

THE ECOLOGY, COENOLOGY AND CHOROLOGY OF THE ENDEMYTES AND SUBENDEMYTES IN THE REGION OF OLTENIA (ROMANIA)

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Abstract: The paper contains 18 endemic species and subspecies of the Romanian Flora which can be found also in Oltenia region. These are accompanied by information on ecology, coenology and chorology (in Oltenia) and finally by the geoelement: *Androsace villosa* ssp. *arachnoidea*, *Athamanta turbith* ssp. *hungarica*, *Centaurea pinnatifida*, *Cerastium transsilvanicum*, *Dianthus henteri*, *D. spiculifolius*, *D. tenuifolius*, *Erysimum witmanni* ssp. *transsilvanicum*, *Galium baillonii*, *Hepatica transsilvanica*, *Heracleum palmatum*, *Koeleria macrantha* ssp. *transsilvanica*, *Onobrychis montana* ssp. *transsilvanica*, *Primula auricula* ssp. *serratifolia*, *Sorbus dacica*, *Thlaspi dacicum* ssp. *dacicum* and ssp. *banaticum*, *Thymus comosus*. For the ecology of each species, we have chosen the rupicolous and the saxicolous species (according to Beldie, 1967) these species represent the most characteristic habitats that shelter the endemites and the subendemites.

The subendemites in Oltenia 16, are accompanied by the same data, the list is made of: *Corydalis solida* ssp. *slivenensis*, *Doronicum carpaticum*, *Gypsophila petraea*, *Iris reichenbachii*, *Peucedanum rochelium*, *Potentilla haynaldiana*, *Ranunculus carpaticus*, *Scabiosa columbaria* ssp. *pseudobanatica*, *Seseli gracile*, *Sesleria bielzii*, *Silene lerchenfeldiana*, *S. nutans* ssp. *dubia*, *Symphyandra wanneri*, *Thymus pulcherrimus*, *Trisetum fuscum*, *T. macrotrichum*.

Physical and geographical general frame

Oltenia represents one of the historical and geographical provinces of Romania, bordering the Danube River, in the south and in the west, the Meridional Carpathians in the north and in the north-west and the Olt River in the east. Within the territory of Oltenia, there is a sequence, as if in a huge amphitheater, going from north to south, made up of the following relief forms: the alpine and mountainous level, which belongs to the Mehedinți, Vâlcan, Parâng and Căpățâni Mountains; with a contact SubCarpathian depression; the Central SubCarpathian level of Oltenia consisting of the SubCarpathian hills and the intra-hillock depressions; the Getic Plateau; the southern level representing the Oltenia Plain, made up of the 8 terraces of the Danube and the Jiu Rivers, and to the south, the Danube River Meadow.

The Parâng Mountains are the highest and the most massive in the group of mountains situated in the area formed by the Jiu, Strei and Olt Rivers. These are mainly made up of crystalline shales and granites, with more than 20 peaks, which reach an altitude of more than 2.000 metres. The maximum altitude is given by the Parângul Mare Peak (2.518 m). The Căpățâni Mountains are considered average mountains with few peaks that are over 2.000 metres and they mainly consist of Jurassic limestone, eruptive shales and rocks, where one can find exo- and indokarstic phenomena, steep ridges, narrow valleys, passes, gorges, and caves.

The history of the botanical research in the area

The flora and the vegetation of Oltenia started to be explored sporadically ever since the second half of the 19th century: first of all the Parâng Mountains, by the botanists in Transylvania: G. Baumgarten, M. Fuss, J. S. Schur. Later on, real contributions to the flora of these mountains were made by: V. Janka, C. Zach. Panțu, L. Simonkai, A. Kanitz, D. Grecescu,

Gh. Grințescu, I. Prodan, T. Săvulescu, Al. Borza, E. I. Nyárády, Tr. Ștefureac, Al. Buia, I. Safta, M. Păun etc. The floristic research on the whole territory of Oltenia intensified the moment when the Botanical Department of the former Agronomic Institute in Craiova was founded (1948). Thanks to these researchers and to others, who were not mentioned here, the flora of Oltenia is relatively well known. From a total of about 3.200 spontaneous vascular species on the Romanian territory, 2.150 species are known, nowadays to grow in the region of Oltenia.

