Evaluation of Anthropical Pressures on Community Interest Habitats and Species in Natura 2000 Cold Someș

Marian PROOROCU*, Cristina-Maria AVRAM

Faculty of Agriculture, University of Agriculture Sciences and Veterinary Medicine, Calea Mănăştur no. 3-5, 400372 Cluj-Napoca, Romania

*corresponding author: marian.proorocu@usamvcluj.ro

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Abstract

The list of habitats of community interest within the Natura 2000 site ROSCI0233, as provided in the Natura 2000 standard, comprises 8 habitats of community interest. Two important activities were carried out: identification and inventory of habitats and species and assessment of negative influences that could affect the natural distribution area, the structure and functions. The assessment of the conservation status has highlighted the existence of significant anthropogenic pressures on some habitats (deforestation, land use change), which led to their unfavorable conservation status (habitat 9410, habitat 91D0*, habitat 91E0*, habitat 9110, habitat 9130).

Keywords: anthropogenic pressures, habitats, species.

INTRODUCTION

The conservative importance of the Natura 2000 site Cold Someș was reflected by the presence of three categories of natural heritage values: the geological, floristic and faunistic component. The flora is a characteristic of the mountain floor of the Apuseni Mountains, with the spruce forest as a basic component, but the special conditions of relief and climate favored the existence of a mosaic of natural habitat. According to the Management Plan, 8 habitats of Community interest have been identified at the site, 3 of which are priorities, covering about 20% of the site's surface. After Proorocu (2008), a natural habitat type threatened for which conservation has a particular responsibility.

The investigation activity was carried out on 4 large groups of species, as mentioned in the Standard Form: mammals (*Canis lupus*, *Lynx lynx*),

amphibians and reptiles (*Bombina variegata*), fish (*Cottus gobio*, *Eudontomyzon danfordi*, *Sabanejewia aurata*, *Gobio uranoscopus*) and invertebrates (*Lucanus cervus*, *Carabus hampei*). According to the NATURA 2000 classification, they have been inventoried habitats of community interest: boreal and alpine meadows on siliceous substrate (6150), mountain meadows (6520), beech forests of the *Luzulo-Fagetum* type (9110), beech forests of the type *Asperulo-Fagetum* (9130), peatlands with forest vegetation (91D0 *), alluvial forests with *Alnus glutinosa* and *Fraxinus exelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) (91E0 *), acidophilic forests of *Picea abies* in the mountain region (*Vaccinio -Piceatea* -9410) and active peat-7110*.

In an overall investigation into the site, there has been an alarming increase in illegal grubbing-up actions in recent years, with negative

consequences for the ecological balance in the area and thus for the conservation status of habitats and species. These human pressures are also compounded by poaching, which was denounced by talks with local people.

MATERIALS AND METHODS

The studies and researches has been carried out within a project by UASMV Cluj-Napoca and focused on two important directions: identification and inventory of habitats/ species of community interest and evaluation of the negative influences that act on them, which causes the natural distribution area to be affected, the structure and their functions.

In the first stage, the existing bibliographic sources related to the studied area were identified and consulted. This was established on the basis of the composition and floristic structure of the vegetation characteristic of each habitat type, in accordance with the national manuals for the identification of Natura 2000 habitats and the habitats in Romania (Gafta and Mountford, 2008; Doniță *et al*, 2004). The second stage consisted of performing repeated trips to the field, where the areas that could be included in the targeted habitats were identified and were documented in detail by taking pictures and collecting information regarding their floristic structure on the files of land, according to the Monitoring Guide for Plant and Species of community interest in Romania (Institute of Biology form Bucharest - Romanian Academy, 2015). Within the standard form in the „list of other important species of flora and fauna“, three species of plants appear, respectively: *Arnica montana*, *Lycopodium clavatum* and *Galanthus nivalis* (Linnaeus, 1758). Following field investigations these species were identified as follows: *Arnica montana* appears distributed mainly in the boreal and alpine areas, in the green-green areas of the boreal floor, *Lycopodium clavatum* appears both in the *Luzulo-Fagetum* habitat type on the edge of the acidophilic forests with *Picea abies* and in certain areas of the boreal and alpine meadows (Coldea, 2012).

With the inventory, the main anthropogenic activities have also been assessed, with an impact on the conservation status of species and habitats. The main threats found are uncontrolled felling of trees leading to habitat reduction,

new forest roads, aggressive wood exploitation technologies, which disrupt habitat balance, poaching, etc.

Regarding the conservation fauna, for the identification and inventory of species of community interest, methodologies and techniques of research and investigation validated at national level were used, which provided clear and precise information. For the amphibians the transect was used (Cogălniceanu, 1997), for the fish species were used the electric fishing going

by water and electric fishing from the boat and for the invertebrates were used the Barber traps and the direct observation (Chiari *et al*, 2014). In this case, the main threats are represented by the same human activities in the site area: upstream logging, the transport of wood material and the works related to the hydropower development on the Someșului Rece course, to which are added the activities of the local community.

