

VEGETAL TAXA WITH HIGH SOZOLOGICAL DEGREE WITHIN OLTENIA, ROMANIA (I)

RĂDUȚOIU DANIEL^{1*}, STAN ION²

¹ University of Craiova, Faculty of Horticulture, Biology and Environmental Engineering Department
A.I. Cuza Street, no 13, RO 200585, Craiova, Romania
University of Craiova, Botanical Garden "Al. Buia", C-tin Lecca Street, no. 32, Craiova, Romania
*Corresponding author, e-mail: radutoiu02daniel@gmail.com

Keywords: chorology, flora, sozological degree, Oltenia, Romania.

ABSTRACT

The main objective of the paper is to update the chorology data for the plant taxa within Oltenia, which are characterized by high sozological degree.

The present paper highlights some of the vascular plants that have undergone changes in their spreading area, or the disappearance from certain stations mentioned in the field literature and in the herbarium of the University of Craiova (C.R.A.), as well as those taxa for which new chorological data are presented: *Acanthus balcanicus* Heywood & I. Richardson, *Aphanes australis* Holub, *Carex secalina* Willd. ex Wahlenb., *Dianthus trifasciculatus* Kit. in Schult, *Hordeum bulbosum* L., *Salvia sclarea* L., *Silene borysthena* (Gruner) Walters, *Alyssum montanum* L. subsp. *gmelinii* (Jord.) Em. Scmid in Hegi, *Medicago polymorpha* L., *Rumex tuberosus* L., *Trifolium michelianum* Savi și *Fimbristylis bisumbellata* (Forssk.) Bubani.

INTRODUCTION

Information regarding the spreading area of certain plant taxa within Romania's flora is available in specialized works that have appeared since the 19th century (e.g. Grecescu, 1898). Numerous plants are reported in these scientific papers, some being described for the first time in Oltenia (e.g. *Potentilla haynaldiana* Janka, *Prangos carinata* Gris).

The species with different sociological degrees received an increased attention after the establishment of the IUCN (International Union for the Conservation of Nature).

Data on the rare, endangered, vulnerable, endemic species or on those with "unknown" status are present in different specialized identification guidebooks (Prodan, 1939; Beldie, 1977, 1979; Ciocârlan, 2000, 2009; Sârbu et al., 2013), in the red book of vascular plants of Romania (Dihoru et Negrean, 2009), or in other different scientific papers (Dihoru et Dihoru, 1994; Oprea, 2005; Rugina et

Mititiuc, 2003, Făgăraș et al. 2006, Șorop et al., 1985).

The monographs and scientific papers issued by researchers who studied the flora of various territories with different extents within Oltenia (Buia, 1959; Păun, 1966; Popescu, 1971, 1974, 1979; Popescu et Păun, 1973; Maloș, 1968; Păun et Popescu, 1971, 1985; Păun et al., 1971, 1989; Popescu et al., 2003; Popescu L., 1980; Roman, 1974; Dihoru et Răduțoiu, 2005, 2006a, 2006b; Costache, 2005, 2006; Niculescu, 2006, Răduțoiu, 2006, 2008a, 2008b; Răduțoiu et Costache, 2009, 2012; Răduțoiu et al., 2013a, 2013b, 2016) comprise chorological data for various species with different sozological degrees.

MATERIAL AND METHODS

Oltenia is located in southwestern Romania and, by its conditions related to relief, climate, soil etc., as well as through its borders, the region represents a well-defined unit from the natural viewpoint. It is bounded by the Olt river eastwards, by

the Danube southwards and westwards, while the Southern Carpathians represent the northern border; the region consists of five counties: Dolj, Olt, Mehedinți, Vâlcea, and Gorj.

Although its surface is approximately eleven times smaller than that of the country, Oltenia encompasses almost all landforms existing in Romania. A varied flora also reflects this diversity. Some of the vegetal taxa mentioned within Oltenia, in various specialized papers, have a high zoological degree at national level.

GPS coordinates were taken for the species identified at different points in Oltenia; moreover, there was realized an image collection of these species and the plants with which they cohabit were recorded. In addition, the ecology, the geoelement and the coenology are presented based on the specialized literature (Sanda et al., 1983) and on the data collected in the field.

RESULTS AND DISCUSSIONS

Acanthus balcanicus Heawood & I. Richardson – Fam - Acanthaceae

Sozological characterization: it represents a vulnerable species that is present in several counties located in southwestern Romania. The specialized literature treats it as an endemic species for the Balkan Peninsula (Dihoru et Negrean, 2009).

It is present at the northern limit of the area.

