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FORESTS HABITATS IN RÂIOSU AND BUDA MOUNTAINS, FĂGĂRAŞ MASSIF

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ABSTRACT. As a member of the European Union, Romania is obliged to implement NATURA 2000, which is a pan-European network for the conservation of nature, whose goal is to protect the natural habitats, as well as the wild flora and fauna, conformable to the stipulations of the Birds Directive (2009/147/EC) and Habitats Directive (92/43/EEC). Some of these classifications systems are more detailed; for example CORINE (1991), Devillers & Devillers (1996, 1999) and EUNIS (1997-2005), while others are brief, including only those types of habitat whose preservation needs the endorsement of some specific measures, for example EMERALD (2000), Habitats Directive (1992, amended in 1992 and 2002). The paper presents a list of the main forests habitats identified in Râiosu and Buda Mountains, Făgăraş Massif.

Keywords: forests habitats, NATURA 2000, Râiosu and Buda Mountains.

REZUMAT. Habitatele forestiere din Munții Râiosu şi Buda, Masivul Făgăraş. România, în calitate de stat membru al Uniunii Europene, are obligația de a implementa rețeaua NATURA 2000, o rețea pan-europeană pentru conservarea naturii, în scopul protejării habitatelor naturale, a florei şi faunei sălbatice, conform prevederilor Directivei Păsări (2009/147/EC) şi Directivei Habitate (92/43/EEC). Lucrarea prezintă o listă cu principalele habitate prioritare alpine şi subalpine din Munții Râiosu şi Buda, Masivul Făgăraş. Unele dintre aceste sisteme de clasificare sunt mai detaliate, de exemplu CORINE (1991), Devillers & Devillers (1996, 1999) şi EUNIS (1997-2005), iar altele mai sumare, incluzând numai acele tipuri de habitate a căror conservare necesită adoptarea unor măsuri specifice, de exemplu EMERALD (2000), Directiva Habitate (1992, amendată în 1992 şi 2002).

Cuvinte cheie: habitate forestiere, NATURA 2000, Munții Râiosu şi Buda.

INTRODUCTION

The mountain level is quite well represented in Râiosu and Buda Mountains. Includes closed forests situated above the hilly floor. The lowest limit is the level at which *Quercus* species disappear and the upper limit is considered the altitude where spruce fir forests rarely begin.

The two mountains whose vegetation was researched are divided into three vegetation sublevels: the sublevel of the lower mountain, middle mountain sublevel and the sublevel of the upper mountain (Stancu, 2005).

The sublevel of the lower mountain (800 (600)-1200 m) is characterized by forest vegetation composed of pure stands of beech or mixed with other deciduous trees (occur sporadically) and conifers. The area occupied by this sublevel is small compared to the other two less grown; it is present below the altitude of 1000 m. All other areas at the foot of two studied mountains are found straight into the middle mountain sublevel.

The middle mountain sublevel (1200-1400 m) is characterized by mixed beech forests with spruce or fir. Common associations found here are: *Symphyto cordati-Fagetum sylvatice, Pulmonario rubrae-Fagetum* and on hillsides *Scorzonero roseae-Festucetum nigricantis* (Coldea, 1991).

The sublevel of the upper mountain (1300-1700 m) is made of pure spruce stands grouped in *Hieracio transsilvanici-Piceetum* association. However, spruce fir forest are commonly found up to an altitude of 1700 m on the southern slope of Buda Mountain, while the steep western slope of the Raiosu mountain spruce fir suppression occurs either because the orographic nature or due to anthropozoogenic action.

MATERIAL AND METHODS

During the last two decades, various systems of classification of the habitats have been completed in Europe. The purpose of this action was to highlight the diversity of the ecosystems that represent the spontaneous living coverage, part of it natural, which is still present on the continent.

Some of these classifications are more detailed; for example CORINE (1991) (Devillers & Devillers, 1996; 1999) and EUNIS (1997-2005), while others are brief, including only those types of habitat whose preservation needs the endorsement of some specific measures, for example EMERALD (2000), Habitats Directive (1992, amended in 1992 and 2002).

In Romania, the issue of establishing the habitats has dated since 1991, when over 240 types were identified. During the years, the number of the identified habitats has increased. Thus, in 1995, there were recorded 986 entrances, belonging to 7 hierarchic levels of classification. In 2005, it was performed the first attempt of a unitary description of the main types of habitats from Romania, most of them being included in the systems of classification CORINE (1991) and PALEARCTIC HABITATS (1996, 1999).