For some of them, the ecological, coenological, chorological and biological data are totally incomplete. Thorough studies are necessary regarding their vitality, the size of the populations their variability, the ways of multiplication in different habitats etc.

Rare, endangered and endemic species

In the last few decades of the 20th century, many European countries signalled upon the decrease of the taxonomic diversity in many regions or countries because of the strong impact the zoo-anthropogenic actions have had. The demographic increase, the tourism on horizontal and vertical scale, the economic activities exert pressure on numerous natural ecosystems, leading to qualitative and quantitative changes of the flora and vegetation to be noticed in several decades or years.

That is why, the present requirement for many highly populated European countries is represented by the biodiversity preservation. This has two distinct aspects: the identification of the species with different levels of danger and the measures which must be taken in order to solve them; the correct application of these measures within the endangered systems. The protection must have a prophylactic characteristic, in order to prevent the decrease or even the disappearance of some populations or species trying to avoid the stage when they are in full decline or even near extinction [6].

The Committee for Endangered plants (Threatened Plants Committee - TPC) of the International Union for Conservation of Nature Resources (IUCN) elaborated the first list of rare, endangered and endemic plants in Europe, taking advantage of the contribution of the specialists from 30 European countries, among which Romania.

Romania has become, after 1990, a signatory to a series of International Conventions to conserve the biodiversity. The involvement of our country in international projects regarding the biodiversity has shown some lagging behind, concerning the work methodology in order to make an inventory, to classify and to integrate the data within a European context. That is why, the necessity of writing a national Red List appeared, in the beginning for the vascular plants (Tracheobionta).

The elaborated Red Lists (Oltean et al., 1994; Boșcaiu et al., 1994; Dihoru, Dihoru, 1994) adopted the zoologic categories (endangered) established by IUCN: extinct (Ex), Endangered (E), Vulnerable (V), Rare (R), Indeterminate (I), Out of danger (O), Insufficiently known (K), Not threatened (nt).

The endemites and the subendemites are to be found in one or several categories. Some of them can be rare and threatened others neither rare non-threatened but with a special significance for a country or a smaller region. By means of going on with the research on systematics, areology and the Botanical Garden Information, we have noticed that the number of the endemites and subendemites has diminished considerably. Although in the Red Lists elaborated for Romania, there is no common point of view upon the framing of the species into a zoologic category (as these are the working tools, which are very useful for the thorough studies in biology, ecology and chorology). We must not pass over other species, whose status might change in time.

We shall continue our study with a presentation of the endemites with a limited specific spreading area, but only those on the Romanian territory and which were identified in Oltenia. The subendemites are the taxa (species or subspecies) which have most of their spreading area

on the territory of our country; we start from the assumption that they were formed in this region but they extended their spreading area to the neighbouring territories. Some species became endemic because of a restriction of their spreading area for more extended is the past (conservative endemism), while for some other species their spreading area in getting larger (progressive endemism).

Taking into consideration these facts, one can distinguish two categories of endemytes:

- palaeoendemytes with genera and species (megaendemic taxa);
- neoendemytes, normally represented by microendemic taxa (infraspecific) (Bănăreşcu, Boşcaiu, 1973).

Beldie, 1967; Boşcaiu, 1973 in: Bănăreşcu et Boşcaiu, 1973 and Dihoru, 1987 in Dihoru et Pârnu, 1987, made an important clearing-up regarding the way of using terms such as endemism, endemyte, subendemyte.

Generally accepted, the endemyte is a species, which has a specific spreading area of small size, although the limits for its size cannot be specified (sometimes the endemyte is also a superspecific taxon: genus, family).