It is successfully cultivated in the Botanical Garden of Craiova.

Ecology and geoelement. It prefers the dry, thermophile sites, with a rocky under-layer, made of bushes or forest borders. Balkan.

Coenology. *Orno-Cotinetalia*.

New locations: Fața Cremenii, Cervenita (Mehedinți County).

Aphanes australis Holub, - Fam. Rosaceae.

Sozological characterization: it is a critically endangered taxon, being first mentioned by A. Nyarady (1957), under

the name of *Aphanes microcarpa* (Boiss. & Reut.) Rothm. Subsequently, this name was replaced by *Aphanes inexpectata* Lippert 1984 (Ciocârlan 2000, Dihoru et Negrean, 2009), or *Aphanes australis* Rydb. (Dihoru et Răduțoiu, 2006b).

Ecology and geoelement. On skeletal soils, easily eroded, poorly fixed. European.

Coenology. *Stellarietea mediae*, car. *Aphanion*.

New locations: In the meadows, between Moi and Rovinari settlements (Gorj County).

Carex secalina Willd. ex Wahlenb. - Fam. Cyperaceae.

Sozological characterization: It is a slightly endangered central-eastern European element, which was found near several settlements in Oltenia. It is present at the southern limit of the area

Ecology and geoelement. It was identified on moist soils located near a water source (Fig. 1). When it is in early development stages and during prolonged drought, the domestic animals feed on the plant.



Fig. 1. *Carex secalina* from Valea Rea – Radovan (orig.)

Coenology. *Juncion gerardii*.

New locations: Valea Rea – Radovan (Dolj County).

Cirsium creticum (Lam.) d'Urv. – Fam. Asteraceae.

Sozological characterization: It is an endangered species that only grows in southwestern Romania: on the

Danube Floodplain, at Cișmeaua Trăsnită, between Șimian and Hinova; near Virciorova, on Vodița Valley; Dragotești (Severin district); Vânu Mare towards Bucura; on the Motru Floodplain, at Broșteni (district Strehaia); Calafat, Cernele, Tâmburești, Malu Mare, Ciuperceni, Motru, Valea Ploștina (Dihoru et Negrean, 2009). It is present at the northern limit of the area.

Ecology and geoelement. It was identified within wet meadows, on the waterside areas (Fig. 2). Mediterranean.

Coenology. *Agrostion stoloniferae*, *Phramition communis*.

New locations: Criva (Dolj County).



Fig. 2. *Cirsium creticum* found on the outskirts of Criva settlement (orig.)

Dianthus trifasciculatus Kit. in Schult subsp. *parviflorus* Stoj. & Acht - Fam. Caryophyllaceae

Sozological characterization: It is a critically endangered taxon that grows in the southern part of the Romanian Plain and in northern Bulgaria. It was found in Șimnicul de Sus Forest, between Dobrosloveni and Cilieni, in the Romanescu Park, at Vulpeni, between Curtișoara and Iancu-Jianu., in Craiovița Pond area.

It is endemic to a limited area, representing a Getic-Mesic element (Dihoru et Negrean, 2009).

Ecology and geoelement. Meadows or marginal scrubland. Bulgaria, Romania.

Coenology. *Quercetalia pubescenti-petraeae*.

New locations: Fălcoiu (Olt County).

Hordeum bulbosum L. - Fam. Poaceae
Sozological characterization: Critically endangered. It was found at: Orșova on the Alion Hill, Craiova, Bucovăț Forest, Coțofenii din Față, Mofleni, the Jiu Floodplain, Verbicioara, Desa, Pisculeț, Lascăr Catargiu. The northern limit of the area.

Ecology and geoelement. This plant is characteristic for the plains and hills located in southern Romania. Mediterranean.

Coenology. *Sisymbrium*.

New locations: Valea Rea Radovan, Drăgoaia (forms meadows – Fig. 3), Mărăcine, Ciutura, Râpa Roșie Terpezița (Dolj County).



Fig. 3. *Hordeum bulbosum* in the meadows near Drăgoaia settlement (orig.)

Salvia sclarea L. - Fam. Lamiaceae
Sozological characterization: Endangered species that grows only in the south of the country.

It was found on dry areas near Maglavit and Ciuperceni settlements. It is present at the northwestern limit of the area.

Ecology and geoelement. It is present in dry, ruderal grasslands. Mediterranean.

Coenology. *Festuco-Brometea*.

New locations: It was identified on the outskirts of Băilești town (Dolj County) (Fig. 4), towards Galiciuica with

12 specimens (N44°02'573"; E23°21'439"). It is endangered by the uncontrolled grazing in the area.



