

ASPECTS OF FLORISTIC DIVERSITY IN THE COMMUNITY TOPOLOG (TULCEA COUNTY): II – GRASSLANDS FLORA

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Abstract

Flora of grasslands, located at the base of hills around the Topolog commune, comprises important species for diversity of vegetation in this area and, also, in our country: most of the species, of the thirty-six identified in the course of our reports, made in July-August, 2010-2012, have a limited area of distribution; eight species are rare in Romania and one of them – Campanula romanica Săvul. - is an endemic one, found only in Dobrogea. According to the zoological categories, four species are considered vulnerable and two have endangered status.

Key words: endemic, grasslands, primary vegetation, xerophilic.

INTRODUCTION

Dobrogea is a region with a high concentration of rare taxa for our country due to special conditions of climate and soil that favoured the installation of plant species of Pontic, Balkan, or Mediterranean origin, along those of Eurasian, Central-European, European or others. (Brandza, 1898; Sârbu et al., 2006; www.parmacin.ro). Some of them are inventoried in European or Romanian Red Lists, considered of international importance, having the status of threatened, vulnerable or endemic plants (Dihoru and Negrean, 2009; Oltean et al., 1994; www.iucnredlist.org). Such species can be found in areas already protected by law or can be scattered in other places, sometimes restricted to small surfaces, it being necessary to report and apply measures for the conservation *in-situ* (Petrescu, 2004).

Dobrogea grasslands may be mesophilic and mezohigrophilic, in the Danube Delta and Meadow and in the valleys of the important river, or xerophilic, installed on slopes unsuitable for agriculture, hills rocky surface, at the borders of fields, on terraces or on communal pastures (Dihoru and Doniță, 1970; Popescu et al., 2008). Excessive grazing affected in time primary xerophilic steppes' vegetation, so the basic components disappeared and were replaced by other species or they appear insular (Dihoru and Doniță, 1970). However, where the substrate is stony,

the rare flora species, typical of Dobrogea, may be found (Petrescu, 2004).

The authors continue presenting flora of places surrounding the Topolog communities with the species identified in xerophilic grasslands, located on different land categories.

MATERIALS AND METHODS

Physical-geographical description of the territory where the observations were made was done in the previous paper-work.

Field observations were conducted in July - August, 2010 - 2012.

The itinerary study method has been chosen for the flora inventory, covering portions of land occupied by grassland vegetation at the infield ends, base of the hills or near wooded areas.

The taxonomic classification of the species and the analysis of the life forms, geographical elements and the spread in the country were based on literature (Ciocârlan, 1994; Ciocârlan, 2009, Cristea et al., 2004).

Data on the vulnerability or endemic status of the species is in accordance with The Red List of higher plants in Romania (Oltean et al., 1994) and The Red Book of vascular plants in Romania (Dihoru and Negrean, 2009).

RESULTS AND DISCUSSIONS

The discussions are based on data included in Table 1.

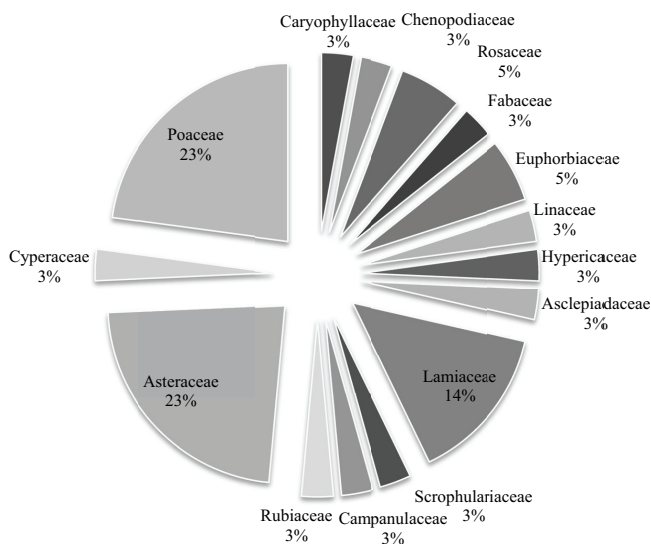


Figure 1. Analysis of floristic composition

Floristic composition

Following the observations made in the field there were 36 recorded species belonging to 15 families. From a systematic point of view species of *Asteraceae* and *Poaceae* (eight species) are prevalent followed by those of *Lamiaceae* (five species), *Rosaceae*, *Euphorbiaceae*, *Scrophulariaceae* (two species). *Fabaceae*, *Linaceae*, *Hypericaceae*, *Asclepiadaceae*, *Campanulaceae*, *Rubiaceae* and *Cyperaceae* are represented by a single species. The share of each family is shown in Figure 1.

According to Dihoru and Doniță, in Babadag Plateau specimens of the *Chrysopogon gryllus* or *Stipa* genus represent vestiges of primary steppe grasslands while individuals of *Campanula romanica* and *Dianthus nardiformis* appear in places with rocky substrate. *Euphorbia* species are indicative of degraded grasslands and *Carduus thormeri* specimens are found in fallow lands, on rendzine (Dihoru and Doniță, 1970).

