

CONTRIBUTIONS ON CHOROLOGY OF RARE PLANT SPECIES FROM TULCEA HILLS (ROMANIA)

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Abstract: Accordingly to the researches conducted in North Dobrogea, Tulcea Hills, combined with information in the literature available in the field, in this area have been noticed a significant number of rare flora. For a good part of them were identified new chorology points for Romania.

Keywords: vascular flora, chorology, Tulcea Hills

Introduction

Tulcea Hills, in northern Dobrogea, stretch along the Danube River and they are some Triassic units, kimmerical island structure coming into direct contact with meadow and the Danube Delta, Razelm lake complex, Babadag plateau and Niculițel plateau. Maximum height is reached on Deniz Tepe hill with 273 meters altitude.

The relief is represented by witnesses of erosion formed from limestone (Triassic mass or arranged on plates), crystalline sites or quartz, quartz sandstone, buried in loess deposits (Popovici et al. 1984, Mutihac 1990). Hydrological regime is torrential with spring-summer flood and summer flood, powered by moderate storms. Climate is as in the plain, steppe district climate, topometry climate floor is framed as in the hills, undergrowth low hills and plateaus. The predominant soil types are chernozems (carbonate or leachate), white or brown soils and lito-soils.

The objectives of this study consisted of an inventory of vascular plants in general and specifically, the identification of species and subspecies with various degrees of threat, located in the hilly area of Tulcea.

Material and methods

Data on flora which forms the natural ecosystems on Tulcea Hills is the result of research conducted since the spring of 2005 until summer 2009. Our study began with a preliminary prior recognition of the investigated territory, followed by collection of botanical material and its determination and sorting.

Collecting was done repeatedly during optimal vegetation (which is between May and June, on the investigated territory). We have also undertaken studies of aspects of flowering and vegetation outside the optimum period, in order to capture those aspects characteristic for pre-vernal and vernal or autumnal season, issues which most often are not traced during the summer season.

The taxonomic nomenclature is according to Ciocârlan (2009).

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Results and discussion

Epitome vascular flora inventoried on Tulcea Hills until now include 1049 species and subspecies (grouped into 99 families and 421 botanical genders), which represents 61.70% of the Dobrogea flora and 27.31% of Romanian flora. From these, there are 200 (19%) distinguished species and subspecies, mentioned in the Red Lists of Romania (Dihoru & Dihoru 1994, Boșcaiu et al. 1994, Oltean et al. 1994) placed in different zoological categories: 156 rare species and subspecies from which 5 are included in Berne Convention, 12 vulnerable species and subspecies, 16 rare/vulnerable species and subspecies from which 6 are included in Berne Convention, 5 sub-endemic species, 5 indeterminate species, 3 rare/endangered species from which 1 is included in Berne Convention, 1 not-threatened species, 1 Romanian endemism, 1 insufficiently known species.

An important part of the rare species, in the broad sense, were found in our researches and for many of them were reported new chorological points in Romania. Thereby, we can notice the presence of *Hedysarum grandiflorum* Pall. on Pietriș Hill (confirmed by V. Ciocârlan), identified in our country only on Alah Bair Hill – Constanța county and other species as *Allium guttatum* Steven (Fig. 1), *Silene compacta* Fisch. (Fig. 2), *Adonis vernalis* L. (Fig. 3), *Colchicum tryphyllum* G. Kunze (Fig. 4), *Gymnospermium altaicum* (Pall.) Spach subsp. *odessanum* (DC.) E. May. et Pulević (Fig. 5), *Paeonia peregrina* Mill. (Fig. 6), *Convolvulus lineatus* L., *Dianthus nardiformis* Janka, *Ephedra distachya* L. s.l., *Centaurea thirkei* Sch.- Bip., *Hyacinthella leucophaea* (K. Koch) Schur, *Onobrychis gracilis* Besser, *Ornithogalum sibthorpii* W. Greuter, *Salvia aethiopsis* L., *Scutellaria orientalis* L. var. *pinnatifida* Rehb., *Stachys angustifolia* M. Bieb., too. All these species mainly form the carpet plant in habitats of Dobrogea dry grasslands and are framed in *Festucion valesiaca*, *Stipion lessingiana*, *Pimpinello-Thymion zygoidi* alliances.



