MANAGEMENT OF THE HIGH CONSERVATION VALUE FORESTS (HCVF) IN PRODUCTION UNIT V DUMBRAVA – CRIŞUL REPEDE GORGE, ALEŞD FOREST DISTRICT

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Abstract

The lack of forest protection in Romania in the past has resulted in the deforestation of 3.5 million hectares. In the 20th century and early 21st century, forest protection measures were imposed in protected natural areas, natural parks, national parks, Natura 2000 sites, Biosphere Reserves, through legal regulations, laws, government ordinances. Within the area of Aleşd Forest District, Production Unit V Dumbrava District, management units that contain high conservation value forests (HCVF) were inventoried and selected, for which special measures of conservation and sustainable management were established.

Key words: forests, values, high, conservation, sustainable management

INTRODUCTION

The area of Crişul Repede Gorge between Şuncuiuş and Vadu Crişului is declared by the Committee for the Protection of Natural Monuments attached to the Romanian Academy, as of 1955, a mixed nature reserve, harbouring 10 natural monuments of geological and paleontological significance, 20 caves, 15 rare, endangered, vulnerable plant species, natural monuments, and 21 rare, protected animal species.

MATERIAL AND METHOD

The study material are the forests of the reserve stretching over an area of 247 hectares, comprising management units (mu) located on the right side of Crişul Repede: mu 1A, 1B, 1C, 1D, 1E, 1F, 2A, 2B with enclaves E1, E2, E3, mu 3A, 3D, 4A, 4B, 5A, 5B, 6, 7A, 7B, 8, as well as those located on the left side of Crişul Repede; mu 94A, 94B, 95, 96N1, 97A, 97B, 97C, 97N1. The buffer zone of the reserve comprises the plots located on the plateau at the upper limit of the right slope: mu 3b, 3C, 170A, 170B, 170C, 171A, 171B, 172A, 172B, 172C, 173I, 173B, 173c, 173d, 173L.

The management units selected and which contain high conservation values have been checked in the field in order to determine the existence of rare species and ecosystems to be protected, as well as their conservation status.

After going through the entire study material, a list of forests containing high conservation value was drawn up. Only management units comprising forests with high conservation values: HCVF 1.1, HCVF 1.2, HCVF 1.3, HCVF 3, HCVF 4.1, HCVF 4.2, were selected from the list, in a table.

For each HCVF, special conservation measures were established, taking into account the recommendations of the "Practical Guide for the Identification of High Conservation Value Forests" ("Ghid practic pentru identificarea pădurilor cu valoare ridicată de conservare") by Stanciu et al. (2004), and information from the works of: Abrudan et al. (2006, 2009), Biriş (2004, 2005), Biriş, Veen (2005), Biriş et al. (2002), Burescu (2013, 2014, 2015), Cenuşă (2001), Doniţă et al. (2001, 2005), Gafta, Mountford (2008), Ioraş, Abrudan (2007), Jennings et al. (2003), Radu et al. (2004), Stanciu et al. (2004), Stăncioiu (2008), Vlad et al. (1997).

RESULTS AND DISCUSSION

1. Forest protection and management in the past

In the distant past, during the reign of King Decebalus, as well as after the conquest of Dacia by the Romans in year 106 A.D., about 80% of the territory of Greater Dacia was it covered by mostly virgin natural forests with very high biodiversity. The first deforestations occurred during the rule of the Roman Empire on small areas in the lowlands and hills. The pace of deforestation increased slightly during the Ottoman rule and accelerated during the 19th century when about 3 million hectares were cut, to which an additional deforestation of 1.3 million hectares was added in the period between the two world wars 1919-1938.

According to Giurgiu (2001), deforestations in Romania can be summarized as follows:

- 2 million hectares cut by the end of the 19th century;
- 0.7 million hectares cut until the beginning of socialist rule;
- 0.5 million hectares until year 1990.

In the rush for profit, the ruthless cutting of virgin and quasi-virgin natural forests exploded after the 1989 revolution in Romania, reaching huge levels kept hidden to the public by the profiteers for a long time.

2. Motivation for the protection and conservation of forests in Romania

The grandeur of virgin forests containing high conservation values impressed the Frenchman Hüffel G. (1894), who recommended the conservation of such forests by applying the forest selective cutting system. Biologists Borza (1925-1939), Botezat (1935) responded to this initiative, taking steps towards the protection of virgin forests that contain high conservation values. Thus, in 1930 the "Natural Monuments Protection Act"

was issued. In 1935, Retezat National Park was established, which comprises mostly virgin forests. 15 natural reserves enjoy the same legal status: Slătioara Forest, Giumalău, Bucegi, Beusnița Domogled, Pietrosul Rodnei.

