

THE FLORA AND VEGETATION IN THE NATURA 2000 PROTECTED AREA PRUNIȘOR, MEHEDIŢI COUNTY (ROMANIA)

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ABSTRACT

Following the research carried out within this area, a significant floristic richness was identified, which includes numerous rare taxa in the spontaneous flora of Romania (*Acanthus balcanicus* Heywood et I. Richardson, *Medicago arabica* (L.) Huds., *Lathyrus sphaericus* Retz., etc.), or taxa protected as natural monuments (*Ruscus hypoglossum* L.). In addition, there is to be noted the high share of southern elements (sub-Mediterranean, Pannonian, Balkan), as well as that of habitats characterized by high conservation value (e.g. R4133 Balkan sessile oak (*Quercus petraea*) forests with *Helleborus odorus*). Both the southern elements encountered in the area and the rare ones, as well as the habitats with high conservative value have a good representation on the site.

INTRODUCTION

Protected sites usually represent very complex areas that need complex management systems, which allow them to perform multiple functions.

The standard data form of this area mentions three types of habitats present on the site: 9130 *Asperulo-Fagetum* beech forests, 9170 *Galio-Carpinetum* oak - hornbeam forests and 91M0 Balkan-Pannonian Turkey oak and sessile oak forests, as well as three species stipulated in Article 4 of the Directive 2009/147/EC, species listed in Annex II of the Council Directive 92/43/EEC (*Triturus dobrogicus*, *Lucanus cervus*, and *Testudo hermanni*).

The deciduous forests cover about 60% (i.e. 59.46%) of the total area of the site, while the grasslands account for 11.34%. The difference up to 100% belongs to arable land (18.15%), orchards and vineyards (7.99%), as well as transition forests (3.06%).

Data concerning the flora of the area under study are comprised in the high-value syntheses conducted by Kánitz 1881; Brândză 1883; and Grecescu 1898, 1909 (after Roman, 1974).

The first decades of the 20th century mark occasional researches conducted in the southern part of the Mehedinți Plateau and materialized through some publications: Degen 1896, 1921; Pax 1919; Săvulescu 1919, 1924; Prodan 1933, 1939; Nyárady E. I. 1928, 1931, 1939, 1949; Georgescu & Constantinescu 1943 (after Roman 1974).

Sporadic data are also available from the studies conducted in a general context for Oltenia by: Buia et Popescu, 1952; Buia, 1959, 1960; Buia et al., 1961; Maloş et al., 1972; Păun et al. 1971; Păun et Popescu, 1975; Păun et Cârţu, 1980; Popescu, 1988; Popescu et Costache, 1999.

MATERIAL AND METHODS

Natura 2000 protected area *Prunişor* is a Site of Community Importance, located in the central part of Mehedinți County. It belongs entirely to the continental biogeographic region, covering an area of 1,900.40 ha (ROSCI0432).

The study of the vegetation within this area started with the literature review,

the information thus obtained being supplemented with data collected by the author in the field.

The following types of equipment were used during the research: Panasonic type camera; Garmin etrex 30 GPS; notebook, used to record all the species within the studied habitats, the site characteristics and the corresponding coordinates; icepick, used to collect the plants needed for a proper identification in the field or in laboratory; specialized identification guide; plastic bags, used for preserving the plants that were collected in order to be botanized and included in the Herbarium of the University of Craiova (C.R.A.).

A total floristic inventory of about 472 species resulted after the collection and processing of all the information (from the field and the specialized literature).

The inventory brings together species that are common to this part of the country and species of zoological importance.

RESULTS AND DISCUSSIONS

Following the research carried out within this area, a significant floristic richness (i.e. 472 plant taxa) was identified, which includes numerous rare taxa in the spontaneous flora of Romania (*Acanthus balcanicus* Heywood et I. Richardson, *Medicago arabica* (L.) Huds., *Lathyrus sphaericus* Retz., *Myrrhoides nodosa*, etc.), or taxa protected as natural monuments (*Ruscus hypoglossum* L.).

The large number of species is also explained by the presence of different types of natural and human-induced ecosystems: forests, meadows, arable land, orchards, vineyards or transition forests.

