

RESEARCHES CONCERNING THE DIVERSITY OF SCARABS (COLEOPTERA, SCARABAEOIDEA) FROM DOFTEANA VALLEY (DOFTEANA, BACAU COUNTY)

CERCETĂRI PRIVIND DIVERSITATEA SCARABEIDELOR (COLEOPTERA, SCARABAEOIDEA) DIN VALEA DOFTEANEI (COM. DOFTEANA, JUD. BACĂU)

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Rezumat

Valea Dofteanei aparține Munților Nemira, care sunt situați în partea sudică a Carpaților Orientali, între Munții Ciucului și Munții Vrancei. Materialul analizat în această lucrare a fost colectat în perioada 2001-2004, punctele de colectare fiind reprezentate de pășiști și alte locații: Cheile Dofteanei, Pufu (1047 m), La Cireș (1063 m).

Cele 323 de scarabeide colectate în Valea Dofteanei aparțin la două familii, 6 subfamilii, 15 genuri și 20 de specii. Pentru fiecare specie au fost calculați indici ecologici precum: abundența, dominanța, frecvența, constanța, indicele de semnificație ecologică (W). Conform rezultatelor obținute, *Cetonia aurata* (LINNAEUS, 1761), *Anoplotrupes stercorosus* (SCRIBA, 1791) și *Hoplia argentea* (PODA, 1761) sunt speciile cel mai bine reprezentate (luate împreună aceste trei specii reprezintă 60,4% din totalul materialului colectat). Din cele 20 de specii, identificate pentru Valea Dofteanei, 5 sunt caracteristice: *Anoplotrupes stercorosus* SCRIBA, *Aphodius fimetarius* (LINNAEUS, 1758), *Cetonia aurata* L., *Gnorimus nobilis* (LINNAEUS, 1758) și *Trichius fasciatus* (LINNAEUS, 1758).

Key words: Dofteana Valley, scarabs, diversity, abundance, dominance

Cuvinte cheie: Valea Dofteanei, scarabeide, diversitate, abundență, dominanță

INTRODUCTION

Dofteana Valley belongs to the Nemira Mountains, which are situated in the southern part of Eastern Carpathians, between Ciucului Mountains and Vrancei Mountains (fig. 1) ALBOTĂ M. (1983). The material was collected for 4 years: 2001, 2002, 2003 and 2004, from the grasslands and other locations: Dofteana Gorges, Pufu (1047 m) and La Cireș (1063 m).

The vegetation of this region is characteristic for Eastern Carpathians: *Picea excelsa*, *Abies alba*, *Fagus sylvatica*, *Carpinus betulus*, *Acer pseudoplatanus*, *Quercus petraea*; the grasslands are rich in flowering plants and berry bushes. In this area, the fauna is well represented: mammals, birds, reptilians, amphibians and invertebrates (GURĂU GABRIELA, 2002).

MATERIAL AND METHODS

The material analysed in this was collected in for four years: 2001-2004, in Dofteana Valley (Bacau County). The insects were collected directly from the plants, or from the soil. For the mentioned period of study it has been collected 323 scarabs: 83 in 2001, 67 in 2002, 120 in 2003 and 53 in 2004.

The species were identified based on literature (DELLACASA G., 1983, PANIN S., 1955, PANIN S., 1957). The taxonomy and the nomenclature used by the author is the one published by Cornelia Chimișliu (CHIMIȘLIU CORNELIA, 2002).

In order to make a sinecological analysis, it was necessary to calculate some ecological indexes: abundance, frequency, constancy, dominance and ecological significance index (W) based on reference literature (VARVARA M. et al. 2001).

RESULTS AND DISCUSSIONS

The 323 specimens of scarabs, identified in the material collected in Dofteana Valley (2001 – 2004), are included in 2 families: Geotrupidae (with one subfamily - Geotrupinae) and Scarabaeidae (with 5 subfamilies - Aphodiinae, Melolonthinae, Rutelinae, Cetoniinae and Trichiinae) and 20 species (table 1).

