

FLORISTIC DIVERSITY OF CORMOPHYTAE IN BERZUNȚI MOUNTAINS, BACĂU COUNTY

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ABSTRACT

This study presents the research done in the territory of Berzunți Mountains which are situated in the central area of Bacău County. The conspectus of cormoflora in the researched area during 2007-2010 comprises 825 taxa (618 species, 197 subspecies, 9 varieties and 1 form) which belong to 403 genera, 99 botanical families included in 58 orders, 6 classes and 2 fila. Besides, the paper presents: an analysis of bioforms, floristic elements and ecological indexes of Cormophytae and a short analysis of species included in the “Red List” of superior plants in Romania.

Keywords: Berzunți Mountains, diversity, cormoflora

Introduction

The Berzunți Mountains are completely situated in the territory of Bacău County, between 46° 28' 04" și 46° 16' 10" northern latitude and 26° 27' 59" și 26° 38' 41" eastern longitude. They have the following borders: Tarcău Mountains to the north, Dărmănești Depression to the west, Tazlău Subcarpathians to the east and south. The territory studied lies on a 140 km² surface of which 50% approximately is covered with forest vegetation, 20% with pastures and 5% with hayfields, the rest with agricultural fields, urban areas, access roads.

Material and methods

The determination of taxa collected between May 2007 and August 2010 in 31 collecting points was made by using several specialty books, such as: Săvulescu T., 1952-1976 - *Flora R.P.R.- R.S.R.* (vol. I-XIII) (9); Ciocârlan V., 2000 - *Flora ilustrată a României - Pteridophyta și Spermatophyta* (2); Sârbu I., 2001 - *Flora ilustrată a plantelor vasculare din estul României* (8). For the conspectus of vascular flora we used the nomenclature in the above mentioned studies. The families in the flora conspectus are mentioned in a systematical order, the genera of each family are alphabetically mentioned, also the species included the genera.

Results and discussions

After reading the specialty literature (1, 4, 5, 7)

and research in the field we made the conspectus of cormoflora in the area, which comprises 825 taxa (618 species, 197 subspecies, 9 varieties and 1 form) belonging to 403 genera, 99 botanical families included in 58 orders, 6 classes and 2 fila). Compared to the flora of the entire Bacău County which includes 1832 taxa, the vascular flora in Berzunți Mountains constitutes 45,03%.

The numerical distribution of cormoflora in fila, subfila and classes is dominated by Spermatophyta filum, Magnoliophytina subfilum with 806 taxa (96,96%) in which Magnoliopsida has 80,12% with 661 taxa, being followed by Liliopsida class with 16,84% (139 taxa). The Pteridophyta filum has only 2,30% of the identified taxa. Among the 99 families well represented (over 40 taxa) we mention the following families: Asteraceae, Poaceae, Fabaceae, Lamiaceae, Brassicaceae which have 292 taxa, representing 35,37% of the total taxa number.

The analysis of ecological bioforms

The spectrum of bioforms shows as dominant the **hemipterophyte** (H) species with 44,28% representing almost half of the total identified taxa. Far from the first category are situated the **terophyte** species, either annual (Th) or biannual (TH) having 29,79% with 245 taxa. **Geophytes** (G) are represented by 91 taxa (11,07%). The participation of **phanerophytes** (M, M, N) to the spectrum of bioforms is quite low: 74 taxa (8,99%) (Fig.1)

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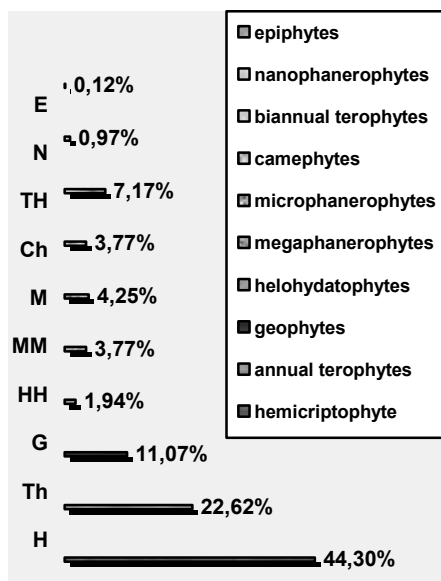


Figure 1 – Percent distribution of taxa in bioform categories

The analysis of floristic elements

Among geoelements a substantial weight belongs to the *Eurasian floristic element* (Eua) with 349 taxa (42,92%) followed by European elements (Eur) represented by 132 taxa (16,23%). Regarding floristic elements, the Berzunți Mountains area belongs to Eurasian domain, its flora having a European character, a fact proven by the numerical dominance of the mentioned elements (Fig. 2).