Knowing all the aspects of these species can offer clues regarding the measures one must take in order to protect them. The concept of protection is represented in a modern vision, by protecting the whole habitat, with the species it preserves, through creating protected areas. These territories or habitats must be studied and watched in time, in order to notice the evolutionary tendencies for them and for the species they preserve. One must do further research on the vegetal populations, their level of vitality, division, spreading for species with different degrees of being in danger. Besides the data on the population and biology of each taxon, we have to know both the ecologic and coenologic variability and amplitude, i.e. the phytocoenologic groupings they vegetate in, and the comparing to similar data in the country. All this information could lead to the delimitation of some perimeters with special protection, in order to preserve them within the ecological environment they were formed and live in.

For Oltenia, which covers the territory between the Danube River and the Parâng and Căpăţanii Mountains about 230 species from a total of 2,100 known vascular species are rare and vulnerable (including the endemytes and the subendemytes). One explanation for the large number of species in Oltenia could be the diversity of habitats. However the geodiversity is more pronounced in the mountains compared to the plain and hills and plateaus. That is why according to the following data, the mountains are richer in endemytes and subendemytes. We can most characteristic habitats (stable places) which are less influenced by zoo-anthropogenic activities in the mountains and these are the ones that shelter species of special phytogeographic and phytohistorical importance, including endemisms.

a) The endemytes in Oltenia

They will be ordered alphabetically, accompanied by the sozological* category, ecology**, coenology and chorology in Oltenia and finally the geoelement. Compared to the preceding paper (G. Popescu, M. Păun, 1973) the taxonomic data were up-dated according to personal research studies, the material in the herbarium (HUCv – Herbarium Universitatis

* The sozological category (of danger) was adopted according to M. Oltean et al. 1994; for some species it was written in brackets, whenever it was necessary.

** For the ecology of each species, one opted for *rupicolous* and *saxicolous* species; these represent the most characteristic habitats (stable places) which shelter endemytes and subendemytes, and also other species with an important phytogeographical or phytohistorical value, together with the other data of ecology (according to Al. Beldie, 1967, 1977, 1938):

rupicolous – species that vegetate on the steep slopes, strongly inclined declivities

saxicolous – species that vegetate on rocky regions, boulder area and detritus: sometimes on skeleton-rocky soils.

Craiovensis) which consists of about 500.000 sheets, and the new data on their specific spreading areas, published for the Romanian or Central Europe Flora.

R *Androsace villosa* L. ssp. *arachnoidea* (Schott, Nyman et Kotschy) Nyman

Ecology: mesoxerophyte, heliophylis *saxicolous* species. **Coenology:** in associations of limestone rocky regions in the subalpine and alpine areas (*Seslerion bielzii*). **Chorology:** Vânturarița Peak in the Căpățâni Mountains (1.800 – 1.900 m). End. Carp. S-E.

R *Athamanta turbith* (L.) Brot. ssp. *hungarica* (Borbás) Tutin

Ecology: calcophyle, termophylis *saxicolous* species. **Coenology:** in calcophyle associations of the low mountain regions and subalpine area from Al. *Seslerion rigidae* and *Seslerion-Festucion pallentis*. **Chorology:** in the limestone gorges of Olteț, Bistrița, Sohodol, Galben, Motru (600-800 (900)m) and in Buila (1.600 m). End. Carp. S.

R *Centaurea pinnatifida* Schur

Ecology: mesothermic, heliophylis, *rupicolous* species. **Coenology:** in associations of subalpin and alpin region without *Seslerion bielzii* (*Seslerio bielzii-Caricetum sempervirentis*, *Seslerio caerulantis-Festucetum saxatilis*). **Chorology:** The Parâng and the Căpățâni Mountains. End. Carp. S-E.