Comparing the two families, it is easy to remark that, numerically, Scarabaeidae Family is very well represented (82.62%).

The sinecological analysis (table 2) shows that *Cetonia aurata* (LINNAEUS, 1761) is very well represented, being the most abundant specie: 125 specimens (38.7%). This specie is followed by *Anoplotrupes stercorosus* (SCRIBA, 1791) with 38 specimens (11.8%) and *Hoplia argentea* (PODA, 1761) with 32 (9.9%). The species: *Trypocopris vernalis* (LINNAEUS, 1758), *Geotrupes (Geotrupes) spiniger* (MARSHAM, 1802), *Aphodius (Limarus) maculatus* (STURM, 1800), *Amphimallon assimile* (HERBST, 1790) and *Liocola marmorata* (FABRICIUS, 1793) are represented only by 1 specimen (0.3% each) (fig. 2).

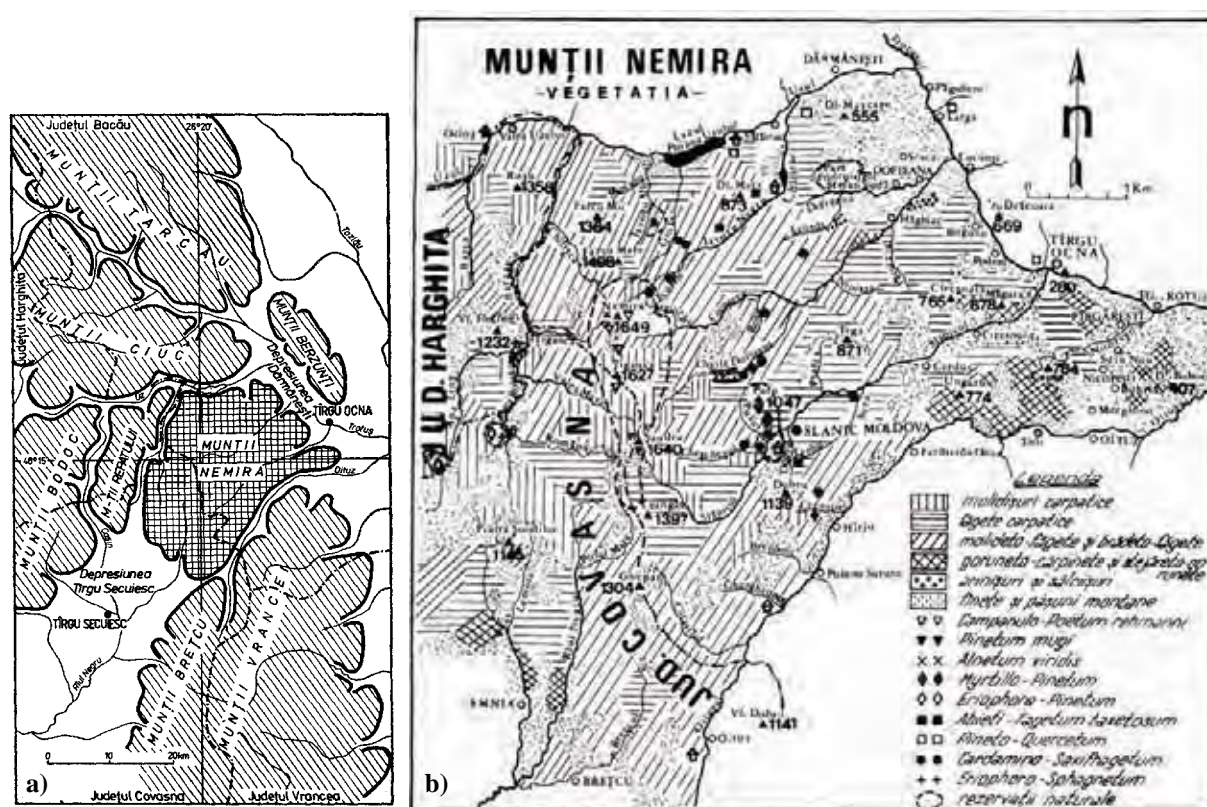


Fig. 1. Nemira Mountains: a) the geographic position and limits (ALBOTĂ, M., 1983);
b) the vegetation (MITITELU & BARABAȘ, 1994).