Fig. 1. *Allium guttatum* Steven



Fig. 2. *Silene compacta* Fisch.



Fig. 3. *Adonis vernalis* L.



Fig. 4. *Colchicum tryphyllum* G. Kunze



Fig. 5. *Gymnospermium altaicum* (Pall.) Spach subsp. *odessanum* (DC.) E. May. et Pulevič



Fig. 6. *Paeonia peregrina* Mill.

Also it is required to mention that *Agropyron brandzae* Panțu et Solac, Romanian endemism identified at Mahmudia (Anghel & Morariu 1972, Petrescu 2007), cannot be confirmed by our researches, as the investigations carried out on Bestepe Hills have identified only *Agropyron ponticum* Nevski.

The species mentioned above are widespread in Dobrogea protected areas (Kanitz 1879–1881, Brandza 1884, Grecescu 1898, Prodan 1934, 1935–1936, 1938, Andrei 1963, Oprea 2005, Petrescu 2007, Sârbu 2007, Ciocârlan unpubl.). Our contribution confirms the presence of some of them which have been previously named by other authors in Hills of Tulcea perimeter as well as we identify some new chorological points.

The new chorological points, highlighted in research conducted by the author are presented in Table 1.

Conclusions

The researches conducted on Hills of Tulcea have revealed relative high flora profusion, up to present being identified over 1,000 vascular plants. From these, there are 19 % distinguished species and subspecies, mentioned in the Red Lists of Romania.

Table 1

Species and subspecies of cormophytes from Romania included in The Red Lists

Crt. No.	Family	Name of species	The Red Lists			Location and author
			Oltean et al. 1994	Dihoru 1994	Boșcaiu et. al. 1994	
1	Asteraceae	<i>Achillea coarctata</i> Poir.	AR	-	-	Tulcea (1), Beștepe (5), Denis Tepe (2,5)
2	Asteraceae	<i>Achillea leptophylla</i> M. Bieb.	R	E	-	Beștepe (5), Murighiol (5)
3	Poaceae	<i>Agropyron brandzae</i> Panțu et Solac.	BV/R	Ed.R	-	Mahmudia (1,3)
4	Ranunculaceae	<i>Adonis vernalis</i> L.	-	V	-	Găvana Mică (5), Agighiol (5), Tulcea (1)
5	Alliaceae	<i>Allium guttatum</i> Steven	R	V	-	Agighiol (5), Beștepe (5)
6	Alliaceae	<i>Allium saxatile</i> M. Bieb.	R	R	-	Beștepe (1), Găvana Mică (5), Agighiol (5), Stâncă Mare (5)
7	Alliaceae	<i>Allium flavum</i> L. subsp. <i>tauricum</i> (Besser) Stearn	R	-	-	Stâncă Mare (5), Denis Tepe (5)
8	Liliaceae	<i>Asparagus verticillatus</i> L.	R	-	-	Beștepe (1), Beștepe, Deniz Tepe (3), Agighiol, Beștepe, Deniz Tepe, Stâncă Mare (5)
9	Fabaceae	<i>Astragalus ponticus</i> Pall.	V/R	-	-	Mahmudia (1), Mahmudia, Beiului, Stâncă Mare (5)
10	Campanulaceae	<i>Campanula romanica</i> Săvul.	AV/R	Ed.V	-	Agighiol (4,5), Denis Tepe (3,5)
11	Ulmaceae	<i>Celtis glabrata</i> Steven ex Planch.	R	-	-	Denis Tepe (2,3,5), Stâncă Mare (5)
12	Asteraceae	<i>Centaurea thirkei</i> Sch.-Bip.	R	-	R	Agighiol (5), Stâncă Mare (5), Beștepe (5), Cartal (5)
13	Liliaceae	<i>Colchicum tryphyllum</i> G. Kunze	R	-	-	Uzum Bair (5), Agighiol (5)
14	Convolvulaceae	<i>Convolvulus lineatus</i> L.	R	-	R	Agighiol, Beștepe, Beiului, Stâncă Mare, Pietriș, Păd. Tulcea, Cartal (5), Agighiol (4)
15	Iridaceae	<i>Crocus reticulatus</i> Steven	V/R	-	-	Beștepe, Denis Tepe (4), Uzum Bair, Agighiol (5)
16	Rubiaceae	<i>Crucianella angustifolia</i> L.	R	R	R	Denis Tepe (1,2), Agighiol (1), Pietriș (5)
17	Ranunculaceae	<i>Delphinium fissum</i> Waldst. et Kit.	R	-	-	Cartal (5)
18	Caryophyllaceae	<i>Dianthus leptopetalus</i> Willd.	R	V	-	Agighiol (5)
19	Carylophylaceae	<i>Dianthus nardiformis</i> Janka	BV/R	V	-	Tulcea (1), Găvana Mică (5), Stâncă Mare (5), Agighiol (5), Beștepe (3,5), Pietriș (5)
20	Ephedraceae	<i>Ephedra distachya</i> L. s.l.	R	R	V	Beștepe (3,5), Agighiol, Stâncă Mare (5)
21	Euphorbiaceae	<i>Euphorbia glareosa</i> Pall. ex M. Bieb. subsp. <i>dobrogensis</i> (Prodan) Ciocârlan	bR	-	-	Agighiol (4,5), Beștepe (3,5), Găvana Mică (5)