R *Cerastium transsilvanicum* Schur

Ecology: mesophyte-mesohigrophyte, sciaphylis *rupicolous* species. **Coenology:** in subalpine and alpine associations of *Seslerion bielzii*. **Chorology:** the limestone chain of mountains Buila-Vânturarița in the Căpățâni Mountains. End. Carp. S-E.

nt *Dianthus henteri* Heuffel (Fig. 1)

Ecology: xeromesophylis, sciaphylis *rupicolous* species. **Coenology:** in mountain calcophylis associations (*Seslerio-Festucion pallentis*) and on silicious rocks (*Asplenion septentrionalis*). **Chorology:** in limestone gorges (in the lower mountain region) up to subalpine area (Parâng, Căpățâni and Vâlcan Mountains) End. Carp. S.

nt (R) *Dianthus spiculifolius* Schur (Fig. 2)

Ecology: a mesoxerophyte, calcophylis, heliophylis *saxicolous* species, often in compact populations. That is why we do not consider it endangered. **Coenology:** in associations with a limestone sublayer, from the mountain region to the subalpine area (*Seslerietalia*, *Seslerion rigidae*, *Seslerio-Festucion pallentis*). **Chorology:** in gorges, on the mountain valleys of Olteț, Sohodol, Bistrița, Gilort. End. Carp.

R *Dianthus tenuifolius* Schur

Ecology: a mesothermic *rupicolous* species. **Coenology:** in associations from the mountain region to the subalpine (alpine) area *Festucion rupicolae*, *Seslerio-Festucion* and *Seslerion bielzii*. **Chorology:** rare in Căpățâni Mountains. End. Carp. S-E.

R *Erysimum wittmannii* Zawadzki ssp. *transsilvanicum* (Schur) P. W. Ball.

Ecology: a mezoxerophyte-xerophyte, heliophylis, *saxicolous* species. **Coenology:** characteristic to associations of grassy, sunny to semi-shadowed rocky regions from *Seslerio-Festucion pallentis*. **Chorology:** the Olteț Gorges The Albu Peak in the Căpățâni Mountains, the Parâng Mountains. End. Carp. S.

nt (R) *Galium baillonii* Brandza

Ecology: a sciaphylis, *rupicolous* species. **Coenology:** in forest associations on limestone rocky regions from *Acerion pseudoplatani*, *Carpinion betuli* (*Galio kitaibeliani-Fagetum*). **Chorology:** in the gorges, on limestone rocky regions, on all the mountain valleys in Oltenia; therefore we do not consider it endangered. End. Carp. S.

R *Hepatica transsilvanica* Fuss

Ecology: a rare mesophylis species met on limestone rocky regions and in weed areas on slopes or forest glades, in few localities, in small populations. **Coenology:** beech forests with

mull flora (*Symphyto cordato-Fagion*) or forest on limestone rocky regions (*Acerion pseudoplatani*). **Chorology:** The Gorges of Sohodol (the Vâlcan Mountains) the Motru Valley at Piatra Broștenilor. End. Carp. S-E.

R(nt) *Heracleum palmatum* Baumg. (Fig. 3)

Ecology: a sciaphylis *rupicolous* species in the high weed areas along the mountain valleys. **Coenology:** in associations of high weeds in the lower mountain region up to the subalpine area from *Adenostylion* and *Telekion*. **Chorology:** in a few localities and in small populations; however, the plants are big and strong and they multiply with difficulty, by means of a sexual reproduction (fruits): The Gorges of the River Cheia, Bistrița, Vâlcea, Rânca and Gaura Mohorului-Parâng. End. Carp.

R *Koeleria macrantha* (Ledeb.) Schultes ssp. *transsilvanica* (Schur) A. Nyárady

Ecology: a xeromesophylis, xerophylis, heliophylis, *saxicolous* species, especially calcicolous. **Coenology:** In association on limestone rocky regions in the upper mountain region up to the alpine area from *Seslerion bielzii* (*Seslerio coerulantis-Festucetum saxatilis*, *Minuartio verna-Festucetum saxatile* etc.). **Chorology:** the Căpățâni Mountains (frequently), and less in the Parâng Mountains.

R *Onobrychis montana* DC. ssp. *transsilvanica* (Simonkai) Jáv.