Fig. 4. Flowering specimen found on the outskirts of Băilești town (orig.)

Silene borysthena (Gruner) Walters – Fam. Caryophyllaceae

Sozological characterization: It is a central and east-European endangered element, present on the sand dunes from Obedeanu, the outskirts of Sadova and Craiova settlements, as well as in the Ciuperceni – Desa protected area.

Ecology and geoelement. It was identified on sandy areas. Eurasian continental.

Coenology. *Festucion vaginatae*.

New locations: Numerous specimens were found on the sandy areas located on the outskirts of Secui settlement (Dolj County) (Fig. 5).



Fig. 5. *Silene borysthena* on the outskirts of Secui settlement (orig.)

Alyssum montanum L. subsp. *gmelinii* (Jord.) Em. Scmid in Hegi – Fam. Brassicaceae

Sozological characterization: It is a taxon with low extinction risk.

Ecology and geoelement. It is present in sandy places, especially in the western part of Romania (southwest, northwest). Pannonian. Balkan.

Coenology. It cohabits with *Eragrostis minor*, *Tragus racemosus*, *Tribulus terrestris*, *Silene conica*, *Cynodon dactylon*, *Anthemis ruthenica*. *Festucion vaginatae*.

New locations: Ciuperceni Noi – Desa protected area (Dolj County).

Medicago polymorpha L. – Fam. Fabaceae

Sozological characterization: For Romania, it is a rare plant that finds its spreading area in the southwestern part of the country. In Oltenia, it is present in 3 of the 5 counties: Olt, Mehedinți and Dolj.

Ecology and geoelement. It was identified in mesophile grasslands, which are sometimes ruderal. It cohabits with *Alopecurus pratensis*, *Poa sylvicola*, *Trifoiul dubium*, *Lolium perenne*, *Agrostis stolonifera* and, seldom, with *Zingeria pisdica*.

Coenology. *Arrhenatherion*.

New locations: Fălcoiu (Olt County), Popești (Mehedinți County).

Rumex tuberosus L. – Fam. Polygonaceae

Sozological characterization: It is a critically endangered species, its spreading area on the Romanian territory being restricted only to several settlements in Moldavia and Dobruja. In Oltenia, it was identified at Valea Rea, Radovan.

Ecology and geoelement. It is mentioned in the xerophilous grasslands of the plain region. Eurasian continental.

Coenology. *Festucion rupicolae*.

New locations: Calafat, near Bașcov Forest (Dolj County).

Discussions: Although it is mentioned in Oltenia, in the xerophilous grasslands from Valea Rea, Radovan (Cârțu, 1968), the studies conducted

during the last 20 years have not shown the presence of the species in this area.

Trifolium michelianum Savi – Fam. Fabaceae.

Sozological characterization: It is a critically endangered southern element, which finds its spreading area in the southern part of Romania. In Oltenia, it is mentioned near several settlements of Dolj, Olt, and Gorj Counties.

Ecology and geoelement. It was identified in wet meadows (Turcu, 1963), where water persists for a period. Mediterranean.

Coenology. *Molinio-Arrhenatheretea*.

New locations: Drănic (Dolj County)

Fimbristylis bisumbellata (Forssk.)

Bubani – Fam. Cyperaceae

Sozological characterization: It is a vulnerable species, being mentioned near several settlements in Oltenia: Lișteava, Căciulătești, Craiova – Fântâna Obedeau, Desa, as well as in the Olteț floodplain, north of Balș town. Sârbu et al. (2013) mention the species in Gorj, Dolj, Olt, and Vâlcea Counties.

Ecology and geoelement. Alluvia and terrace springs. Southern Europe, eastern and southwestern Asia, Africa, Australia.

Coenology. *Nanocyperion*.

New locations: It was identified on the outskirts of Calafat municipality, near certain lakes (Fig. 6).



Fig. 6. *Fimbristylis bisumbellata* near a slope spring on the outskirts of Calafat settlement (orig.)

CONCLUSIONS

To conclude, there can be stated that the territory of Oltenia hosts numerous species with different sozological degrees, which are worthy of conservation. There are multiple reasons for this aim: the limit of the spreading area is on the territory of Romania (of Oltenia); they display scientific, practical, ornamental importance (e.g. *Acanthus balcanicus*); their population is in decline because of various external factors (e.g. *Salvia sclarea*); some of them disappeared from the sites mentioned in the specialized literature (e.g. *Rumex tuberosus*); the habitats where these species vegetate undergo aridity and human-induced changes.