22	Euphorbiaceae	<i>Euphorbia myrsinites</i> L. subsp. <i>litardierei</i> Font Quer et Garcias Font	V/R	R	R	Agighiol (1,5)
23	Poaceae	<i>Festuca calieri</i> (Hackel ex St. Yves) Margraf	R	R	-	Denis Tepe (3,5), Beștepe (3,5), Stânca Mare (5)
24	Amaryllidaceae	<i>Galanthus plicatus</i> M. Bieb.	R	V	R	Agighiol, Cartal (5)
25	Berberidaceae	<i>Gymnospermium altaicum</i> (Pall.) Spach subsp. <i>odessanum</i> (DC.) E. May. et Pulevič	R	E	E	Denis Tepe (1,2,3,5), Stânca Mare(5)
26	Chenopodiaceae	<i>Halocnemum strobilaceum</i> (Pall.) M. Bieb.	R	V	R	Plopu (5)
27	Fabaceae	<i>Hedysarum grandiflorum</i> Pall.	R	E	R	Pietriș (5)
28	Liliaceae	<i>Hyacinthella leucophaea</i> (K. Koch) Schur	R	R	R	Beștepe (1,5), Găvana Mică (5)
29	Asteraceae	<i>Jurinea glycacantha</i> (Sibth. et Sm.) DC.	R	-	-	Stânca Mare (5)
30	Dipsacaceae	<i>Knautia macedonica</i> Griseb.	R	-	-	Agighiol (5)
31	Poaceae	<i>Koeleria lobata</i> (M. Bieb.) Roem. et Schult.	R	-	-	Agighiol (4,5), Beștepe (3,5), Denis Tepe (3), Găvana Mică (5), Stânca Mare (5)
32	Boraginaceae	<i>Lappula patula</i> (Lehm.) Gürcke	-	-	R	Murighiol (4), Stânca Mare (5)
33	Caryophyllaceae	<i>Minuartia adenotricha</i> Schischk.	R	I	-	Stânca Mare (5), Agighiol (5)
34	Caryophyllaceae	<i>Minuartia viscosa</i> (Schreb.) Schinz et Thell.	R	E	I	Dealul Câșla (5)
35	Fabaceae	<i>Onobrychis gracilis</i> Besser	R	R	R	Beștepe (5), Ogurului (5), Cartal (5), Stânca Mare (5), Agighiol (5), Câșla (1)
36	Liliaceae	<i>Ornithogalum sibthorpii</i> W. Greuter	R	R	-	Păd. Tulcea (5), Denis Tepe(3,5), Stânca Mare (5)
37	Paeoniaceae	<i>Paeonia peregrina</i> Mill.	V/R	V	V	Beiului (5), Curcuz (5), Ogurului (5), Agighiol (1,5), Deniz Tepe (2,3,5), Cartal (5), Stânca Mare (5), Uzum Bair (5), Pietriș (5)
38	Orchidaceae	<i>Platanthera bifolia</i> (L.) Rich.	R	-	-	Agighiol (5)
39	Poaceae	<i>Polypogon monspeliensis</i> (L.) Desf.	R	R	-	L. Pietrei (5)
40	Lamiaceae	<i>Salvia aethiopis</i> L.	E/R	-	-	Ogurului (5), Uzum Bair (5), Stânca Mare (5), Cartal (5)
41	Lamiaceae	<i>Salvia nutans</i> L.	nt	-	-	Malcoci (1), Uzum Bair (5), Cartal (5), Stânca Mare (5), Găvana Mică (5), Ogurului (5)
42	Apiaceae	<i>Scandix pecten-veneris</i> L.	R	-	-	Stânca Mare (5), Agighiol (1)
43	Asteraceae	<i>Scorzonera mollis</i> M. Bieb.	R	R	-	Cartal (5)