Ecology: oligotrophic mesoxerophyte, heliophylis *saxicolous* species. **Coenology:** locally in *Dryadetum octopetalae*, *Minuartio verna - Festucetum saxatile*. **Chorology:** in the subalpine area of the Căpățâni Mountains (Buila, Vioreanu, Ștevioara, Albu, Claia Strâmbă) but only in small populations. End. Carp.

R *Primula auricula* L. ssp. *serratifolia* (Roch) Jáv.

Ecology: mesophylis-mesoxerophylis, calcicolous, sciaphylis, *saxicolous*. **Coenology:** in associations of limestone rocky regions in the lower mountain region from *Seslerion rigidae*, *Moehringion muscosae*, in small, vulnerable populations. **Chorology:** a rare species in the Vâlcan Mountains (the Sohodol Gorges) and in the Mehedinți Mountains. End. Carp. S.

R *Sorbus dacica* Borbas

Ecology: mesoxerophyte, subthermophylis, calcicolous, *rupicolous* species. **Coenology:** in a few localities in Oltenia with this species in association *Syringo-Fraxinetum orni* Borza 1958 em. Resm. 1970. **Chorology:** the Vâlcan Mountains (the Sohodol Gorges), the Mehedinți Mountains (Piatra Cloșanilor). End. Carp.

R *Thlaspi dacicum* Heuffel ssp. *dacicum*

Ecology: calcicolous, mesophyte-mesoxerophyte, heliophylis, *rupicolous* species. **Coenology:** in associations of limestone rocky regions in the alpine and subalpine areas (*Seslerion bielzii*). **Chorology:** the Parâng Mountains. End. Carp. S-E.

R *Thlaspi dacicum* Heuffel ssp. *banaticum* (Uechtr.) Jáv.

Ecology: mesoxerophyte, *saxicolous* species. **Coenology:** in associations of detritus, in the alpine and subalpine areas (*Thlaspietea rotundifolii*). **Chorology:** Obârșia Cloșani, the Mehedinți Mountains. End. Carp. S.

nt *Thymus comosus* Heuffel ex Griseb.

Ecology: calciphylis, mesoxerophyte-xerophyte, heliophylis, *saxicolous* species. **Coenology:** in associations of limestone rocky regions in the lower and middle mountain region going up to the subalpine area (*Teucrion*, *Seslerio-Festucion*) or of rock cracks (*Asplenion septentrionali*). **Chorology:** In the gorges on limestone rocks in the mountain valleys: Sohodol, Olteț, Bistrița, Costești etc. End. Carp. S-E.

b) The subendemytes in Oltenia

R *Corydalis solida* (L.) ssp. *slivenensis* (Velen) Hayek

Ecology: eutrophic, meso-hygrophylis, silvicolous species. **Coenology:** in Turkey oak, pedunculate oak forest (*Quercion frainetto*, *Carpino-Quercetum robori*). **Chorology:** Craiova, Leamna, Podari etc. Balc.

R *Doronicum carpaticum* (Griseb. et Schenk) Nyman

Ecology: sciaphylis-chionophylis, *saxicolous* species. **Coenology:** in associations of mountain and subalpine detritus (*Thlaspietea rotundifolii*). **Chorology:** a rare species in the Parâng Mountains (the Roman Valley: 1,100-1,200 m, Muntinu, Urdele etc) and the Căpățâni Mountains (Ștevioara Peak 1.850 m). Carp. - B.

R *Gypsophila petraea* (Baumg.) Reichenb.

Ecology: subthermophylis, heliophylis, *saxicolous* species. **Coenology:** in associations of sunny rocky regions (*Gypsophilion petraeae*). **Chorology:** Oslea Peak in the Mehedinți Mountains. Carp. – B.

R *Iris reichenbachii* Heuffel

Ecology: thermophylis, heliophylis, *saxicolous* species. **Coenology:** in associations of sunny rocky regions and slopes (*Festucion rupicolae*). **Chorology:** the Mehedinți Plateau, between Dudașul Schelei and Alion Mountain. Balc.

