

Data on leaf-beetle (Coleoptera: Chrysomelidae) and jewel beetle fauna (Coleoptera: Buprestoidea) of the Botanical Reserve "Fânațele Clujului"

(Cluj county, Transylvania region, Romania)

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Rezumat

Date asupra faunei de crizomelide (Coleoptera: Chrysomelidae) și Buprestide (Coleoptera: Buprestoidea) din rezervația botanică "Fânațele Clujului" (Județul Cluj, Transilvania, România)

În această lucrare sunt prezentate specii de Chrysomelidae și Buprestoidea (Coleoptera) colectate în rezervația botanică "Fânațele Clujului" în perioada mai-septembrie 2000. În cazul crizomelidelor au fost identificate 70 de specii din 10 subfamilii, specie cu abundență cea mai mare fiind *Longitarsus melanocephalus* cu un număr de 158 indivizi. Sunt prezentate 20 specii rare.

În cazul buprestidelor au fost identificate până acum 5 specii și 34 de exemplare, dintre care o specie este foarte rară (a trei-a semnalare în fauna României) și o probabil nouă subspecie (*Coraebus elatus diaflaviae* n. ssp.), care va fi publicată ulterior.

Keywords: "Fânațele Clujului", leaf-beetle fauna, jewel beetle fauna, ecology.

Information about leaf-beetle and jewel beetle fauna of Transylvania was found in specific studies of SIEDLITZ (1891), PETRI (1912, 1920), KUTHY (1918), KASZAB (1938, 1940), KONNERT-IONESCU (1963), GRUEV et al. (1963), SZEL et al. (1996). Concerning the jewel beetles, it is created a database, which contains all species recorded till now in Romania (RUICĂNESCU 1998).

Starting with 1992 a more ample study of the leaf-beetle fauna was initiated, including papers which refers to protected areas or reserves: CRISAN (1993, 1994), CRISAN & BONEA (1995), CRISAN & TEODOR (1996), CRISAN et al. (1998, 1999), BALOG (1998). This study is a continuation of those made in protected areas.

Material and methods

Data we present in this paper are about leaf-beetles and jewel beetles collected between 28 of May and 8 of September 2000 in the Botanical Reserve "Fânațele Clujului" which is situated about 5 km North from Cluj-Napoca. The reserve has a steppe character regarding its vegetation. The latest botanical studies show 474 plant species with different geographical origin. There are many endemic (*Salvia transylvanica*, *Cephalaria radiata*, *Jurinea mollis* ssp. *transylvanica*) and rare species (*Lilium martagon*, *Fritillaria tenella*). These findings are important having in mind that the surface of the reserve is only 7.8 ha. The terrain of "Fânațe" shows

marks of erosion and slipping, which caused prominent formations like mounds and hillocks with a general Eastern-Western orientation and about 30m high. Herbaceous plants dominate the land but there are also bushes. Especially on the Northern slopes exist associations of *Prunus spinosa*, *Crataegus monogyna*, *Euonymus europaeus*, *Hypophoe rhamnooides*.

Samples were taken with an entomological net by sweeping from different habitats including different kind of lawns and both Southern and Northern slopes of the hillocks. The captured leaf-beetles were killed in 70° alcohol after words they were kept dry. The taxonomical identification was made using bibliographical sources: FREUDE et all. (1966), KASZAB (1962-1971), KIPPENBERG & DOBERL (1994), PANIN (1951), ROZNER (1996), SCHAEFER (1949) and THÉRY (1942).

For the leaf-beetles the ecological similarity was calculated after the co-efficient of similarity given by Jaccard ($C_j = j/a+b - j$; in which j = the number of species common in the two different ecosystems; a = the number of species from lawns; b = the number of species from hillocks).

The jewel beetles (Buprestoidea) was collected by sweeping with the entomological net and killed with ethyl-acetate vapours and then was stored in the author's collection.

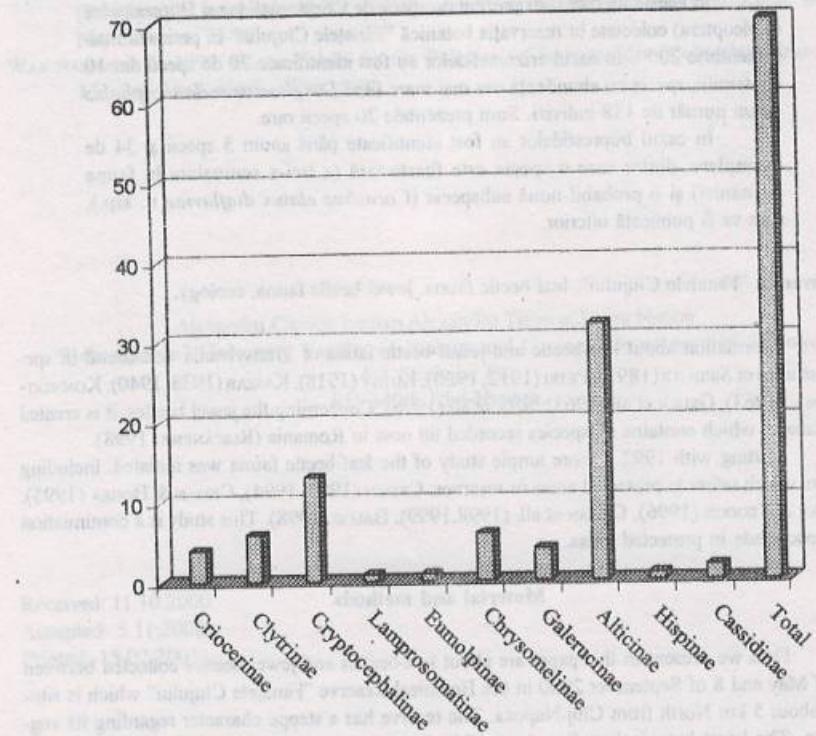


Fig.1. Diagram of the representation of leaf-beetle subfamilies according to the number of species