REFERENCES

- Beldie Al.**, 1977, 1979 - *Flora României. Determinator ilustrat al plantelor vasculare*. 406, 412 pag. Vol. I, II. Edit. Acad. R.S.R. București.
- Buia Al.**, 1959 - *Plante rare pentru flora R.P.R. existente în Oltenia*. Buletinul comisiei pentru Ocrotirea monumentelor Naturii. Edit. Acad. R.P.R.: 13-42. București.
- Cârțu D.**, 1968 - *Contribuții la flora Olteniei*. Bul. Ști, 10: 63-70. Univ. Craiova.
- Ciocârlan V.**, 2000. *Flora ilustrată a României. Pteridophyta et Spermatophyta*. 1038 pag. Edit. Ceres, București.
- Ciocârlan V.**, 2009 - *Flora ilustrată a României. Pteridophyta et Spermatophyta*. Editura Ceres, București. 1041 pp.
- Costache I.**, 2005 - *Flora și vegetația bazinului hidrografic inferior al râului Motru*. Teza de doctorat. 290 pag.
- Costache I.**, 2006 - Reports 71-85. pp. 420-422 in Vladimirov, V., Dihoru G. & Kit Tan. *New floristic records in the Balkans*: 3. Phytologia Balcanica. Sofia, Bulgaria.
- Dihoru G., Dihoru Alexandrina** 1994. *Plante rare, pericolitate și endemice*

in flora României - lista roșie. Acta Bot. Horti Bucurest. (1993-1994): 173-197. București.

Dihoru G., Răduțoiu D., 2005 - *Montia fontana L. (Portulacaceae) în flora României*. Lucrări Științifice, Seria Horticultură. Anul XLVII, Vol. 1 (48). pp. 639-644.

Dihoru G., Răduțoiu D., 2006a. Reports 98-108. pp. 423-424 in Vladimirov, V., Dihoru G. & Kit Tan. *New floristic records in the Balkans*: 3. Phytologia Balcanica. Sofia, Bulgaria.

Dihoru G., Răduțoiu D., 2006b. *Aphanes microcarpa s.l. in Romania*. Croatian Symposium on Agriculture. XL. pp. 769-770. Opatia. Croația. ISBN 978-953-6153-57-8.

Dihoru Gh., Negrean G., 2009 - *Cartea roșie a plantelor vasculare din România*. 630 pag. Edit. Acad. Române.

Făgăraș M., Niculescu M., Bercu R., 2016 - *Durankulak beach, a reservoir of rare plant species for the coastal area of Dobrudja*, Conference proceedings of the 16th International Multidisciplinary Scientific Geoconference (SGEM2016), Book 3, Vol. II - Marine and Ocean Ecosystems, Bulgaria, 741-748.

Grecescu D., 1898 - *Conspectul Florei României*: 836 pag. București.

Maloș C., 1968 - *Contribuții la studiul florei și vegetației din Bazinul Superior al Motrului*. Buletin Științific. Nr. X.: 72-83.

Niculescu M., 2006 - *Flora și vegetația Bazinului superior al râului Luncavăț*, Teză de doctorat, Universitatea "Babes - Bolyai", Cluj - Napoca. 347 pp.

Nýaradý A. 1957 - *Aphanes microcarpa (Boiss. & Reut.) Rothm., o specie nouă pentru flora României din Fam. Rosaceae*. Stud. Cercet. Biol. (Cluj), 8(3-4): 285-289. București.

Oprea A., 2005 - *Lista critică a plantelor vasculare din România*. Edit. Universității „A. I. Cuza” Iași. 668 pp.

Păun M., 1966 - *Contribuții la flora raionului Balș, reg. Oltenia*. Bul. Șt. Inst. Agron. T. Vladimirescu” Craiova: 27-59.

Păun M., Popescu G., 1971 - *Flora spontană din cursul superior al văii*

Oltețului. Com. Bot. Vol. XII: 163-172. București.

Păun M., Georgescu L., Fulga G., 1971 - *Importante puncte floristice și de vegetație în cuprinsul Olteniei*. Stud. Cercet. C.C.E.S. Dolj: 67-84. Craiova.

Păun M., Popescu Gh., 1985 - *Aspecte din flora și vegetația psamofilă a Olteniei*. Analele Univ. Craiova, vol. XVI(XXVI): 39-43. Craiova.

Păun M., Popescu Gh., Roman N., Mititelu D., Karacsonyi C., 1989 - *Cercetări privind flora și vegetația terenurilor nisipoase continentale din România*. Lucrări Șt. SCCCPN. Dăbuleni vol. VII: 17-32. București.

Popescu G., 1971 - *Plante noi și rare pentru flora Olteniei identificate în bazinul Bistriței, jud. Vâlcea*. Anal. Univ. Craiova. Vol. III (XIII): 35-42. Craiova.