Munții Nemira: a) Așezarea geografică și limite (ALBOTĂ, M., 1983);
b) vegetația (MITITELU & BARABAȘ, 1994).

Table 1. The species of scarabs collected in Doftena Valley (2001 – 2004).
Speciile de scarabeide colectate în Valea Doftenei (2001-2004).

No.	Family	Subfamily	Species	A	
1.	GEOTRUPIDAE	Geotrupinae	<i>Anoplotrupes stercorosus</i> (SCRIBA, 1791)	38	
2.			<i>Trypocopris vernalis</i> (LINNAEUS, 1758)	1	
3.			<i>Geotrupes (Geotrupes) spiniger</i> (MARSHAM, 1802)	1	
4.	SCARABAEIDAE	Aphodiinae	<i>Aphodius (Acrossus) depressus</i> (KUGELANN, 1792)	9	
5.			<i>Aphodius (Acrossus) rufipes</i> (LINNAEUS, 1758)	4	
6.			<i>Aphodius (Aphodius) fimetarius</i> (LINNAEUS, 1758)	23	
7.			<i>Aphodius (Bodilus) ictericus</i> (LAICHARTING, 1781)	3	
8.			<i>Aphodius (Colobopterus) erraticus</i> (LINNAEUS, 1758)	2	
9.			<i>Aphodius (Limarus) maculatus</i> (STURM, 1800)	1	
10.			Melolonthinae	<i>Hoplia argentea</i> (PODA, 1761)	32
11.				<i>Amphimallon assimile</i> (HERBST, 1790)	1
12.			Rutelinae	<i>Anomala (Anomala) solida</i> (ERICHSON, 1847)	5
13.				<i>Phyllopertha horticola</i> (LINNAEUS, 1758)	3
14.	Cetoniinae	<i>Cetonia aurata</i> (LINNAEUS, 1761)	125		
15.		<i>Oxythyrea funesta</i> (PODA, 1761)	11		
16.		<i>Liocola marmorata</i> (FABRICIUS, 1793)	1		
17.		<i>Potosia cuprea</i> (FABRICIUS, 1775)	2		
18.		<i>Tropinota hirta</i> (PODA, 1761)	3		
19.		Trichiinae	<i>Gnorimus nobilis</i> (LINNAEUS, 1758)	29	
20.	<i>Trichius fasciatus</i> (LINNAEUS, 1758)		29		
		Total	323		