During the communist period, Cetățile Ponorului Forest, Galbenei Valley, Crișul Repede Gorge and Pietrele Doamnei were declared protected areas.

After the fall of communism in 1990, 13 national parks were established, totaling an area of about 394 000 ha, whose secular forests contain high conservation value and benefit from total protection. Forests in the national parks: Bucegi, Piatra Craiului, Cozia, Retezat, Rodna, Călimani, Ceahlău, Cheile Bicazului-Hasmaș, Semenic-Cheile Caraşului, Domogled-Valea Cernei, Cheile Nerei-Beuşnita, Apuseni, the Danube Delta.

3. Guidelines for the selection of forests with high conservation value

In addition to biologists, foresters who have fought with scientific arguments for the protection of virgin and quasi-virgin forests with high conservation value, another factor that has contributed to the protection of forests is that of forest management. A large number of forests that contain high conservation values (rare species of plants, animals, rare natural ecosystems of community interest) or those with important functions in protecting the soil against erosion, the regulation of the precipitation patterns, were withdrawn from the sales market according to the Practical Guide for Identification developed by Stanciu, Mihul, Dinicu-Iorgu, Abrudan, Biriș, Drăgoi, Dragoș, Doniță, Filip, Ferkö, Tamaș, Comănescu-Paucă, Sandor, Tănăsie, Tatole (2004), on the basis of the following selection criteria:

- forests for the protection of rare, threatened, endangered, jeopardized species, national endemic, regional endemic species, glacial relicts, tertiary relicts; HCVF 1.2; HCVF 1.3;
- secular virgin and quasi-virgin forests; HCVF 3;
- forests established as scientific reserves, for the protection of Forestry Genetic Resources and ecofund; from seed reserves; HCVF 1.1;
- forests for the protection of natural monuments or of those located in karst areas; HCVF 1.1;
- forests that contain or are included in rare, threatened ecosystems; HCVF 3;
- forests which provide protection for water sources or those located on the direct slopes of reservoirs; HCVF 4.1;
- forests located on lands with steep slopes (30-40°), scree, cliffs with a role in maintaining soil stability, erosion control; HCVF 4.2;

- forests located around avalanche aisles; HCVF 4.2;

- forests located at high altitude, at the upper limit of forest vegetation, which regenerate under very difficult circumstances; HCVF 4.2.

4. Forest protection and management at present

In the forests that contain rare plant and animal species or which are included in rare national ecosystems of community interest, all tree cutting is prohibited except special conservation cutting, which is only allowed on strictly limited areas.

4.1. Mode of management of forests with high conservation value for plants

For the protection of flora and biodiversity, with reference to the rare, vulnerable, endangered, relict, endemic species, natural monuments, forests with high conservation value (HCVF) will be managed, according to Burescu (2013), in compliance with the following requirements:

- prohibition of forestry works of any kind, of the exploitation of secondary forest products, of grazing, of hunting in HCVF 1.1;

- prohibition of the cutting of trees and of the exploitation of secondary forest products HCVF 1.2, HCVF 1.3, containing rare, threatened, endangered, endemic, relict species, at least 3 species from the red lists of Boşcaiu et al. (1994), Dihoru, Negrean (2009), Oltean et al. (1994), namely: *Selaginella helvetica, Asplenium ruta-muraria, Ceterach officinarum, Cystopteris fragilis, Quercus pubescens, Sorbus aria, Rhamnus saxatilis ssp. tinctorium, Dianthus carthusianorum ssp. puberulus, Silene heufelii, Aconithum anthora, Pulsatilla montana ssp. dacica, Saxifraga paniculata, Amygdalus nana, Thymus comosus, Jurinea mollis ssp. transsylvanica, Centaurea stoebe, Koeleria macrantha, Sesleria rigida, Helictotrichon decorum, Cleistogene serotina, Stipa capillata, Allium flavum, Allium senescens (A. montanum), Fritillaria orientalis, Ruscus aculeatus, Anthericum ramosum, Iris aphylla, Iris graminea, Iris sibira, Cephalanthera longifolia, Cephalanthera rubra, Cephalanthera damasonium, Epipactis helleborine, Epipactis microphyla, Epipactis atropurpurea, Platanthera bifolia, Limodorum abortivum, Neottia nidus-avis, Spiranthes spiralis, Primula elatior ssp. leucophylla, Teucrium montanum, Thymus comosus, Gentiana cruciata, Gentiana ciliata, Orchis mascula, Orchis morio;*

- preservation of forests with low consistency such as HCVF 1.2, which harbour *Ruscus aculeatus* undergrowth, *Sorbus aria* shrubs, *Amygdalus nana*, herbaceous species, *Fritillaria orientalis, Iris aphylla, Iris graminea, Allium flavum, Allium senescens, Helictotrichon decorum*, as in the management units mu 5A, 6, 7A, 7B, 8, 96N1;

- performance of strictly limited forestry works in the HCVF 3 forests included in the areas of conservation and HCVF 4.2 critical environmental services (anti-erosion, water-related, functional types II, where caution is required so as to avoid changing the natural composition of forest stands and to preserve their age-specific structure).

