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PLANTS SPECIES OF COMMUNITY INTEREST IDENTIFIED IN THE FLORA OF THE TRANSYLVANIAN PLAIN (MUREŞ COUNTY)

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ABSTRACT: The purpose of this study is to present the species of community interest identified in the cormoflora of the Transylvanian Plain (Mureş County) as well as to verify in the field the existing chorological information, to select the endangered plant categories and to highlight the main populations of valuable species. Because of the location of the region, the diversity of the reliefs (hills, meadows), the various exhibitions and inclinations of the slopes, the Transylvanian Plain is distinguished by a great diversity of vegetal taxa (Oroian, Sămărghițan, 2014). The target species were the species of community interest listed in the Annexes to the Habitats Directive and those of O.U.G. no.57/2007.

KEYWORDS: conservation status, Mureş county, Transylvania

INTRODUCTION:

The Transylvanian Plain is represented by the central part of the Transylvanian Depression and extends on the territory of three counties: Bistriţa-Năsăud, Mureş and Cluj. In the territory of Mureş County, the Transylvanian Plain, situated to the north of the Mureş River, is a region formed by hills with an average altitude of 400 m and is walled by the wide valleys of the Mureș River tributaries.

As a consequence of the location of the region, the diversity of the reliefs (hills, meadows), the various exposures and inclinations of the slopes, the Transylvanian Plain is characterized by a great diversity of vegetal taxa, the floral inventory comprising 716 vascular taxa, including 692 species, 24 subspecies and 2 forms (Oroian, Sămărghițan, 2014).

MATERIAL AND METHODS:

For each species of community interest data was recorded such as: species systematic, area, population, area of habitat/habitats suitable for species, the conservation status and the general trend of conservation status, conservation measures, factors that isolate populations and future prospects, abundance (Mihăilescu & al. 2015).

A chorology map is presented for each species. The symbols we used are • for the points (localities) of species identified in field and ▪ for the localities mentioned in bibliography.

The study focuses on the species of community interest listed in the Annexes to the Habitats Directive and those of O.U.G. no.57/2007.

The habitat types are coded according to Interpretation Manual of Natura 2000 Romanian habitats (Gafta & Mountford (eds.) 2008) and according to Habitats in Romania (Doniţă & al. 2005).

To analyze and classify de plant associations we followed Coldea, 2012.

There are no bibliographic data about the population size and their conservation status. Thus the evaluation of the population size trend was made taking in consideration authors experience and previous personal field researches.

RESULTS:

In the study area, seven species of community interest were identified. Of these:

- ✓ 4 species are LC (least concern) – Lowest risk; does not qualify for a higher risk category. Widespread and abundant taxa are included in this category.
- ✓ 1 species NT (near threatened) – Likely to become endangered in the near future.
- ✓ 1 species DD (data deficient) - Not enough data to make an assessment of its risk of extinction.

The general tendency of the conservation status is unfavorable-inadequate, the populations of the community species being predominantly in a good and very good conservation status, but a decline in the populations size is expected in the future.

Agrimonia pilosa Ledeb. – Hairy agrimony
Natura 2000 Code: 1939

- Sozological category **LC**, Anexes IIb, IVb/Anexes 3, 4A.
- *Trifolion medii*; H, Euras; 2n=28, 56, P; $L_6T_5U_5R_6N_x$.

It is a species that grows on the edge of forests or in bushes, it is perennial, mesophyte; prefers weakly acidic soils. In the studied area, the coenoses with *Agrimonia pilosa* were identified in the localities: Herghelia, Săbed, Moreşti and Ulieş (fig.1), being classified in all. *Festucion valesiacae*. They were described from the habitats: 6240* Sub-pannonic steppic grasslands in association *Medicagini minimae-Festucetum valesiacae* Wagner 1941 and 62C0 *Ponto-Sarmatic Steppes. The coenoses were framed in the ass. *Danthonio-Stipetum stenophyllae* Ghisa 1941 (*Stipetum stenophyllae transsilvanicum* Soó 1946 and Soo 1947). Individuals set up on small areas, located in the upper third of the hill slope, at an altitude of 400-475 ms.m and an aspect of about 20-40 degrees. The