Life-cycle and forms of life

Of the 36 species, five are annual, four - biennial and 27 perennial. Life forms analysis shows that among the perennial species, three

are of Chamaephyta, 3 of Geophyta and 21 of Hemycryptophyta.

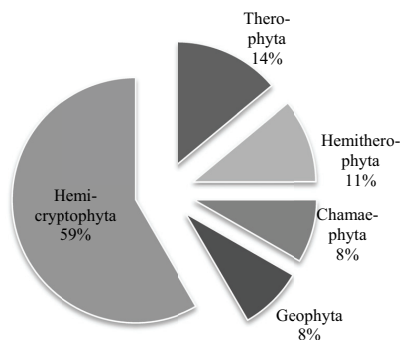


Figure 2. Analysis of forms of life

The small percentage of the Terophytes and Hemiterophytes - 14%, and 11%, respectively (Figure 2), indicates a low intervention of the anthropic factor. The dominance of the Hemicyptophytes - 59% of all species, with which are Geophytes (8%) and Chamaephytes (8%), reveal a climate of water shortage where are edified steppe grasslands mainly by perennial grass species.

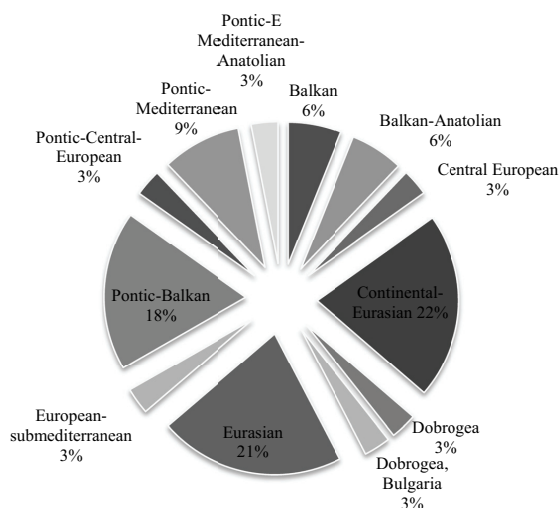


Figure 3. Analysis of floristic elements

Floristic elements (Geographical distribution)

Analysis of the floristic elements (Table 1, Figure 3) shows that, of all species, 55% are Eastern origin (Ciocârlan, 1994): 22% Continental Eurasian and 33% Pontic (broadly); the predominance of the Eastern elements highlights the steppe character of vegetation. 21% of all species are of Eurasian and 3% of Central European origin. The presence of European species is according to European character of the Romanian flora. Xerophilic and thermophilic vegetation character is emphasized by the presence of the southern and south-eastern elements: Balkan - 6%, Balkan - Anatolian - 6% European - Mediterranean - 3%. 6% of all species inventoried represents plants characteristic of Dobrogea (endemic). We notice the absence of cosmopolitan and adventives species which underlines again the low level of human intervention. Our data are comparable to those in the other studies of the Dobrogea flora and vegetation (Andrei and Cristurean, 2006; Ciocârlan, 1994; Dihoru and Doniță, 1970, Popescu et al., 2008, www.parcmacin.ro).

Distribution in the country and sozological category

The importance of grassland flora surrounding the villages of Topolog community is evidenced by the large number of species with limited distribution in our country; they are in a

proportion of 43%, against 47% frequent species (Figures 4 and 5). Of rare taxa, in accordance with Dihoru & Negrean, 2009, four are considered as vulnerable and two are endangered (Table 1). One species - *Campanula romanica*, is an endemic one, found only Dobrogea and another, *Potentilla emilii-popii*, is found only in Romania (Dobrogea) and Bulgaria.

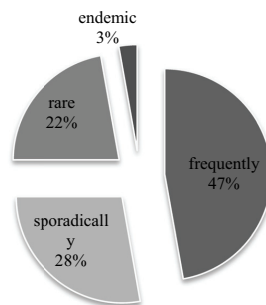


Figure 4. Analysis of sozological category

CONCLUSIONS

Grasslands around the villages of Topolog community are, through the floristic composition, important areas for diversity of the higher plant species, characteristic of Dobrogea.

Table 1. Grasslands species around Topolog community (Tulcea county)