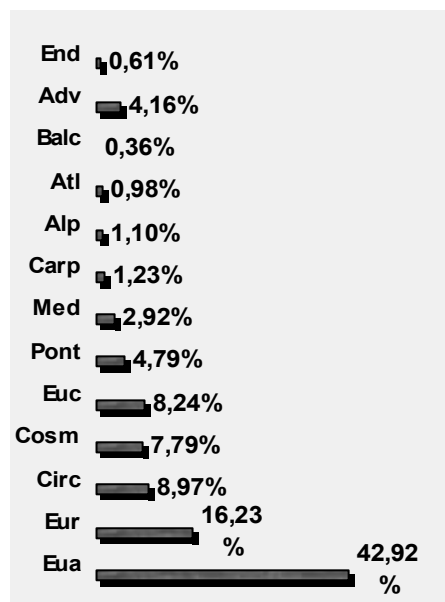


Figure 2 - Percent distribution of phytogeographical elements

The analysis of ecological indexes

Regarding the *ecological indexes* we notice the predominance of light biased plants with little tolerance for shade (L7 – 32,04%), amphitolerant (Tx – 26,72%) and of submontan temperate climate plants (T5) spread across the entire Central Europe (C3 – 30,06% and C4 – 18,99%), which prefer moderately wet soils (U5 – 21,73%), amphitolerant to the soil reaction (Rx – 29,48%) and unaffected by nitrogen concentration in soil (Nx – 17,50%) (Fig. 3).

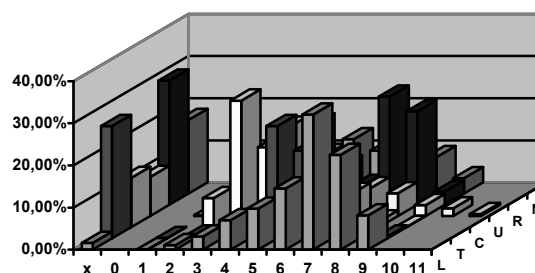


Figure 3 - Allocation of ecological category according to L,T,C,U,R and N indexes

The analysis of taxa in the „Red List”

After reading the books M. Oltean et al., 1994, *Lista Roșie a Plantelor Superioare din România* (6) și Dihoru Gh., Dihoru Alexandrina, 1994, *Plante rare, periclitate și endemice în flora României – Lista Roșie* (3), we noticed that of the 825 taxa in the conspectus either mentioned in the studied bibliography or seen in the field only 3,39 % are included in the Red List. The 28 taxa are distributed as follows (Table 1).

Conclusions

- The conspectus of cormoflora in the researched area comprises 825 taxa (618 species, 197 subspecies, 9 varieties and 1 form) which belong to 403 genera, 99 botanical families included in 58 orders, 6 classes and 2 fila).

- The numerical distribution of cormoflora in fila, subfila and classes is dominated by Spermatophyta filum, Magnoliophytina subfilum with 806 taxa (96,96%) in which Magnoliopsida class has a 80,12% weight with 661 taxa, being followed by Liliopsida class with 16,84% (139 taxa). The Pteridophyta filum has only 2,30% of the total identified taxa.

