	0.76	0.83	0.73
Medium age-years	87	81	99	49	73	36	55	43	59	23	81
Current cr.mc/an/ha	5.3	6.1	5.1	5.2	3.6	6.3	2.5	7.2	4.2	6.4	5.4
Volum mediu mc/ha	276	327	420	132	138	133	170	191	172	35	277

Abandoning the dust which, results from wood conversion, on the edge of the roads, throwing it in the rivers damages the aquatic ecosystems through affecting filtrating organisms and the breathing system of the fish ore other animals with bronchial breathing, but also through the alteration of the chemical substratum. Although burning the dust is not a solution, being a waste of energy, still, given the difficulty of making profitable business of making good use of it in the area, in this moment, at least the ash coming from its eventual burning could be used as fertiliser.

The placing of the wood piles along the roads in the park, as well as keeping it in these locations for a longer period of time brings about serious damages to the entire landscape in the park.

Likewise, the dangers represented by natural causes are strongly related with the exploitation of the wooden material. Thus, the strong wind can produce massive falls of significant forest areas in which, initially irrational cuttings were performed. This threat of biodiversity of the forest ecosystems is always present in Apuseni Natural Park, frequent wind falls having taken place in the last few years, including the forests located in the absolute protection area.

#### Over- and under-grazing

The impact of over-grazing with sheep and cattle is very obvious, especially in some areas of the park like P-na Călineasa, Depr. Bălileasa etc. These effects are visible through the damage of the soil, its compaction by compression and the radical change of the chemical composition through pollution with organic substances coming from dejections which, interfere with the water underground. In the same way, as a result of the over-grazing, the composition of the vegetation is changed by proliferation of some nitrophile species of plants (*Urtica dioica*, *Rumex alpinus*).

On the other hand, stopping the grazing in some areas of the park, traditionally used as pastures, leads to the flower diversity decreasing during the process of ecological succession of transforming the pastures in forest ecosystems.

The intensive recreation, uncontrolled activities, especially in the sensitive areas of the park.

Visiting some areas in the park takes place in a way not very much sensitive to the

needs of the landscape. Driving the car on the pasture to these areas, only with the goal of having a "picnic", listening music very loud, making new fire places, abandoning wastes on the camping places leave visible and invisible fingerprints in the scenery.

In the last years ATVs and snowmobiles were added to the cross country cars and bikes, with which the visitors explore the beauties of the scenery by avoiding the permitted access roads in favour of high adrenaline activities in more dangerous areas. These practices, still difficult to control, have a high destructive potential, physically and aesthetically, throughout damaging the paths and tourist routes. A higher destruction level, in the steeper areas, consists in damaging of the pastures. The noise is a lot disturbing than the one produced by the cars and unsettle the wild life in these areas. The presence of these means of transport in restricted areas of the park both in winter and summer doubles the negative effect.

The inadequate behaviour of a certain visitor is often used as an excuse by others, this way causing several damages to the natural habitats. These manifestations were scarcely controlled up to the present. There are some places in Apuseni natural park where, this type of problems are more obvious: P-na Glăvoi area, Padiş Boarding area, Boga Valey, Sighiştelului Valey, Răchițele waterfall etc.

#### Hydrotechnical management plans and water pollution

After the building of barrages which created the existent accumulations (Fântânele lake, upstream and downstream Boga lakes) modifications were made in the structure of the habitats, species composition and the landscape due to fragmentation of the aquatic habitat, the passing from flowing water to hydrological regime and due to vertical storing of the new lakes. According to their sizes they have a bigger or smaller impact which, is difficult to determine bearing in mind the fact that there were no studies made on biodiversity before their construction (in the '70s), which are meant to serve as comparison for evaluating the potential impact, which these anthropic management plans have had upon the environment.

Especially in the sensitive area from Padiş plateau but in other areas as well like Ocoale – Scărișoara plateau, several gatherings of underground waters without an appropriate territorial planing and hydro-geological important studies, according to the method "first arrived-first to be served". These can sometimes produce dramatic modifications of water circulation through cortex systems. In the same way in some areas (like Gârda de Sus, Padiş, Căput, etc.) the problem of eliminating the domestic water is present without previous cleaning, which infiltrates back in the cortex this way determining a diffused pollution of the water, which does not efficiently infiltrates in the cortex systems and sometimes comes out at the surface as drinking water. The lack of an efficient system of distributing the drinking water and cleaning of the domestic waters are major problems, which in some areas become restrictive factors for their development and can bring about irreversible damages of the underground ecosystems.

Torrent regularisation works, in general and transversal works made in water beds in particular seriously affect the fish species by fragmentation of the habitat. This way, those species of fish, which cannot perform long jumps, to exceed the transversal limits, are concerned: (*Cottus gobio*), (*Cobitis taenia taenia*), (*Eudontomyzon danfordi*), (*Gobio uranoscopus*) and *Misgurnus fossilis*.

Another problem, no less important, which affect the flowing water landscapes is the mechanical pollution of them with wastes coming from the local's houses but to a large extend from the tourists as well.

#### Uncontrolled and excessive use of the natural resources

Uncontrolled and excessive use of the natural resources like mushrooms, medical plants, forest fruits and other forestry products is presently done extensively in some areas especially near the park limits but not only that.



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