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RESULTS AND DISCUSSIONS

The following habitat types were identified:

1. Temperate deciduous hardwoods

- **Habitats of Romania R4104**

The Southeastern Carpathian forest of beech (*Fagus sylvatica*) and fir (*Abies alba*) with *Pulmonaria rubra*.

Correspondences:

NATURA 2000: 91V0 Dacian beech forest (*Symphyto – Fagion*).

EMERALD: 41.1 Beech forests.

CORINE: -

PAL.HAB: 41.1D212 Dacian *Pulmonaria rubra* fir – beech forest.

EUNIS: G3.1123 Dacian neutrophile mountaine fir forest

Vegetal associations: *Pulmonario rubrae – Fagetum* (Soó 1964) Täuber 1987.

The association includes mixed beech stands (*Fagus sylvatica* ssp. *sylvatica* L.) with spruce (*Picea abies* (L.) H. Karst.) and fir (*Abies alba* (Mill.)) found between 700-1200 m altitude, usually above the pure beech forests (*Symphyto-Fagetum*).

Few specimens of sycamore (*Acer pseudoplatanus* L.), elm mountain (*Ulmus glabra* Huds.), less ash (*Fraxinus excelsior* L.), hornbeam (*Carpinus betulus* L.) are met here.

Shrub layer is represented by a small number of *Corylus avellana* L.*, Lonicera nigra* L.*, Daphne mezereum* L.*, Spiraea chamaedryfolia* L.

Grass and under grown layer are developed unevenly depending on light exposure and is composed of species of Mull flora (*Dentaria glandulosa* Waldst. et Kit., *Galium odoratum* (L.) Scop.*, Asarum europaeum* L.*, Stellaria holostea* L.*, Rubus hirtus* Waldst. et Kit.). Discontinuous and poorly developed moss layer is composed of *Hylocomium splendens* (Hedw.), *Dicranum scoparium* Hedw. etc.

Conservative value: moderate.

- **Habitats of Romania R4109**

Southeast Carpathian forests of beech (*Fagus sylvatica*) with *Symphytum cordatum*.

Correspondences:

NATURA 2000: 91V0 Dacian beech forest (*Symphyto – Fagion*).

EMERALD: 41.1 Beech forests.

CORINE: -

PAL.HAB: 41.1D211 Dacian *Dentaria glandulosa* beech forest.

EUNIS: G1.6D21 Dacian *Symphytum* beech forest.

Vegetal associations: *Symphyto cordati – Fagetum* Vida 1959.

The association is well defined and unitary throughout the Romanian Carpathians. It is developed on brown soils, deep, often skeletal, more or less moist

with a rich mull type and trophic medium to high. Among the monodominante clusters enlightened only by beech (*Fagus sylvatica* ssp. *sylvatica*) there are clumps of fir disseminantion (*Abies alba*) and spruce (*Picea abies*). Rare specimens of sycamore (*Acer pseudoplatanus*) or elm mountain (*Ulmus glabra*) could also be found here.

The shrub layer is missing or poorly developed because of the shadow. There are rare specimens of *Corylus avellana, Crataegus monogyna* Jacq., *Sambucus racemosa* L., *Lonicera xylosteum* L., *Daphne mezereum* L., *Spiraea chamaedryfolia* L.

In the herbaceous layer, *Symphytum cordatum* has a high consistency. Besides this endemic species, there are other Dacian or Daco-Balkans species like: *Hepatica transsilvanica* Mill., *Dentaria glandulosa, Pulmonaria rubra* Schott. In all studied groves, regeneration is active, the fact that the beech forests provides an optimum climate in the current period.

The tree layer is well finished, clot canopy is 90%.

Conservative value: high.

2. Temperate coniferous forests

- **Habitats of Romania R4206**

The Southeast Carpathian forests of spruce (*Picea abies*) and fir (*Abies alba*) with *Hieracium rotundatum* Kit. ex Schult.

Correspondences:

NATURA 2000: 9410 Acidophilous *Picea* forests of the montane to alpine levels (*Vaccinio – Piceetea*).

EMERALD: -

CORINE: -

PAL.HAB: 42.21623 Carpathian high montane *Hieracium* spruce forests.

EUNIS: G3.1B1 Bilberry spruce forest.

Vegetal associations: *Hieracio rotundati – Piceetum* Pawl. et Br.-Bl. 1939

Spruce stands on the north-eastern side of the Râiosu mountain and the south-eastern slope of Buda mountain, had the dominant species (*Picea abies*) that inhabit humus rich soils moder type, moderately acid reaction. Tree layer is composed exclusively of (*Picea abies*) or, at lower altitudes mixed fir (*Abies alba*), mountain ash (*Sorbus aucuparia* L.) etc.