R *Peucedanum rochelianum* Heuffel

Ecology: heliophylis, grassy and from the xeromesophylis shrubby species. **Coenology:** in mesophylis associations of *Festuco rubrae-Agrostietum* and mesohigrophylis associations from *Carici pallescenti-Agrostirtum caninae*. **Chorology:** in the holm-oak storey to Călnic – Gorj. Romania, Serbia.

R *Potentilla haynaldiana* Janka (Fig. 4)

Ecology: silicicolous, *saxicolous* species. **Coenology:** in associations of silicious rocky regions in the subalpine and alpine areas (*Seslerio – Festucion pallentis*). **Chorology:** The Parâng Mountains, Urdele, Tidvele, Călcescu Lake etc. Carp.-B.

R *Ranunculus carpaticus* Herbich

Ecology: silvicolous species or on fixed detritus. **Coenology:** in associations of beech trees or beech trees combined with resinous trees (*Fagion dacicum*). **Chorology:** small populations but in more localities in the middle and upper mountain region: the Defile of Bistrița, Vâlcea, Olteț; Mălaia (the Căpățâni Mountains). Carp. E.

R *Scabiosa columbaria* L. ssp. *pseudobanatica* (Schur) Jáv. et Csapody (Fig. 5)

Ecology: calciphylis, thermophylis, heliophylis, *saxicolous* species. **Coenology:** in thermophylis associations of limestone rocky regions (*Seslerio-Festucion pallentis*). **Chorology:** from the middle mountain level to the subalpine area in the Căpățâni Mountains. Dac. - Pan.

R *Seseli gracile* Waldst. et Kit.

Ecology: calciphylis, subthermophylis, *saxicolous* species. **Coenology:** in associations of limestone rocky mountains in the mountain region up to the subalpine area (*Seslerion regidae*). **Chorology:** The Gorges of the Cheia River (1.100 m) the Vânturarița Peak (1.800 m), in the Căpățâni Mountains. Carp. – B.

R *Sesleria bielzii* Schur

Ecology: mesoxerophyte, oligothermic, *rupicolous* species. **Coenology:** specific to associations of limestone rocky regions in the subalpine – alpine area (*Seslerion bielzii*, *Seslerietalia caeruleae*). **Chorology:** the limestone chain of mountains Buila – Vânturarița (the Căpățâni Mountains), Tidvele, Urdele, Mohorul, Boarneș, Parângul Mare (the Parâng Mountains). Carp. – B.