Popescu G., Păun M., - 1973. *Date corologice asupra endemismelor floristice din munții Olteniei*. Stud. Cercet. C.C.E.S.: 87-92. Rîmnicu-Vâlcea.

Popescu G., 1974 - *Studiul floristic și geobotanic al Bazinului hidrografic al Bistriței-Vîlcii*. 303 pag. Teza de doctorat, București.

Popescu G., - 1979. *Noutăți floristice și de vegetație din Oltenia*. Stud. Cercet. Biol. Veget., Ser. Bot. Tom 31. 1: 13-21. București.

Popescu G., Costache I., Răduțoiu D., Boruz Violeta, 2003 - *The ecology, coenology and chorology of the endemic and subendemic plant taxa in the region of Oltenia (Romania)*. Contrib. Bot. XXXVIII (2): 147-156. Cluj Napoca.

Popescu Lorin 1980 - *Monumente ale Naturii și Rezervații Naturale din Jud. Vâlcea*. Stud. Cercet. Conservarea Naturii pe Baze Ecologice 61 – 68. Drobeta Turnu Severin.

Prodan I., 1939 - *Flora pentru determinarea și descrierea plantelor ce cresc în România*. Vol. II. Noțiuni generale de Fitogeografie. Fiziografia generală a României. Fitogeografia României. 713 pag. Tipografia “Cartea Românească” Cluj.

Răduțoiu D., 2006 - *Specii endemice și de interes floristic identificate*

în Bazinul Cernei de Olteț. Bul. Grăd. Bot. Iași. Tom 13: 109-112. Iași.

Răduțoiu, D., 2008a - *Flora și vegetația Bazinului Cernei de Olteț*, Edit. Sitech, Craiova, 407pag.

Răduțoiu D., 2008b - *New floristical information from Cerna of Olteț Basin (Valcea-Romania)*. Buletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Agriculture, vol. 65 (1): 217-222.

Răduțoiu D. & Costache I., 2009 - *New chorologic data in the region of Oltenia (Romania) (II)*. Acta Horti Botanici Bucurest. 36: 75-78. Edit. Univ. București. ISSN 1453-8830.

Răduțoiu D., Costache I., 2012 - *Contribution to rare taxa chorology of the Romanian flora*. Muzeul Olteniei Craiova. Oltenia. Studii și comunicări. Științele Naturii. Tom. 28, no. 1: 37-40.

Răduțoiu D., Costache I., Simeanu C.G., 2013a - *Contributions to the Romanian vascular flora*. Muzeul Olteniei Craiova. Oltenia. Studii și comunicări. Științele Naturii. Tom. 29, no. 1: 151-154.

Răduțoiu D., Simeanu C.G. & Stan I., 2013b - *Contributions to some taxa chorology of the Romanian flora. (II)*. Annals of the University of Craiova. Annals of the University of Craiova. Biology, Horticulture, Food products processing technology, Environmental Engineering. Vol. XVIII (LIV): 645-650.

Răduțoiu D., Ștefănescu D. M. & Răduțoiu A., 2016 - *Rare plant species not listed in Natura 2000 sites from Oltenia Region (Romania)*. Analele Universității din Craiova, Seria Agricultură – Montanologie – Cadastru (Annals of the University of Craiova - Agriculture, Montanology, Cadastre Series) vol. XLVI: 249-254.

Roman N., 1974 - *Flora și vegetația din sudul podișului Mehedinți*. 222 pag. Edit. Acad. Române, București.

Rugină Rodica, Mititiuc M., 2003 – *Plante ocrotite din România*. 190 pag. Edit. "Univ. A.I. Cuza" Iași.

Sanda V., Popescu A., Doltu M.I., Doniță N., - 1983. *Caracterizarea ecologică și fitocenologică a speciilor spontane din flora României*. Stud. Com. (25) Supliment Științele Naturii Muzeul Brukenthal: 126 pag. Sibiu.

Șorop Gr., Vasile D., et Iancu S., - 1985. *Nisipurile și solurile nisipoase din sudul Olteniei*. Analele Univ. Craiova, vol. XVI(XXVI): 11-15. Craiova.

Turcu G., 1963 - *Trifolium michelianum* Savi. Comun. Bot., 2(1): 143-150. Soc. Ști. Nat. Geogr. Rep. Pop. Rom.

Sârbu I., Ștefan N., Oprea A., 2013 – *Plante vasculare din România. Determinator ilustrat de teren*. Edit. VictorBVictor. 1320 pag. București.