Following the analysis of the geoelements, there is to be noticed the predominance of the Eurasian elements, followed at some distance by the central European and European ones (Fig. 1).

A rather high share belongs to the southern elements (Mediterranean, sub-Mediterranean, Pontic, Pannonian, Balkan), i.e. *Fagus sylvatica* L. subsp. *moesiaca* (Maly) Hjelmquist, *Lychnis*

coronaria (L.) Desr., *Euphorbia epithymoides* L., *Fraxinus ornus* L., *Digitalis ferruginea* L., *Crataegus pentagyna* Waldst. et Kit., *Cornus mas* L., *Allium ursinum* L. subsp. *ucrainicum* Kleopow & Oksner, *Asparagus tenuifolius* Lam., *Asperula taurina* L. subsp. *leucanthera* (G. Beck) Hayek, *Cynosurus echinatus* L., *Cruciata pedemontana* (Bellardi) Ehrend., *Cruciata pedemontana* (Bellardi) Ehrend., *Lathyrus sphaericus* Retz., *Helleborus odoratus* Waldst. & Kit., *Primula acaulis* (L.) L., *Tamus communis* L., *Tilia tomentosa* Moench, *Sclerochloa dura* (L.) P. Beauv., etc.

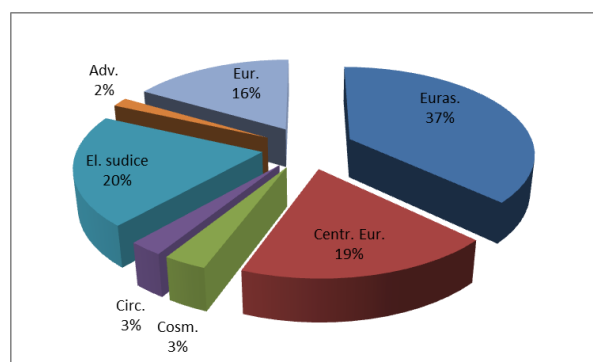


Fig. 1. The spectrum of geoelements (orig.)

The analysis of the bioforms reveals the predominance of the hemicryptophytes, which account for approximately 65% of the total (Fig. 2).

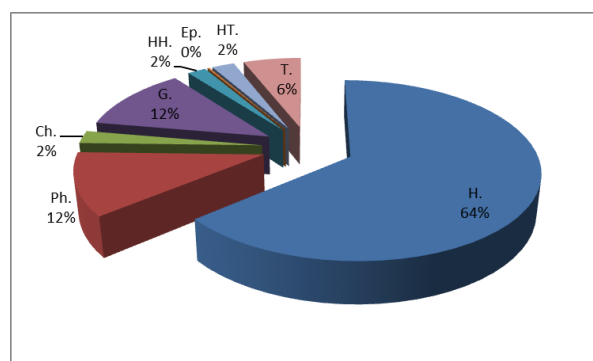


Fig. 2. The spectrum of bioforms (orig.)

This is explained by the presence of these plants in almost all vegetation formations encountered within the protected area (forests, meadows,

shrubs). Although the phanerophytes account for a relatively low share (i.e. 12%), they are still well represented in the field by numerous specimens. These species give the aspect of the forests in the identified habitats.