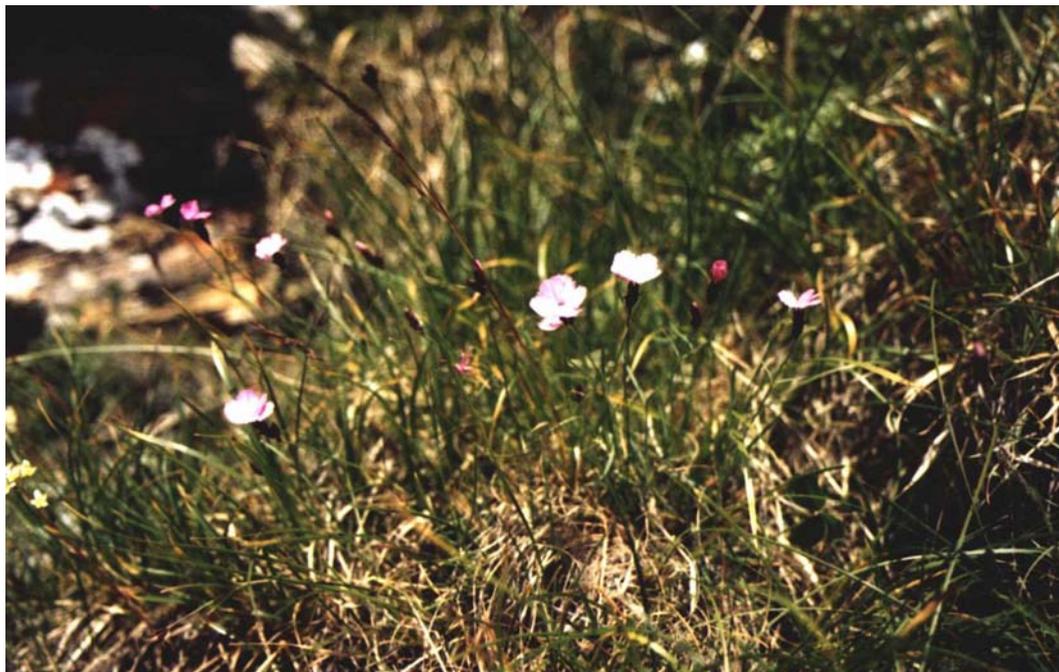


Fig. 1: *Dianthus henteri* Heuffel



Fig. 2: *Dianthus spiculifolius* Schur



Fig. 3: *Heracleum palmatum* Baumg.



Fig. 4: *Potentilla haynaldiana* Janka



Fig. 5: *Scabiosa columbaria* L. subsp. *pseudobanatica* (Schur) Jáv. et Csapody

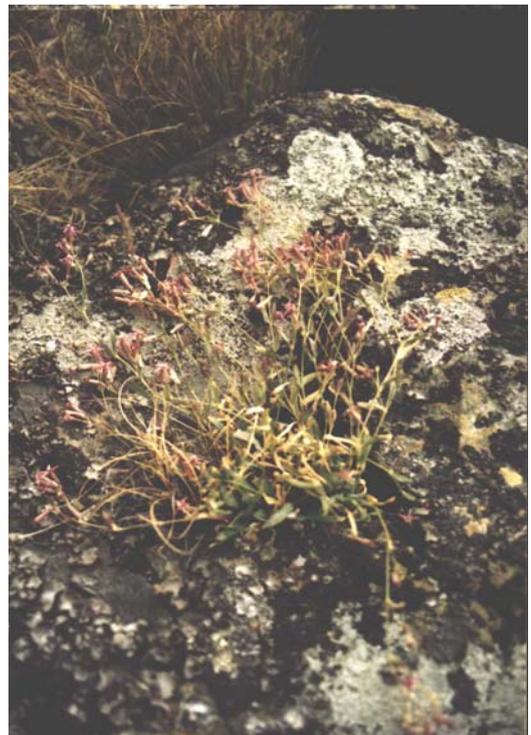


Fig. 6: *Silene lerchenfeldiana* Baumg.

R *Silene nutans* L. ssp. *dubia* (Herbich) Zapal

Ecology: mesophyte, *saxicolous* species, but also of stony mountainsides in places with incomplete vegetation. **Coenology:** in open associations from Cl. *Sedo-Scleranthetea* (in lower mountain region) but also in the rocky cracks (*Asplenietalia septentrionalis*) and on grassy rocky regions in the upper mountain and subalpine areas (*Festucion rupicolae* and *Seslerion bielzii*). **Chorology:** in several localities in the Parâng, Vâlcan and Căpățâni Mountains, but in small populations. Carp.

R *Silene lichenfeldiana* Baumg. (Fig.6)

Ecology: calcifugal, mesoxerophyte, silicicolous, *saxicolous* species. **Coenology:** *Silenion lichenfeldianae*. **Chorology:** the Parâng, and the Vâlcan Mountains, a rare species. Carp. – B.

R *Symphandra wanneri* (Rochel) Heuff.

Ecology: calciphylis, mesophylis, sciaphylis, *saxicolous* species. **Coenology:** in associations of limestone rocky regions in the lower mountain area (*Moehringion muscosae*) up to the subalpine area (*Silenion lichenfeldianae*). **Chorology:** The Gorges of Bistrița – Vâlcea (700 m); Stog, Stogșoare (1.600-1.700 m) in the Căpățâni Mountains. Carp. – B.