44	Lamiaceae	Scutellaria orientalis L. var. pinnatifida Rchb.	R	R	R	Beștepe (3,5), Uzum Bair (5), Agighiol (5)
45	Apiaceae	Seseli pallasii Besser	R	-	-	Beștepe (5), Stâncă Mare (5), Găvana Mică (5), Agighiol (4,5)
46	Apiaceae	Seseli peucedalifolium (Spreng.) Besser	R	R	-	Agighiol (4,6)
47	Caryophyllaceae	Silene compacta Fisch.	R	V	-	Beștepe (3,5), Deniz Tepe (3,5)
48	Caryophyllaceae	Silene italica (L.) Pers.	-	K	-	Agighiol (5)
49	Caryophyllaceae	Silene supina M. Bieb.	-	-	R	Agighiol (5)
50	Lamiaceae	Stachys angustifolia M. Bieb.	R	R	R	Agighiol (1), Beștepe (3), Deniz Tepe (5), Stâncă Mare (5)
51	Poaceae	Stipa pulcherrima K. Koch	R	V	-	Ogurului (5), Tulcea (1)
52	Poaceae	Stipa ucrainica P. Smirnov	R	V	-	Murighiol (4), Beștepe (5), Stâncă Mare (5), Uzum Bair (5), Cartal (5)
53	Asteraceae	Tanacetum millefolium (L.) Tzvelev	R	-	-	Mahmudia - Agighiol (1), Beștepe (5), Pietriș (5), Stâncă Mare (5), Agighiol (5), Uzum Bair (5), Găvana Mică (5)
54	Trapaceae	Trapa natans L.	V	-	-	Dunavăț (1), Balta Somova (5)
55	Lamiaceae	Thymus zygioides Griseb.	R	-	-	Agighiol - Mahmudia (1), Agighiol - Mihail Kogălniceanu (1), Deniz Tepe (2,3,5), Agighiol (5), Stâncă Mare (5), Beștepe (3,5), Uzum Bair (5), Găvana Mică (5), Pietriș (5), Ogurului (5), Păd. Tulcea (5), Roșu (5)

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CONTRIBUȚII PRIVIND COROLOGIA UNOR SPECII DE PLANTE RARE DE PE DEALURILE TULCEI (ROMÂNIA)

Rezumat: Articolul evidențiază diversitatea floristică de pe Dealurile Tulcei, cu accent pe speciile și subspeciile încadrate în Listele Roșii din România. Pentru multe dintre acestea confirmăm sau infirmăm prezența, ori au fost identificate puncte corologice noi pentru țara noastră.

Cuvinte cheie: flora vasculară, corologie, Dealurile Tulcei