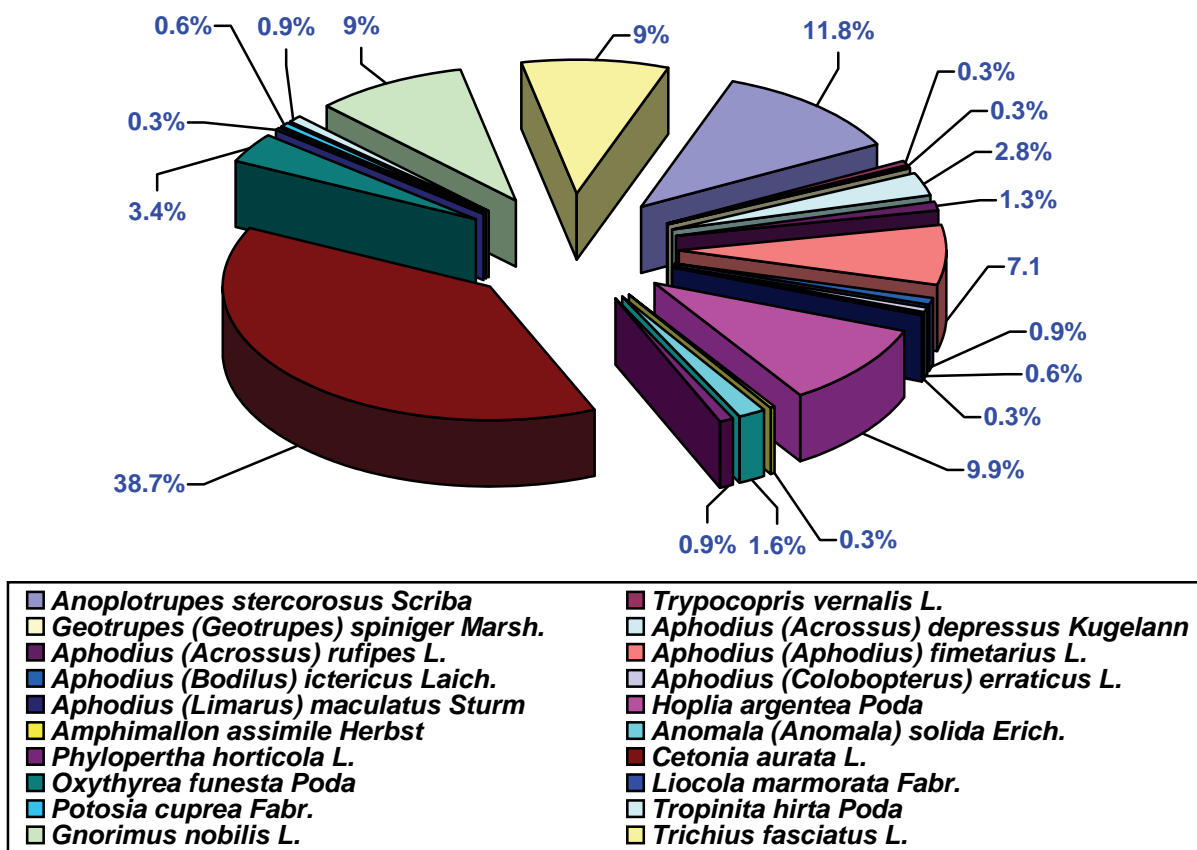


Fig. 2. The species of scarabs and their dominances (Dofteana Valley, 2001-2004).
Speciile de scarabeide și dominața lor (Valea Dofteanei, 2001-2004).

Table 2. Sinecological analysis of the species of scarabs collected in Dofteana Valley (2001 – 2004).
Analiza sinecologică a speciilor de scarabeide colectate în Valea Dofteanei (2001 – 2004).

No.	Species	2001	2002	2003	2004	A	F	C	D		W	
1.	<i>Anoplotrupes stercorosus</i> SCRIBA	13	11	9	5	38	100	C4	11.8	D5	11.8	W5
2.	<i>Trypocopris vernalis</i> L.	1	-	-	-	1	25	C1	0.3	D1	0.07	W1
3.	<i>Geotrupes spiniger</i> MARSH.	-	-	1	-	1	25	C1	0.3	D1	0.07	W1
4.	<i>Aphodius depressus</i> KUGELANN	-	1	8	-	9	50	C2	2.8	D3	1.4	W3
5.	<i>Aphodius rufipes</i> L.	1	-	-	3	4	50	C2	1.3	D2	0.6	W2
6.	<i>Aphodius fimetarius</i> L.	14	8	1	-	23	75	C3	7.1	D4	5.3	W4
7.	<i>Aphodius ictericus</i> LAICH.	-	-	-	3	3	25	C1	0.9	D1	0.2	W2
8.	<i>Aphodius erraticus</i> L.	-	2	-	-	2	25	C1	0.6	D1	0.1	W2
9.	<i>Aphodius maculatus</i> STURM	-	-	-	1	1	25	C1	0.3	D1	0.07	W1
10.	<i>Hoplia argentea</i> PODA	4	-	28	-	32	50	C2	9.9	D4	4.9	W3
11.	<i>Amphimallon assimile</i> HERBST	-	1	-	-	1	25	C1	0.3	D1	0.07	W1
12.	<i>Anomala (Anomala) solida</i> ERICH.	2	-	1	2	5	75	C3	1.6	D2	1.2	W3
13.	<i>Phyllopertha horticola</i> L.	1	2	-	-	3	50	C2	0.9	D1	0.4	W2
14.	<i>Cetonia aurata</i> L.	26	23	53	23	125	100	C4	38.7	D5	38.7	W5
15.	<i>Oxythyrea funesta</i> PODA	2	9	-	-	11	50	C2	3.4	D3	1.7	W3
16.	<i>Liocola marmorata</i> FABR.	-	1	-	-	1	25	C1	0.3	D1	0.07	W1
17.	<i>Potosia cuprea</i> FABR.	1	1	-	-	2	50	C2	0.6	D1	0.3	W2
18.	<i>Tropinota hirta</i> PODA	3	-	-	-	3	25	C1	0.9	D1	0.2	W2
19.	<i>Gnorimus nobilis</i> L.	13	3	8	5	29	100	C4	9	D4	9	W4
20.	<i>Trichius fasciatus</i> L.	2	5	11	11	29	100	C4	9	D4	9	W4
	Total	83	67	120	53	323	-	-	100	-	-	-