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steppe landscape is dominated by xeric grasslands in whose composition the grasses and various xerophilous dicotyledonous prevail. In the floristic composition besides the edifying species: *Stipa tirsa* and *Thymus pannonicus*, there are a large number of characteristic xerophilous species for *Cirsio-Brachypodion*, *Festucetalia rupicolae*, *Festucetalia valesiacae*, but also species characteristic of the *Festuco-Brometea* class, which emphasize the xerophilous character of association. Within the association are also encountered shrubs of *Prunus tenella* and *Rosa gallica*. Besides the edifying species, phytogeographical important species or species included in various sozological categories have been identified: *Astragalus exscapus* ssp. *transsilvanicus, Salvia transsylvanica, Crambe tataria, Jurinea mollis* ssp. *transylvanica, Cephalaria radiata, Salvia nutans, Dictamnus albus, Iris aphylla, Orchis morio, Adonis vernalis*, etc.

These grasslands with a staggered steppe character, which occupy small areas, are nothing more than relic of diluvial steppe, usually pasture, being in a severely degraded state due to the unfavourable water regime. As a result, the state of conservation of the identified population is unfavorable-bad.

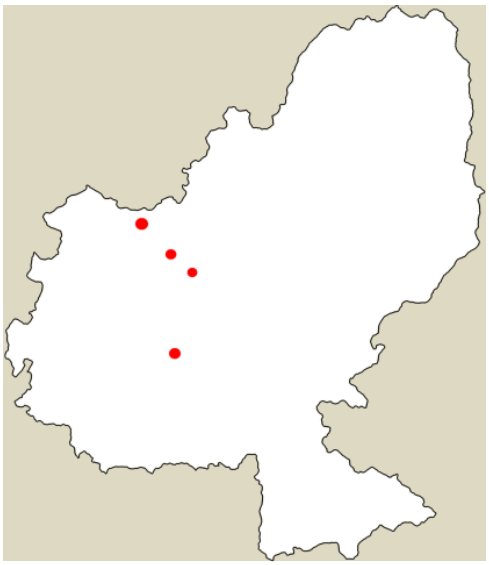

Fig. 1 Chorology map of *Agrimonia pilosa* in the studied area

Crambe tataria Sebeók – Tartarian Breadplant
Natura 2000 Code: 4091

- Sozological category **LC**, Anexes IIb, IVb/Anexes 3, 4A.
- *Stipion lessingianae, Agropyro-Kochion, Festucion valesiacae*; H, Pont-Pan; 2n=30, D $L_9T_6U_3R_7N_3$.

Tartarian Breadplant (fig.2a,b) is a species that grows on the eroded slopes of the forest-steppe area, is a perennial, xeromezophilous, subtermophilous species that grow on weakly neutrophilic soils.

In this study the species was identified in the localities: Cozma, Fărăgău, Moreşti, Oroiu, Săbed and Zau de Câmpie. The bibliographic information, on the species' chorology, indicates its presence in the localities: Balda, Cheţani, Frunzeni, Grindeni, Lechincioara, Luduş, Madaras, Moisa, Pogăceaua, Tăureni and Zau de Câmpie.

The habitats in which the Tartarian Breadplant individuals are present are framed in all. *Festucion valesiacae*: 6240* Sub-pannonic steppic grasslands (*Festuco rupicolae-Caricetum humilis* Soó (1930) 1947) and 62C0* Ponto-Sarmatic steppes (*Stipetum pulcherrimae* Soó 1942 association). Along with the populations of *Crambe tataria*, some species included in various sozological categories have been identified: *Astragalus exscapus* ssp. *transsilvanicus, Jurinea mollis* ssp. *transylvanica, Cephalaria radiata, Salvia nutans, Dictamnus albus, Iris aphylla, Adonis vernalis* etc. but also other species such as *Astragalus monspessulanus, Carex humilis, Festuca valesiaca, Oxytropis pilosa, Verbascum phoeniceum*, and so on.