The southern elements identified in the area

Agrimónia eupatória L. subsp. *grándis* (Andrz.) Bornm. – Sub-Mediterranean, *Állium ursinum* L. subsp. *ucraínicum* Kleopow & Oksner – Pontic-Mediterranean, *Anchúsa officinális* L. subsp. *procéra* (Besser) Ciocârlan - Balkan, *Anthriscus cerefólium* (L.) Hoffm. subsp. *trichospérma* (Schant.) Arcang - Pontic-Mediterranean, *Aristolochía clematitís* L. - Mediterranean, *Aspáragus tenuifólius* Lam. - Pontic-Mediterranean, *Aspérula taurína* L. subsp. *leucánthera* (G. Beck) Hayek - Mediterranean, *Callepína irregúlaris* (Asso) Thell. - Pontic-Mediterranean, *Cárthamus lanátus* L. - Pontic-Mediterranean, *Centauréa cýanus* L. - Mediterranean, *C. ibérica* Trev. ex Sprengel - Pontic-Balkan., *C. solstitiális* L. - Mediterranean, *C. stoébe* L. subsp. *micránthos* (Gugler) Hayek - Pontic-Pannonian-Balkan, *Cephalária transylvánica* (L.) Roem. & Schult. - Pontic-Mediterranean, *Córnus mas* L. - Pontic-Mediterranean, *Corýdalis cáva* (L.) Schweigg. & Körte subsp. *marschalliana* (Pall.) Hayek - Pontic, *Cratægus pentágyna* Waldst. & Kit. - Pontic-Pannonian-Balkan, *Crépis foétida* L. subsp. *rhoeadifólia* (M. Bieb.) Čelak. - Pontic-Mediterranean, *Cruciáta pedemontána* (Bellardi) Ehrend. - Submedit., *Cynosúrus echinátus* L. - Mediterranean, *Digitális ferrugínea* L. - Balkan, *Dípsacus fullónum* L. – Sub-Mediterranean, *Eragróstis ciliaénsis* (All.) Janch. - Mediterranean-Sub-Mediterranean, *Eryngium campéstre* L. - Pontic-Mediterranean, *Euphórbia epithymoídes* L. Pannonian-Balkan, *E. salicifólia* Host - Pontic-Pannonian, *Fágus sylvática* L. subsp. *moesiaca* (Maly) Hjelmquist - Balkan, *Fragária víridis* Duchesne - Pontic, *Fráxinus órnus* L. – Sub-Mediterranean, *F. pallísiae* Willm. -

Balkan-Danubian-Pontic, *Gálega officinális* L. - Pontic-Mediterranean, *Gálium humifúsum* M. Bieb. - Pontic-Balkan, *Hédera hélix* L. - Atlantic-Mediterranean, *Helléborus odórus* Waldst. & Kit.- Balkan, *Láthyrus áphaca* L. - Mediterranean, *L. sphaéricus* Retz. - Mediterranean, *L. vénetus* (Mill.) Wohlf. - Pontic-Mediterranean, *Oenánthe banática* Heuff. - Pontic-Pannonian-Balkan, *Órchis corióphora* L. subsp. *frágans* (Pollini) Sudre - Mediterranean, *Papáver dúbium* L. subsp. *albiflórum* (Besser) Dostál - Pontic-Mediterranean, *Polygónatum latifólium* (Jacq.) Desf. - Pontic-Pannonian-Balkan, *Prímula acaúlis* (L.) L. – Sub-Mediterranean, *Quércus cérris* L. - Sub-Mediterranean., *Q. dalechámpii* Ten. - E. Mediterranean-Carpathian-Balkan, *Q. fraínetto* Ten. - Balkan, *Q. polycárpa* Schur - Carpathian-Balkan-Caucasian, *Roríppa austríaca* (Crantz) Besser - Pontic, *Rósa gállica* L. - Pontic-Mediterranean, *Rúmex kernerii* Borbás - Balkan-Pannonian, *Scleróchloa dúra* (L.) P. Beauv. - Mediterranean, *Sorghum halepéense* (L.) Pers. - Mediterranean, *Stáchys germánica* L. - Pontic-Mediterranean, *Taeniatherum caput-medusae* (L.) Nevski – Pontic - Mediterranean, *Támus commúnis* L. – Sub-Mediterranean, *Tília tomentósa* Moench - Balkan-Pannonic, *Trifólium fragíferum* L. subsp. *bonannii* (C. Presl) Soják – Sub-Mediterranean, *Vícia pannónica* Crantz – Pontic-Mediterranean, *Vítis sylvestris* C.C. Gmel. - Pontic-Mediterranean, *Xeránthemum ánnuum* L. - Pontic-Mediterranean, *X. cylindráceum* Sibth. & Sm. - Pontic-Mediterranean.

In addition, there is to be noted the presence of a habitat characterized by high conservation value (e.g. R4133 Balkan sessile oak (*Quercus petraea*) forests with *Helleborus odorus*).

There are phytocoenoses edified by European and Balkan species.