- Of the 99 best represented families (over 40 taxa) we mention the following families: Asteraceae, Poaceae, Fabaceae, Lamiaceae, Brassicaceae which have 292 taxa representing 35,37% of the total number of taxa;

- The bioform spectrum shows as dominant the hemicryptohyte species with 44,28%, representing almost half of the total identified taxa; this great number suggests an uniform presence of the vegetal cover;

- Of the geoelements a substantial weight belongs to the *Eurasian floristic element* (Eua) with 349 taxa (42,92%) followed by the *European elements* (Eur) represented by 132 taxa (16,32%). Regarding the floristic elements, Berzunți Mountains area belongs to the *Eurasian domain*, its flora having an *European character*, a fact proven by the numerical dominance of the mentioned elements;

- Regarding the *ecological indexes*, we notice the dominance of the light biased plants with little tolerance for shade (L7 – 32,04%), amphitolerant (Tx – 26,72%) or of submontan temperate climate plants (T5) spread in the entire Central Europe (C3 – 30,06% and C4 – 18,99%), which prefer moderately wet soils (U5 – 21,73%), amphitolerant to the soil reaction (Rx – 29,48%) and unaffected by nitrogen concentration in soil (Nx – 17,50%).

- From the analysis of taxa included in „Red Lists” of superior plants we underlined a number of 28 taxa in different degrees of periclitation.

Rezumat

Lucrarea prezintă cercetările realizate în Munții Berzunți, munți situați în zona centrală a județului Bacău.

Conspectul cormoflorei din zona cercetată în perioada 2007-2010 cuprinde 825 taxoni (618 specii, 197 subspecii, 9 varietăți și 1 forma) ce aparțin la 403 genuri, 99 familii botanice incluse în 58 ordine, 6 clase și 2 increngături.

Lucrarea mai prezintă o analiză a bioformelor, elementelor floristice și indicii ecologice la cormophytae și o scurtă analiză a speciilor prezente în „Lista Roșie” a plantelor superioare din România.

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Table 1 – The analysis of special regime taxa in Berzunți Mountains area

Taxa unincluded in „Red List”	797	96,48%	Special regime species
Taxa included in „Red List”	28	3,51%	
R (rare)	17	2,06%	1. <i>Cephalanthera rubra</i> L. (L.C.M. Richard) 2. <i>Galium pumilum</i> Murray, 3. <i>Gymnadenia conopsea</i> (L.) R. Br., 4. <i>Listera ovata</i> (L.) R. Br., 5. <i>Neottia nidus-avis</i> L. (L. C. M.), 6. <i>Orchis morio</i> L. ssp. <i>morio</i> 7. <i>Pinus sylvestris</i> L., 8. <i>Platanthera bifolia</i> L. (L. C. M.) Richard, 9. <i>Potamogeton trichoides</i> Cham. et Schlecht., 10. <i>Dactylorhiza maculata</i> (L.) Soó, 11. <i>Gladiolus imbricatus</i> L. 12. <i>Dianthus superbus</i> L., 13. <i>Galium rotundifolium</i> L., 14. <i>Monotropa hypopitys</i> L., 15. <i>Orchis coryophora</i> ssp. <i>coryophora</i> (Pollini) K. Richter, 16. <i>Orchis laxiflora</i> Lam. ssp. <i>elegans</i> (Heuffel) Soó; 17. <i>Epipactis helleborine</i> (L.) Crantz;
nt (unthreatened)	4	0,48%	18. <i>Cephalanthera damasonium</i> (Miller) Druce, 19. <i>Cephalanthera longifolia</i> (L.) Fritsch., 20. <i>Galanthus nivalis</i> L., 21. <i>Hepatica transilvanica</i> Fuss
bR (rare subendemic)	3	0,36%	22. <i>Gentiana cruciata</i> L. ssp. <i>phlogifolia</i> , 23. <i>Melampyrum saxosum</i> Baumg
V/R (vulnerable / rare)	1	0,12%	24. <i>Taxus baccata</i> L.
K (insufficiently known status)	1	0,12%	25. <i>Galium sylvaticum</i> L.
BE (European areal almost extinct)	1	0,12%	26. <i>Abies alba</i> Miller
Ant (endemically unthreatened in Romania)	1	0,12%	27. <i>Hepatica transilvanica</i> Foss
E (danger of extinction)	1	0,12%	28. <i>Symphytum cordatum</i> Waldst. et Kit