The shrub layer is absent or poorly developed. There are rare specimens of *Sambucus racemosa, Lonicera nigra, Spiraea chamaedryfolia* etc.

In the herbaceous layer, besides the characteristic species *Hieracium transsylvanicum* (syn. *Hieracium rotundatum*), there are a lot of specific forests of spruce`s acidophilous species such as: *Luzula sylvatica* (Huds.) Gaudin, *Calamagrostis villosa* Chaix ex Vill., *Vaccinium myrtillus* L., *Homogyne alpina* (L.) Cass., *Luzula luzuloides* (Lam.) Dandy & Wilmott and transgressive species of beech forests.

The moss layer is composed of species as: *Hylocomium splendens, Sphagnum* sp., *Dicranum scoparium.*

Conservative value: moderate.

- **Habitats of Romania R4209**

The Southeastern Carpathian forests of spruce (*Picea abies*) with *Leucanthemum waldsteinii*.

Correspondences:

NATURA 2000: - 9410 Acidophilous *Picea* forests of the montane to alpine levels (*Vaccinio – Piceetea*).

EMERALD: -

CORINE: -

PAL.HAB: 42.21625 Carpathian *Leucanthemum* high mountaine spruce forest.

EUNIS: -

Vegetal associations: *Leucanthemo waldsteinii-Piceetum* Krajna 1933.

In contradistinction to *Hieracio rotundati-Piceetum* which is climatically conditioned, this association has an edaphogenous character, beacause its development is ensured by an abundance of edaphic and atmospheric humidity. Spruce phytocoenosis of this association are scattered throughout the Buda Valley, Buda River bank. They are growing on brown, acid, moist soil, rich in moder humus type. The characteristic species of the association, *Leucanthemum waldsteinii* (Sch. Bip.) Pouzar has a hygrophile character.

These spruce stands have united canopy, in contrast, the shrub layer is less developed, while the herbaceous layer is characterized by a rather small number of species. The direct contact of these spruce stands with the phytocoenosis of *Leucanthemo waldsteinii-Fagetum* association makes possible the transition of many forest species characteristic to the Fagetalia order.

Conservative value: high.

- **Habitats of Romania R4401**

The Southeastern Carpathian forests of white alder (*Alnus incana* (L.) Moench) with *Telekia speciosa* (Schreb.) Baumg.

Correspondences:

NATURA 2000: 91E0 Alluvial forest with *Alnus glutinosa* L. and *Fraxinus excelsior* (*Alno – Padion, Alnion incanae, Salicion albae*).

EMERALD: -

CORINE: -

PAL.HAB: 44.214 Eastern Carpathian grey alder galleries.

EUNIS: G1.1214 Eastern Carpathian grey alder galleries.

Vegetal associations: *Telekio speciosae – Alnetum incanae* Coldea (1986) 1990.

Groves with white alder (*Alnus incana*) is an endemic forest association for the Romanian Carpathians, with a unitary floristry composition in all massifs of this orogenetic system. Along the Buda Valley groves with white alder (*Alnus incana*) which are growing on alluvial soils and even on gravel with neutral or slightly acid reaction are met. Besides the high groundwater level caused by the

constant moisture, these groves are exposed regularly floods. Tree layer is composed exclusively of white alder (*Alnus glutinosa*) with a little mixture of spruce (*Picea abies*), fir (*Abies alba*), beech (*Fagus sylvatica* ssp. *sylvatica*), and at lower altitudes, black alder (*Alnus glutinosa*).

The shrub layer is absent or poorly developed, compound of *Salix triandra* L.*, Lonicera xylosteum* L.*, Corylus avellana* L.*, Prunus padus* L. Grass and undergrowth layer is strongly developed, dominated by *Petasites albus* (L.) Gaertn. and *Telekia speciosa* (Schreber) Baumg.*, Ranunculus repens* L.*, Festuca gigantea* (L.) Vill.*, Cirsium oleraceum* (L.) Scop. etc.

Conservative value: high.

CONCLUSIONS

In the paper 5 forests habitats are described. These habitats, which include protected species, relict species, and endemic species, are threatened by numerous negative anthropogenic impacts.

Knowing the different habitat types, their distribution and extent is very important to develop a management plan for the two studied mountains. This plan is necessary in order to improve the conservation status of habitats and species through a series of strategic actions following the increasing ecological database and to educate the population.

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