R *Thymus pulcherrimus* Schur

Ecology: calcicolous, heliophylis, *saxicolous* species. **Coenology:** in associations of boulders, detritus, gravels, in the alpine and subalpine areas of al. *Thlaspeion rotundifolii*; in alpine lawns (*Caricion curvulae*). **Chorology:** in the Căpățâni Mountains: Buila (1.830 m); Zănoaga (1.550 m). Carp.

R *Trisetum fucum* (Kit. ex Schultes) Schultes in Roemer et Schultes

Ecology: *rupicolous*, meso-hygrophylis and in associations of detritus species. **Coenology:** in associations from grassy of limestone rocky regions in the subalpine areas (*Seslerion bielzii*). **Chorology:** Căpățâni Mountains, Vioreanu Peak (1.900 m). Carp. (Romania, Slovakia, Polonia).

R *Trisetum macrotrichum* Hackel

Ecology: *rupicolous*, mesophyte-mesoxerophyte, calcicolous species. **Coenology:** in associations of detritus, in the subalpine areas (*Seslerion bielzii*) and in weedy area from grassy rocky regions (*Calamagrostion*) **Chorology:** in the Căpățâni Mountains: Comarnici sheepfold, Vioreanu Peak (1.800-1.900 m). Carp. (Romania, Ucraina).

Conclusions

The paper presents a complex characterization of 18 endemytes and 16 subendemytes from the ecology, coenology and chorology print of view.

The largest part of the endemytes are *saxicolous* species and subspecies – 9, while 8 species are *rupicolous* species.

The largest part of the subendemytes (10) is representend by *saxicolous* species; there is 3 *rupicolous* species and 2 *silvicolous* species.

Most of the endemytes and subendemytes were described by Schur (8 species and subspecies), by Heuffel (7), by Javorka (4), by Baumgarten (3), by Borbas (2), by Nyman (2), by Brandză (1), by Janka (1), Fuss (1), Hayek (1), Herbich (1), Waldst. et Kit. (1), Zapal (1), Hackel (1).

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ECOLOGIA, CENOLOGIA ȘI COROLOGIA ENDEMITELOR ȘI SUBENDEMITELOR DIN OLTENIA (ROMANIA)

(Rezumat)

Lucrarea realizează o caracterizare complexă a 18 specii și subspecii endemice ale florei României care se găsesc și în Oltenia.

Taxonii endemici analizați în această lucrare sunt: *Androsace villosa* ssp. *arachnoidea*, *Athamanta turbith* ssp. *hungarica*, *Centaurea pinnatifida*, *Cerastium transsilvanicum*, *Dianthus henteri*, *D. spiculifolius*, *D. tenuifolius*, *Erysimum witmanni* ssp. *transsilvanicum*, *Galium baillonii*, *Hepatica transsilvanica*, *Heracleum palmatum*, *Koeleria macrantha* ssp. *transsilvanica*, *Onobrychis montana* ssp. *transsilvanica*, *Primula auricula* ssp. *serratifolia*, *Sorbus dacica*, *Thlaspi dacicum* ssp. *dacicum* and ssp. *banaticum*, *Thymus comosus*.

Dintre taxonii subendemici am analizat: *Corydalis solida* ssp. *slivenensis*, *Doronicum carpaticum*, *Gypsophila petraea*, *Iris reichenbachii*, *Peucedanum rochelium*, *Potentilla haynaldiana*, *Ranunculus carpaticus*, *Scabiosa columbaria* ssp. *pseudobanatica*, *Seseli gracile*, *Sesleria bielzii*, *Silene lerchenfeldiana*, *S. nutans* ssp. *dubia*, *Symphyandra wanneri*, *Thymus pulcherrimus*, *Trisetum fuscum*, *T. macrotrichum*.

Acestea sunt însoțite de informații în ceea ce privește ecologia, cenologia, elementul geografic și corologia (în Oltenia).

La ecologia fiecărui taxon s-a optat pentru: specii rupicole și saxicole (după A. Beldie 1967), acestea reprezentând cele mai caracteristice habitate ce adăpostesc endemitele și subendemitele din Oltenia.