All the populations identified are in a poorly-depressed, unfavorable-inadequate state of conservation for a number of reasons including the pressures and threats affecting the habitats of the species, and the abandonment of the hayfields or intensive grazing (the leaves of the shoots are destroyed by grazing, fig.2c).

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Fig. 2 *Crambe tataria* Sebeók: 2a. chorology map of in the studied area, 2b. general aspect at Săbed, 2c. signs of grazing at Săbed (Foto: Silvia Oroian).

Echium maculatum L. - Russian bugloss
Natura 2000 Code: 4067

- Sozological category **LC**, Anexes IIb, IVb/Anexes 3, 4A.
- *Festucion valesiacae, Jurineo-Euphorbinenion, Aceri-Quercion*; T, Pont-Pan; 2n=24, P; $L_8T_7U_3R_7N_3$.

Russian bugloss is a biannual, xero-mezophilous, sub*termophilous, neutrophilic and rare species. In the studied area, the species was identified in 4 localities: Balda, Fărăgău, Moisa, Oroiu (fig. 3 a,b,c). As far as the species' chorology, it has also been reported in the localities: Band, Câmpeniţa-Păcureni, Grebenişu de Câmpie and Lechincioara according to the bibliography.

The species has been described in habitats belonging to the *Cirsio-Brachypodion* alliance: 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometea habitat in ass. *Carici humilis-Brachypodietum pinnati* Soó 1947 and *Festucion valesiacae* alliance: 62C0* ponto-sarmatic steppes (ass., *Stipetum pulcherrimae* Soo 1942).

In addition to the target species, plant species of phytogeographical importance and rare species listed in the national red lists emphasize: *Crambe tataria, Jurinea mollis* ssp. *transylvanica, Salvia nutans, Dictamnus albus, Adonis vernalis Prunus tenella* etc.

In the observation points beside *Echium maculatum,* species such as: *Stipa pulcherrima, Ajuga laxmanni, Anchusa barrelieri, Astragalus austriacus, Brassica elongata, Falcaria vulgaris, Festuca rupicola, Linum austriacum, Linum tenuifolium, Oxytropis pilosa, Phlomis tuberosa, Salvia austriaca, Vinca herbacea* etc. were noted.

The observations in the field of effective population size and human factors (pressure / threats) shows that populations are in a good state of preservation, but is expected to decrease in the future, only the populations from Fărăgău (Fig. ..) and Oroiu are in a very good conservation status, but they are still in decline.

Limiting factors aimed at population dynamics of the species and the habitat refers to mismanagement of the land use: both the abandonment of use (in particular the absence of mowing) and intensive sheep grazing.

Fig. 3 *Echium maculatum* L.: 3a. chorology map in the studied area, 3b,c. general aspect at Fărăgău (Foto: Silvia Oroian).

Pulsatilla vulgaris Mill. ssp. ***grandis*** (Wender.) Zämels – Greater Pasque Flower
Natura 2000 Code: 4110

- Sozological category LC, Anexes IIb, IVb/Anexes 3, 4A
- *Festucetalia valesiacae*; H, Eur (centr.)-End.; 2n=32, P; $L_9T_6U_3R_7N_1$.

Greater Pasque Flowers are perennials growing in the sunny grasslands of the 20 ° inclined steppic slopes and the S-SE exposure, at an altitude of about 450 meters, being a xero-mesophilous, moderately thermophilous and slightly neutrophilic species.