Considering each year as a sample, it was possible to appreciate the frequency (F) of the species of scarabs collected in Dofteana Valley. Constancy (C) was established for each specie based on the values of their frequency. Thus, the euconstant species are: *Anoplotrupes stercorosus* SCRIBA, *Cetonia aurata* L., *Gnorimus nobilis* (LINNAEUS, 1758) and *Trichius fasciatus* (LINNAEUS, 1758). Beside this, *Aphodius fimetarius* (LINNAEUS, 1758) and *Anomala solida* (ERICHSON, 1847) are constant species.

As it is known, the eudominant and dominant species are influent species, well adapted, with many individuals (VARVARA M. et al., 1997). Consulting the results presented in table no. 2, it was possible to identify the eudominant species (*Anoplotrupes stercorosus* Scriba and *Cetonia aurata* L.) and dominant species (*Aphodius fimetarius* L., *Hoplia argentea* PODA, *Gnorimus nobilis* L. and *Trichius fasciatus* L.). According to the table 2, ten species are subrecent and two are recent.

For identifying the characteristic species, it was necessary to calculate the ecological significance index (W). The values of this index are presented also in table 2. Thus, from the 20 species of scarabs identified for Dofteana Valley, 5 are characteristic (*Anoplotrupes stercorosus* SCRIBA, *Aphodius fimetarius* L., *Cetonia aurata* L., *Gnorimus nobilis* L. and *Trichius fasciatus* L.), 10 are accessories (*Aphodius depressus* KUGELANN, *Aphodius rufipes* L., *Aphodius ictericus* LAICH., *Aphodius erraticus* L., *Hoplia argentea* PODA, *Anomala solida* ERICH., *Phyllopertha horticola* L., *Oxythyrea funesta* PODA, *Potosia cuprea* FABR., *Tropinota hirta* PODA) and 5 are accidental species (*Trypocopris vernalis* L., *Geotrupes spiniger* MARSHAM, *Aphodius maculatus* STURM, *Amphimallon assimile* HERBST. and *Liocola marmorata* FABR.).

CONCLUSIONS

1. The scarabs collected in Dofteana Valley during the period of study totalize 323 specimens: 83 in 2001, 67 in 2002, 120 in 2003 and 53 in 2004.
2. The scarabs identified for the studied area belong to 2 families, 6 subfamilies, 15 genera and 20 species.
3. The species: *Cetonia aurata* L., *Anoplotrupes stercorosus* SCRIBA and *Hoplia argentea* PODA are well represented, totalizing 60.4% of the scarabs collected.
4. *Anoplotrupes stercorosus* SCRIBA, *Cetonia aurata* L., *Gnorimus nobilis* L. and *Trichius fasciatus* L. are euconstant species: *Aphodius fimetarius* L. and *Anomala solida* ERICH. are constant species.
5. From the 20 species of scarabs identified for Dofteana Valley, 5 are characteristic: *Anoplotrupes stercorosus* SCRIBA, *Aphodius fimetarius* L., *Cetonia aurata* L., *Gnorimus nobilis* L. and *Trichius fasciatus* L.

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