The conservation status of a habitat/species is defined respectively in Articles 1e and 1i of the Habitats Directive. The criteria on the basis of which conservation status is established are also defined in the Habitats Directive: for habitats–the area occupied at the site, the structure and functions, and the prospects and for species - size of the population at the site, condition of the species habitat and prospects.

In the case of species and groups of species, the assessment of the conservation status was made on the basis of an algorithm, the weight of each attribute being dictated by the biological and ecological characteristics, areas required for feeding, the intensity of pressures, the characteristics of monotonous, etc. The prospects of the species/habitat depend on the type and intensity of past and present impacts, pressure, and future threats. In many cases, negative impacts are due to anthropogenic past interventions, the effects of which are manifest and will continue to occur over longer periods than the implementation period of the management plan.

The assessment of the presence and intensity/ magnitude of each impact was made on a simple scale with the following qualifications: ‘S’= weak, ‘M’= average, R= high. Both habitats and species had to choose a single conservation status of the four: “favorable” or “unfavorable” or “unfavorable” respectively, “unfavorable-inadequate” or “unfavorable-bad”.

RESULTS AND DISCUSSIONS

The habitat inventory activity, carried out within the project, identified in the field all the 8 habitats mentioned above. As an observation, we can add that, in the field, no other types of habitats other than the standard form have been identified (Tab. 1).

The active peatlands (7110*) with an area of 255 ha, next to the mountain meadows (6520) and the boreal and alpine meadows on a silky substrate (6150), with an occupancy of 8.6 ha are found in a favorable conservation, from which it follows that only small conservation measures are needed, such as limiting the anthropic pressures by continuing to practice traditional mowing and non-intensive grazing, moderation in peat exploitation activities, in the case of habitat 7110*.

The assessment of the conservation status of the habitats highlighted the existence of significant anthropogenic pressures on some habitats (deforestation, land use change), which determined their classification into an unfavorable-inadequate conservation status. The most affected are: habitat 9410, habitat 91D0*, habitat 91E0*, habitat 9110 and habitat 9130.

It should be emphasized that the habitat that has the highest degree of degradation and which we will discuss in more detail in this work is represented by the acidophilic forests of *Picea abies* in the mountain region (*Vaccinio-Piceatea*) - 9410*. This habitat occupies the largest area of all existing habitats on the site (4600 ha) and includes subalpine and alpine coniferous forests.

There are forests at altitudes above 1000 m, with moderate, high or very high conservative value, the conservative value being given by the composition of the grass layer. There are several major changes in the pattern of distribution of habitat type surfaces within the protected natural area. More than 25% of its surface is damaged in terms of the structure and functions of the habitat (including its typical species), which justifies its status in the unfavorable category. There are few areas left unaffected by the cuts that are still stable and do not need conservation, if the abiotic conditions do not change. Compared to these, the areas where extensive deforestation using aggressive logging technologies have left behind a devastated, long-term affected land. The proposed measures for the remediation of this habitat and the favorable conservation status would be the immediate cessation of illegal logging and compliance with the provisions of the forest code; promoting natural regeneration with valuable native species; strict monitoring by the site administration of forest management activities on the entire surface of the habitat, in order to avoid the occurrence and possible extension of invasive species; the proposal of new forest roads in the habitat perimeter will be made only after a thorough analysis of their need.

The species of plants inventoried in the field were over 200, a relatively small number, compared to the floristic richness of Ierii Valley (Stoica, 2011). This fact can be due to the large areas of spruce forests, the reduced areas with mountain/alpine meadows, but also to the humid

Table 1. List of habitats identified in ROSCI0233 Cold Someș

Nr. crt.	Code	Name of Natura 2000
1	7110*	Active peat
2	6520	Mountain hay
3	9110	Beech forests of the <i>Luzulo-Fagetum</i> type
4	9130	<i>Asperulo-Fagetum</i> beech forests
5	9410	Acidophilic forests of <i>Picea abies</i> in the mountain region (<i>Vaccinio- Piceatea</i>)
6	6150	Boreal and alpine meadows on a silky substrate
7	91E0*	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>
8	91D0*	Peatlands with forest vegetation

and cool climate, as is the case in the Natura 2000 Cold Somes site.

As a result of the field investigations, the presence of the two species of invertebrates *Lucanus cervus*, respectively *Carabus hampei*, mentioned in the standard form could not be materialized. Unlike the unprepared, all other species of community interest mentioned in the standard form have reported their presence. Populations of *Bombina variegata* were identified in a small number of individuals 1-5 in water ditches and accumulations near the Someșul Rece river, but abundance was recorded in the wetlands on the western slope at the end of August, at the exit of juveniles from water. The species *Sabanejewia aurata balcanica* was found in the reefil aquatic ecosystem Cold Somes (downstream sector), in number of only 3 individuals, as opposed to *Eudontomyzon danfordi* and *Thymallus thymallus*, where the population size of the species in the protected natural area studied, following processing land, was estimated at 50-100 individuals each. For the *Gobio uranoscopus* species, the size of the species population was estimated at 10-50 individuals. The highest density was 5 individuals/100m² of the species *Cottus gobio*, species whose population was identified in a large number of 5,000-10,000 individuals.