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In the studied territory the species was identified in two points, in Săbed and Moreşti (fig. 4 a,b), only in some sporadic places, in the habitat 6240 * Sub-pannonic steppic grasslands in the ass. *Medicagini minimae-Festucetum valesiacae* Wagner 1941 and in the habitat of 62C0 * Ponto-Sarmatic steppes (ass *Stipetum pulcherrimae* Soó 1942). Besides the edifying species, many species of *Festucion rupicolae* have been noted, such as: *Astragalus exscapus* ssp. *transsilvanicus*, *Crambe tataria*, *Ajuga chamaepitys*, *Alium flavescens*, *Astragalus austriacus* etc. and of Festucetalia valesiacae order: *Achilea setacea*, *Adonis vernalis*, *Ajuga laxmanni*, *Anthemis tinctoria*, *Asperula cynanchica*, *Astragalus onobrychis*, *Bupleurum falcatum*, *Campanula sibirica*, *Centaurea biebersteinii ssp.biebersteinii*, *Festuca valesiaca*, *Linum flavum*, *Linum hirsutum*, *Jurinea mollis*, *Inula ensifolia*, *Iris aphylla*, *Muscari tenuiflorum*, *Salvia nutans*, *Salvia transsylvanica*, *Serratula radiata*, *Verbascum phoeniceum* etc.

Fig. 4 *Pulsatilla vulgaris* Mill. ssp. *grandis* (Wender.) Zämels: 4a. chorology map in the studied area, 4b. general aspect at Săbed (Foto: Silvia Oroian).

The Greater Pasque Flower were also reported in Lechincioara, a village near Săbed.

The main pressures / threats concerning both the habitat of the species and the population dynamics are related to land use: both abandonment of the use (especially lack of mowing) and intensive grazing. As a result, the state of conservation of the identified population is unfavorable-bad.

Among the near threatened species we mention the snowdrops.

Galanthus nivalis L. – Snowdrop

Natura 2000 Code: 1866

- Sozological category NT, Anexe Vb / 5A
- *Fagetalia*; G, Eur (centr.)-subMed; 2n=24, D; $L_5T_xU_xR_xN_7$.

The snowdrop is a perennial grassy plant growing in the studied area through hardwood and hedgerows. The populations being identified in the localities: Band, Băla, Ercea, Fărăgău, Herghelia, Păneţ, Săbed, Şeulia, Tîrgu Mureş, Ulieş, Zau de Câmpie (fig. 5 a,b).

It is a mesophilous, mesotherm, neutrophilic species; prefers wet, sandy, clayey and moderately acidic soils.

In the studied area, the habitat in which individuals of the species are present is 91Y0 Dacian oak-hornbeam forests, within the ass. *Melampyro bihariensis-Carpinetum* (Borza 1941) Soó 1964 em. Coldea 1975. These forests populate slopes of slightly or moderately inclined hills with northern or intermediate exposure, on soils with moderate humidity, to a relatively abundant humidity, on a pseudogley substrate.

Besides the edifying species, populations of *Galanthus nivalis* are accompanied in the tree layer by: *Prunus avium* and *Tilia cordata*, in the bushes layer by: *Acer campestre*, *Cornus mas*, *Cornus sanguinea*, *Crataegus monogyna*, *Euonymus europaea*, *Ligustrum vulgare*, *Lonicera xylosteum*. In the grassy layer is distinguished: *Polygonatum odoratum*, *Helleborus purpurascens*, *Fragaria vesca*, *Stellaria holostea*, *Viola reichenbachiana*, etc.

The main anthropic factor to which the population is exposed is a massive collection for marketing (Fig. 5 c).

Observations on the field show that in the 11 observation points the populations are decreasing but they are in a good conservation status.

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Fig. 5 *Galanthus nivalis* L.: 5a. chorology map in the studied area, 5b. general aspect in the forest near Ulieș (Foto: Silvia Oroian), 5c. massive collection in the forest near Ulieș (Foto: Silvia Oroian).

Out of the data deficient community interest plant species we mention *Iris aphylla* L.

Iris aphylla L. (*Iris hungarica* Waldst. et Kit.) – steppe iris

Natura 2000 Code: 4097

- Sozological category DD, Anexele IIb, IVb/Anexele 3, 4A
- *Geranion sanguinei*, *Festucion valesiacae*, *Jurineo-Euphorbinenion*; H, Cont-Eur; 2n=24, 40, 48; D-P; $L_8T_6U_3R_7N_1$.