4.2. Mode of management of forests with high conservation value for animals

For the protection of fauna, with reference to the rare, vulnerable, endangered, critically endangered species, high conservation value forests (HCVF) will be managed in compliance with the following requirements:

- prohibition of forestry works of any kind in plots with nests throughout the entire year and in those neighbouring them for a distance of up to 150 m from the nest, in order to protect critically endangered birds *Aquila chrysaetos* (golden eagle), *Milvus milvus* (red kite), *Bubo bubo* (Eurasian eagle-owl), *Strix uralensis* (Ural owl), *Aquila pomarina* (lesser spotted eagle), *Buteo buteo* (common buzzard);

- perfect preservation of compact plots of beech, durmast oak, mixed plots, in a quasi-natural state, maintaining old trees with hollows for the protection of vulnerable species: *Glaucidium passerinum* (Eurasian pygmy owl), *Aegolius funereus* (boreal owl), *Ficedula parva* (red-breasted flycatcher), *Picoides tridactylus* (three-toed woodpecker), *Martes martes* (European pine marten);

- perfect preservation of plots of quasi-natural forests, placed in alternation with unproductive areas (cliffs, scree, gorges), containing old trees with hollows, or fissured rocks, caverns, dens, for the protection of vulnerable, endangered species, *Podarcis muralis* (common wall lizard), *Coronella austriaca* (smooth snake), *Circaetus gallicus* (short-toed snake eagle), *Falco peregrinus* (peregrine falcon), *Emberiza cia* (rock bunting), *Corvus corax* (common raven), *Plecotus auritus* (brown long-eared bat);

- preservation of old trees with hollows, of the rotting ones fallen to the ground, of stubs and logs, in plots where vulnerable bird species build their nests *Picus canus* (grey-headed woodpecker), *Dryocopus martiuns* (black woodpecker), *Dendrocopus leucotos* (white-backed woodpecker), *Picus viradis* (European green woodpecker);

- preservation of wetlands, marshes, ponds, streams, puddles, ditches with water, wet meadows, inside forests in order to ensure the protection and reproduction of vulnerable, endangered species: *Triturus vulgaris* (smooth newt), *Salamandra salamandra* (fire salamander), *Bombina variegata* (yellow-bellied toad), *Rana dalmatina* (agile frog), *Anguis fragilis* (slow worm), *Natrix tesselata* (dice snake), *Ciconia nigra* (black stork).

4.3. Mode of management of forests with high conservation value for forest ecosystems

For the protection of forests containing rare, relict or endangered forest ecosystems of the HCVF 3 categories, the performance of forestry works of any kind is prohibited, they are under absolute protection.

In complexes of forest ecosystems, glades (open woods) on cliffs and scree (HCVF 3), it is necessary to prohibit any exploitation works which might affect the fragile stability of cliffs covered with forests. In these forests conservation works may be approved in order to maintain the permanence of forest ecosystems complexes on cliffs and scree.

CONCLUSIONS

1. The research conducted allowed for the identification and selection of plots containing high conservation value forests in the Production Unit V Dumbrava, Aleşd Forest District:

HCVF 1.1, mu3D, 4A, 4B, 5A, 5B, 6, 7A, 7B, 8, 95, 96A; HCVF 1.2, HCVF1.3, mu 1F, 2A, 2B, 3A, 3D, 4A, 4B, 5A, 5B, 6, 7A, 7B, 8, 94A, 94B, 95, 96; HCVF 2, mu 1F, 2A, 2B, 3A, 5A, 5B, 6, 7A, 7B, 8, 94A, 94B, 95, 96A, 97A, 97B, 97C; HCVF 4.2, mu 1A, 1B, 1C, 1D, 1E, 1F, 3A, 3D, 4A, 4B, 5A, 5B, 6, 7A, 7B, 8, 94A, 94B, 95, 96A, 97A, 97B, 97C.

2. Concrete measures were established with regard to the management of high conservation value forests (HCVF) for the rare, vulnerable, endangered, endemic species, natural monuments they contain.

3. Guidelines, recommendations and prohibitions were set out with regard to the management of high conservation value forests (HCVF) for the protection of the herpetofauna, avifauna, mammals, with reference to rare, endangered, critically endangered species.

4. Requirements and recommendations for the sustainable management and protection of forests (HCVF) that contain or are included in rare natural forest ecosystems of community interest were established, in order to maintain the stability of the ecological balance.

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