Regarding the management of Natura 2000 sites, this is done in a differentiated way, both by active measures to ensure and maintain the habitats in a favorable state of conservation, as well as to protect the species of community interest from any disturbing factor. Scientific, educational, scientific activities, even activities for the sustainable use of some natural resources are allowed, but the use of land or the exploitation of resources that harm the assigned objectives is forbidden. However, the actions in the field highlighted 3 important categories of anthropogenic activities: logging, agropastoral activities and tourist activities, situation also found in the Management Plan of the Natura 2000 site Ierii Valley. Besides these are added the activities of exploitation of the hydropower potential, some initiated even within the protected area, on the Răcățău and Cold Someș rivers.

Agro-pastoral activities have direct influence on vegetation, soils and other components of nature. They are correlated with the clearing actions, most of the bare areas of the forest being

occupied, later, by the vegetation of the natural grasslands. These impacts refer to: reducing the size of soil aggregates and decreasing the infiltration, thus increasing the shallow slope drainage; the complete elimination of the vegetation on some surfaces by intensive grazing and the creation of optimal conditions for the action of the geomorphological agents; topographic changes by creating slopes agroterases; reducing some plant species and replacing them with others of lower productivity, etc.

The activities in the forestry field, carried out through the companies of primary exploitation and processing of the wood, but also through the individual installations, represent the most important category of impact. Therefore, the negative impacts on the natural components due to deforestation can be expressed by: uncontrolled tree cutting that leads to habitat reduction, new forest roads construction, aggressive wood exploitation technologies and disturbing habitat balance; the reduction of the surface and the fragmentation of the habitats, reaching the extinction of some species from this area; the use of wood processing plants, activity by which large quantities of sawdust are eliminated, thus infesting groundwater and surface courses, by increasing the organic load.

A positive aspect of the tourism activities is represented by the large number of tourists who can bring income to the local communities through accommodation services, meals or other facilities offered. However, the magnitude of these activities thus determines a series of pronounced impacts on the environment through: household waste left behind by tourists, which lead to soil, water and visual pollution; the large number of visitors disturbs the natural ecosystems; the movement of tourists on unmarked routes and in non-permitted areas causes deterioration of fragile habitats and species; the deliberate collection or destruction of some species of flora and fauna; air pollution, especially in the area of the keys, due to the exhaust gases and dust produced by vehicles; the traffic of tourists in non-permitted areas, the noises produced by them disturb the animals.

The activity of exploiting the hydropower potential directly affects the invertebrates, reptiles, amphibians that may suffer especially through the loss of habitat, due to traffic, but also by their killing by the workers. As for birds, and small

mammals, they will be affected by the yard and associated work, noise and noise. Instead, large mammals will leave the site and the surrounding areas. However, hydrotechnical constructions have a non-polluting character on the water. Therefore, achieving or maintaining the “favorable conservation status” represents the objective to be achieved for all habitats and species of community importance on the site.

CONCLUSION

After analyzing the situation of habitats and processing the information obtained in the field, their conservation status differs, to a certain extent. For example, acid peat (7110*) at the site level is in a favorable state of conservation, along with habitat 6520-Mountain hay and 6150 - boreal and alpine meadows on siliceous substrate. In the natural state, the type of habitat does not require management. If the abiotic factors do not change, the habitat is self-preserving.

Regarding the 5 types of habitats: Acidophile forests of *Picea abies* in the mountain region (9410), *Asperulo-Fagetum* beech forests (9130), *Luzulo-Fagetum* type beech forests (9110), Forests alluvial with *Alnus glutinosa* and *Fraxinus excelsior* (91E0*) and disturbances with forest vegetation (91D0*) showed the existence of significant anthropic pressures on them, such as: deforestation, change of land use, which determined their classification to the unfavorable conservation status unfavorable-inadequate.

For almost all the species of community interest present in the site, in general, a favorable conservation status has been found in relation to their future prospects. An exception is the species *Bombina variegata* whose conservation status is unfavorable-inadequate. In order to minimize the impact of current and future pressures, as well as to increase the degree of favorability of the habitats, respectively of the extension of the area occupied by them, the control of the works that aim to dry the marshy areas, water drainage works, elimination of the gutters, preventing the discharge of the streams on the rivers is required, flat areas by consolidation of banks, creation of artificial rivers etc.

In order to maintain the favorable conservation status and / or to bring them to this stage, actions are required such as; planting areas with forest species for the regeneration of the forest fund,

prohibition of grazing in the forest, afforestation of degraded lands, immediate cessation of illegal logging, activities to discourage poaching and overfishing, ensuring peace in the abrupt and rocky areas that represent the main places where the species are located its burrows, etc. Special attention should also be paid by tourists visiting the site and its surroundings, camping or exploring the site, so that their activities do not endanger the environment. Also, it is necessary to promote and increase awareness among the public and young generations, regarding all these aspects that are the subject of this paper.

By comparing the Management Plan of The Natura 2000 site of the Cold Someș, with the site in its vicinity, the ROSCI0263 Valley Ieri, in terms of the conservation status of species and habitats of Community interest, these are largely similar, including the human pressures exerted on them.

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