The tree layer consists exclusively of sessile oak (*Quercus polycarpa*, *Q. dalechampi*), or, if a combination does exist, it also includes rare specimens of

linden (*Tilia tomentosa*), sycamore (*Acer pseudoplatanus*), sometimes beech (*Fagus sylvatica* subsp. *moesiaca*), while the lower level comprises field maple (*Acer campestre*), manna ash (*Fraxinus ornus*), checker tree (*Sorbus torminalis*), common hornbeam (*Carpinus betulus*). The shrub layer is well-developed, consisting of *Cornus mas*, *Ligustrum vulgare*, *Evonymus europaeus*. *Aremonia agrimoniodes* and *Helleborus odorus* are the representative species for the herbaceous and the understory layers.

The forests within *Prunișor* protected area belong to *Quercetea pubescenti-petraeae*.

The soil-climate framework determines their extension and coenostuctural diversification, which are also partly influenced by human activity.

Among the most frequently found species there are to be mentioned: *Cornus mas*, *Cruciata laevipes*, *Fraxinus ornus*, *Lithospermum purpuro-caeruleum*, *Quercus dalechampii*, *Q. polycarpa*, *Tilia tomentosa*, *Tanacetum corymbosum*, *Teucrium chamaedrys* and more.

The following associations are present in the area under study:

Potentillo micranthae – *Quercetum dalechampii* A. O. Horvát 1981; *Quercetum frainetto* – *cerris* Georgescu 1945, Rudski 1949, *Carpino betuli* – *Fagetum sylvaticae* Paucă 1941 și *Carici pilosae* – *Carpinetum betuli* Neuhäusl et Neuhäuslová-Novotná 1964.

The phytocoenoses edified by sessile oak cover the tablelands, while the Turkey oak and the Hungarian oak forests are present on slopes with southern exposure and the hilly beech forests edified by *Fagus moesica* are located on the northern slopes. Of the two sessile oak species present on the site (*Quercus dalechampii* and *Q. polycarpa*), the Dalmatian sessile oak is the predominant one, fact also observed by N. Roman (1974), in the southern Mehedinți Plateau. The lack of precipitation during the summer of 2019 led to an abundant porosity on the lower face of the leaves of *Q. dalechampii*.

The inclusion of these sessile oak forests in the above-mentioned association is justified by the geographical area relations with the Turkey oak and the Hungarian oak forests located on the adjacent sunny slopes.

The shrub and understory levels host specimens of the following species: *Sorbus torminalis*, *Pyrus pyraaster*, *Tamus communis*, *Cornus mas*, *Ligustrum vulgare*, *Genista tinctoria* subsp. *elatior*, *Chamaecytisus hirsutus* subsp. *leucotrichus*, *Acer tataricum*, *Fraxinus excelsior*, *Tilia tomentosa*.

The southern elements are predominant in the herbaceous layer: *Potentilla micrantha*, *Aremonia agrimonoides*, *Lithospermum purpuro-caeruleum*, *Festuca heterophylla*, *Melica uniflora*, etc.

The Turkey oak and the Hungarian oak forests are present in the area on the sunny slopes (with southern, western or eastern exposures).

The analysis of the floristic composition emphasizes the constancy of the species of recognition for the order *Quercetalia cerris*: *Potentilla micrantha*, *Lychnis coronaria*, *Vincetoxicum hirundinaria*, *Sorbus torminalis*, etc.

Numerous juvenile specimens of the two species that give the aspect of the forest are present in the floristic composition of the shrub layer: *Quercus cerris* and *Q. frainetto*, as well as *Acer campestre*, *A. tataricum*, *Cornus sanguinea*, *Crataegus monogyna*, *Ulmus glabra*, *Carpinus betulus* (juvenile) and *Ligustrum vulgare*.

Within the herbaceous layer, there is to be noted the overall presence of the species that are characteristic of the superior cenotaxonomic units: *Aremonia agrimonoides*, *Campanula persicifolia*, *Fragaria viridis*, *Silene vulgaris*, *Potentilla micrantha*, *Vincetoxicum hirundinaria*, *Euphorbia epithymoides* etc.

The hilly beech forests within the area belong to the *Carpino betuli* – *Fagetum sylvaticae* Paucă 1941 with *Ruscus hypoglossum*, *Neottia nidus-avis*, *Cephalanthera chlorantha*, *Platanthera*

longifolia and *Carex* species. The same combination was mentioned by Popescu Gh. et al., 2001, in the Jilț catchment, between the settlements of Negomir and Turceni, located in Gorj County.