Species	Family	Life-cycle	Form of life	Floristic elements (Geographical distribution)	Distribution in the country and zoological category
<i>Dianthus nardiformis</i>	Caryophyllaceae	p	Ch	Balk.	rare (Dobr.) VU (D&N); VU (Olt.&al.)
<i>Salsola kali</i> subsp. <i>ruthenica</i>	Chenopodiaceae	an	T	Euras.	frequently
<i>Filipendula vulgaris</i>	Rosaceae	p	H	Euras.	frequently
<i>Potentilla emilii-popii</i>	Rosaceae	p	H	Rom.-Dobr. Bulg.-NE	rare (Constanța county) VU (D&N)
<i>Onobrychis gracilis</i>	Fabaceae	p	H	Pont.-Balk.	rare (Ialomița, Constanța, Tulcea, Galați, Bacău county)
<i>Euphorbia agraria</i>	Euphorbiaceae	p	H	Pont.-Balk.	frequently
<i>Euphorbia cyparissias</i>	Euphorbiaceae	p	H	Euras.	frequently
<i>Linum austriacum</i>	Linaceae	p	H	Euras.	frequently
<i>Hypericum perforatum</i>	Hypericaceae	p	H	Euras.	frequently
<i>Cynanchum acutum</i>	Asclepiadaceae	p	H	Pont.- Medit.	sporadically/ frequently in SE
<i>Ajuga chamaeptytis</i>	Lamiaceae	an	T	Pont.- Medit.	sporadically
<i>Salvia amplexicaulis</i>	Lamiaceae	p	H	Balk.	rare (Caraș-Severin, Mehedinți, Constanța, Tulcea county); EN (D&N, Olt.&al.)
<i>Stachys angustifolia</i>	Lamiaceae	p	H	Balk.-Anatol.	rare (Dobr.) VU (D&N); EN (Olt.&al.)
<i>Stachys annua</i>	Lamiaceae	an	T	Eur.(submedit.)	frequently.
<i>Thymus callieri</i>	Lamiaceae	p	Ch	Balk.	rare (Dobr., jud.Dolj) VU (D&N)
<i>Linaria genistifolia</i>	Scrophulariaceae	p	H	Cont.Euras.	frequently
<i>Veronica spicata</i> subsp. <i>barrelieri</i>	Scrophulariaceae	p	H	Pont.-E.Medit.- Anat.	rare (jud.Constanța)
<i>Campanula romanica</i>	Campanulaceae	p	H	Rom-Dobr.	endemic (Dobr.) EN (D&N)
<i>Galium humifusum</i>	Rubiaceae	p	H	Pont.- Balk.	sporadically (Olt., Munt.,Mold., Dobr.)
<i>Achillea coarctata</i>	Asteraceae	p	H	Pont.- Balk.	sporadically (Ban., Olt., Munt., Dobr.,Mold)
<i>Artemisia austriaca</i>	Asteraceae	p	Ch	Cont.-Euras.	frequently
<i>Artemisia scoparia</i>	Asteraceae	bienn	Ht	Cont.-Euras.	frequently
<i>Carduus thomeri</i>	Asteraceae	bienn	Ht	Pont.- Balk.	sporadically (Dobr.)
<i>Carlina vulgaris</i>	Asteraceae	bienn	Ht	Euras.	frequently
<i>Centaurea diffusa</i>	Asteraceae	an	T	Pont.- Balk.	sporadically
<i>Chondrilla juncea</i>	Asteraceae	bienn- p	Ht - H	Cont.-Euras.	frequently
<i>Inula conyzae</i>	Asteraceae	p	H	Centr.Eur.	sporadically
<i>Carex liparocarpus</i>	Cyperaceae	p	G	Pont.-Medit.	sporadically
<i>Agropyron cristatum</i> subsp. <i>pectinatum</i>	Poaceae	p	H	Pont.-Centr.Eur.	sporadically
<i>Bromus inermis</i>	Poaceae	p	H	Cont.Euras.	frequently
<i>Bromus squarrosus</i>	Poaceae	an - an hib.	T - Ht	Cont.Euras.	frequently
<i>Chrysopogon gryllus</i>	Poaceae	p	G	Euras.	frequently
<i>Cleistogenes bulgarica</i>	Poaceae	p	G	Pont.	sporadically
<i>Festuca callieri</i>	Poaceae	p	H	Pont.- Balk.	rare (Dobr.)
<i>Koeleria macrantha</i>	Poaceae	p	H	Circ.	frequently
<i>Stipa capillata</i>	Poaceae	p	H	Cont.Euras.	frequently

Life-cycle: an – annual; an. hib. – annual hibernante; bienn – biennial; p – perennial.

Form of life: Ch – Chamaephyte; G – Geophyte; H – Hemicryptophyte; Ht – Hemiterophyte; T – Therophyte.

Geographical distribution: Anat. – Anatolian; Balk. – Balkan; Bulg. – Bulgaria; Centr. Eur. – Central European; Circ. – Circumpolar; Cont. Euras. – Continental Eurasian; Dobr. – Dobrogea; Eur. – Europe; Euras. – Eurasia; Medit. – Mediterranean; Pont.- Pontic; Rom. – Romania; submedit. – submediterranean.

Distribution in the country and zoological category: EN – endangered (*threatened by extinction*: taxon faced with an extremely high risk of extinction in the wild in the near future); VU - vulnerable (taxon faced with an extremely high risk of extinction in the wild in the medium future); D&N – Dihoru and Negrean, 2009; Olt.&al. – Oltean et al., 1994.

A reduced anthropogenic action is indicating by the presence of those plant species characteristic to primary steppe grasslands and the scarcity of cosmopolitan and adventitious elements.

Relatively high number of vulnerable, endangered or endemic species gives those areas an international importance.

Maintaining these grasslands with their characteristics will allow both the preservation *in-situ* of the endemic, vulnerable or endangered species and plant formations.

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Figure 5. *Dianthus nardiformis* Janka (vulnerable taxon)