Steppe iris is a xeromezophilous, eurytermic species which can be found in dry grasslands, shrubs, sand-rocky places, in the studied hills area. It was identified in the localities: Fărăgău, Lechinţa, Moreşti, Săbed (fig. 6 a,b).

From the literature, the species was quoted from the localities: Band, Culpiu, Grebenişu de Câmpie, Mădăraș and Săbed.

The typical habitats of that species was found in the study area are: 62C0* ponto-sarmatic steppes (ass. *Stipetum lessingianae* Soó 1947, *Stipetum pulcherrimae* Soó 1942), 6240* [Sub-Pannonic steppe grasslands] (ass. *Festuco rupicolae-Caricetum humilis* Soó (1930) 1947; *Botriochloëtum ischaemi* (Krist. 1937) Pop 1977, *Stipetum capillatae* (Hueck 1931) Krausch 1961, 40A0* Subcontinental peri-Pannonic scrub (ass. *Prunetum tenellae* Soó 1947) etc.

In the coenoses with *Iris* characteristic species of Festucion rupicolae alliance were also identified: *Astragasus exscapus* ssp. *transsilvanicus*, *Crambe tataria*, *Acinos arvensis*, *Ajuga chamaepitys*, *Alium flavescens*, *Astragalus austriacus*, *Falcaria vulgaris*, *Festuca rupicola*, *Inula ensifolia*, *Knautia arvensis*, *Salvia austriaca* etc.

Among the species recorded alongside *Iris* aphylla, we mention some species of Festucetalia valesiacae order: *Achilea setacea*, *Adonis vernalis*, *Achillea setacea*, *Ajuga laxmanni*, *Anthemis tinctoria*, *Asperula cynanchica*, *Astragalus onobrychis*, *Bupleurum falcatum*, *Campanula sibirica*, *Centaurea biebersteinii ssp.biebersteinii*, *Centaurea apiculata ssp. spinulosa*, *Centaurea rhenana*, *Dorycnium pentaphyllum ssp. herbacea*, *Festuca valesiaca*, *Linum flavum*, *Linum hirsutum*, *Jurinea mollis*, *Inula ensifolia*, *Iris aphylla*, *Muscari tenuiflorum*, *Salvia nutans*, *Salvia transsylvanica*, *Serratula radiata*, and *Verbascum phoeniceum* etc.

The main anthropic factor to which the population is exposed is the change in land use as well as its collection for commercialization.

Field observations on effective population size and the human factors (pressures / threats) show that the population size is decreasing but in a good state of preservation.

Fig. 6 *Iris aphylla* L.: 6a. chorology map in the studied area, 6b. general aspect at Săbed (Foto: Silvia Oroian).

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CONCLUSIONS

Six species of Community interest were identified as follows: *Agrimonia pilosa* Ledeb., *Crambe tataria* Sebeók, *Echium maculatum* L., *Galanthus nivalis* L., *Iris aphylla* L., *Pulsatilla vulgaris* Mill. ssp. *grandis* (Wender.) Zämels.

In terms of their conservation status, 4 species are classified as LC (least concern), 1 species in the NT category (near threatened) and 1 species in the DD category (deficient data). Of the species identified, the most spread species are *Galanthus nivalis*, which grow in oak forests with hornbeam and *Iris aphylla* and the lowest spread have *Agrimonia pilosa* and *Pulsatilla vulgaris* ssp. *grandis*

The 6 species of community interest belong to phytocoenoses classified in 5 types of Natura 2000 habitats of Community interest (62C0* Ponto-Sarmatian Steppes, 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometea, 6240* Sub-pannonic steppic grasslands, 91Y0 Dacian oak-hornbeam forests and 40A0* Subcontinental peri-Pannonic scrub.

The general tendency of conservation status is unfavourable-inadequate, the populations of community interest species being predominantly in a good and very good conservation status, but a decline in populations is expected in the future.

In addition to the community species in the study area, numerous phytogeographically important plants and rare species mentioned in national red lists were identified.

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