The hornbeam forests with *Carex pilosa* in the herbaceous layer, which belong to *Carici pilosae – Carpinetum betuli* Neuhäusl et Neuhäuslová-Novotná 1964, have a weak representation in the area.

The phytocoenoses of this association are present near those of the beech, on humus-rich substrates (Costache, 2005).

Two layers are to be differentiated within the structure of the hornbeam forests with *Carex pilosa*, i.e. the tree layer, which is dominated to a high extent by *Carpinus betulus* and the well-represented herbaceous layer, in which the sedge (*Carex pilosa*) occupies well-established surfaces together with *Carex sylvatica*, *Stellaria holostea* and other species that are characteristic of the superior coenotaxonomic units to which this coenotaxon belongs.

The influences of the southern elements (Balkan, sub-Mediterranean and Pontic-Mediterranean) in these forests are significant.

The shrubs belong to *Pruno spinosae – Crataegetum monogynae* (Soó 1927) Hueck 1931. They form stripes on the edge of the forests, being also present in the meadows and alongside the roads. Their permanent development leads to the reduction of the surface covered by grasslands in this area.

Elements belonging to several vegetation formations have been identified in the floristic composition of these phytocoenoses, which explains the heterogeneity of these sites. The shrubs edified by blackthorn and hawthorn induce economic advantages, as certain plants within the floral composition have nutritional value, while others present melliferous, fodder, industrial or ornamental values.

The grasslands within the Prunișor protected area are generally conditioned by the edaphic dryness, which explains

their highly fragmented area. They occupy the least fertile land, which can hardly be used for any other purpose. They have a secondary character, being installed after the clearing of forests.

Their phytocoenoses are present on arid slopes with southern, southeastern or southwestern exposure, and on flat land.

From a phytosociological point of view, they are framed to *Festuco-Brometea* Br.-Bl. & R. Tx. ex Klika & Hadač 1944, *Festucetalia valesiaca* Br.-Bl. & R. Tx. ex Br.-Bl. 1949, *Festucion valesiaca* Klika 1931. The presence of a relatively large number of ruderal species and of those with low fodder value (*Aegilops cylindrica*, *Sisymbrium loeselii*, *S. altissimum*, *Echium vulgare*, *Centaurea solstitialis*, *Carthamus lanatus*, *Salvia nemorosa*, *Cichorium intybus*, etc.) indicates the zoo-anthropogenic effect within the grasslands and their immediate vicinity (roads, paths, etc.).

On certain surfaces located on the edge of the forests, there can be noticed the presence of certain phytocoenoses pertaining to the association *Avenulo compressi – Festucetum valesiaca* Popescu Gh. et al. 2001. These secondary phytocoenoses become installed after the clearing of Turkey oak and Hungarian oak forests. These meadows have a distinct aspect as compared to those edified by *Medicago minima* with *Festuca valesiaca*, the particular feature being induced by *Avenula compressa*. They are present on slopes with a low gradient. The floristic composition of these meadows includes both the elements characteristic to the above-mentioned superior coenotaxa, as well as plants from *Arrhenatherion* Koch 1926 and *Arrhenatheretalia* Pawl. 1928: *Anthoxanthum odoratum*, *Hieracium pilosella*, *Luzula campestris*, *Dactylis glomerata*, *Ajuga genevensis*, *Plantago lanceolata*, *Polygala vulgaris*, *Lathyrus sphaericus* etc.

These are the favorite places of the tortoises in the area (*Testudo graeca*

hermanni) because they lay their eggs in these meadows.

CONCLUSIONS

To sum up, there can be stated that Prunișor protected area is and will continue to be a major point of interest for botanists, because it offers a great flora and vegetation diversity.

The sub-Mediterranean influences in this part of the country are mirrored by the relatively high share of southern elements in the study area.

Both the southern elements encountered in the area and the rare ones, as well as the habitats with high conservative value have a good representation on the site.

Therefore, we consider that in order to preserve biodiversity in this site, it is necessary to protect the areas where valuable species and habitats have been identified. An additional reason is the location of the protected area near certain settlements (e.g. Fața Cremenii, Prunișor, Cervenita, etc).

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