Table 1

List of the Chrysomelidae species captured in the Botanical Reserve "Fânațele Clujului"
"between May and September 2000

Subfamily/species	collecting date	Nr. ind	Abund. %	Collecting places / ecosystems
Criocerinae Latreille, 1807				
<i>Oulema (Haspidolema) gallaeciana</i> (Heyden, 1870)	4 VII	1	0,23	H- lawn
<i>Crioceris quatuordecimpunctata</i> (Scopoli, 1763)	28 V 2 VII 23 VII	1 1 2	0,23 0,23 0,47	hillocks-S hillocks-S hillocks-S
<i>Crioceris quinquepunctata</i> (Scopoli, 1763)	28 V	1	0,23	hillocks-S
<i>Crioceris duodecimpunctata</i> (Linnaeus, 1758)	28 V	1	0,23	hillocks-S
II. Clytrinae Kirby, 1837				
<i>Labidostomis longimana</i> (Linnaeus, 1761)	4 VII 28 V 2 VII	1 2 3	0,23 0,47 0,70	X- lawn hillocks-N hillocks-S
<i>Clytra laevicula</i> (Ratzeburg, 1837)	2 VII	4	0,94	hillocks-S
<i>Smaragdina aurita</i> (Linnaeus, 1767)	4 VII 2 VII	1 2	0,23 0,47	H- lawn hillocks-S
<i>Coptocephala chalybaea</i> (Germar, 1824)	28 V	5	1,17	hillocks-S
<i>Coptocephala unifasciata</i> (Scopoli, 1763)	23 VII	1	0,23	hillocks- S
<i>Coptocephala rubicunda</i> (Laicharting, 1781)	19 VIII	2	0,47	X- lawn
III. Cryptocephalinae Gyllenhal, 1813				
<i>Pachybrachys hieroglyphicus</i> (Laicharting, 1781)	28 V	1	0,23	hillocks-S
<i>Pachybrachys fimbriolatus</i> Suffrian, 1848	28 V	5	1,17	hillocks- S
<i>Cryptocephalus moraei</i> (Linnaeus, 1758)	18 VI 4 VII 23 VII 23 VII 23 VII 2 VII 19 VIII 19 VIII	2 3 2 3 2 2 1 1	0,47 0,70 0,47 0,70 0,47 0,47 0,23 0,23	X- lawn H- lawn H- lawn M-lawn G- lawn hillocks- S M- lawn H- lawn

Subfamily/species	collecting date	Nr. ind	Abund. %	Collecting places / ecosystems
<i>Cryptocephalus flavipes</i> Fabricius, 1781	18 VI 28 V 2 VII	1 9 1	0,23 2,11 0,23	X-lawn hillocks-N hillocks-N
<i>Cryptocephalus bipunctatus</i> (Linnaeus, 1758)	4 VII 4 VII 28 V 2 VII	1 1 5 1	0,23 0,23 1,17 0,23	H- lawn X- lawn hillocks-S hillocks- S
<i>Cryptocephalus sericeus</i> (Linnaeus, 1758)	4 VII	1	0,23	X-lawn
<i>Cryptocephalus (Burlinius)</i> <i>bilineatus</i> (Linnaeus, 1767)	4 VII 23 VII	1 1	0,23 0,23	X-lawn M- lawn
<i>Cryptocephalus vittatus</i> Fabricius, 1775	4 VII	1	0,23	X-lawn
<i>Cryptocephalus (Asiopus)</i> <i>quatuordecimmaculatus</i> Schneider, 1792	28 V	9	2,11	hillocks- S
<i>Cryptocephalus (Burlinius)</i> <i>elegantulus</i> Gravenhorst, 1807	28 V 23 VII 23 VII	7 1 2	1,64 0,23 0,47	hillocks-S hillocks-S M- lawn
<i>Cryptocephalus (Burlinius)</i> <i>chrysopus</i> Gmelin, 1790	28 V	1	0,23	hillocks-S
<i>Cryptocephalus (Burlinius) quercreti</i> Suffrian, 1848	23 VII	1	0,23	bushes
<i>Cryptocephalus hypochoeridis</i> (Linnaeus, 1758)	23 VII 2 VII	1 2	0,23 0,47	M- lawn hillocks- S
IV. Lamprosomatinae Lacordaire, 1848				
<i>Omorphus concolor</i> (Sturm, 1807)	23 VII 19 VIII	3 1	0,7 0,23	M- lawns M- lawns
V. Eumolpinae Thomson, 1859				
<i>Eumolpus asclepiadeus</i> (Pallas, 1773)	23 VII 19 VIII 2 VII	1 1 2	0,23 0,23 0,47	hillocks- S X- lawns hillocks- S
VI. Chrysomelinae Latreille, 1802				
<i>Leptinotarsa decemlineata</i> (Say, 1824)	8 IX	1	0,23	G- lawn
<i>Chrysolina (Colaphosoma) sturmi</i> (Westhoff, 1882)	23 VII 23 VII	2 1	0,47 0,23	hillocks- S M- lawn
<i>Prasocuris phellandrii</i> (Linnaeus, 1758)	18 VI	1	0,23	H- lawn
<i>Gonioctena (Spartoxena) fornicate</i> (Bruggemann, 1873)	2 VII	1	0,23	hillocks-S
<i>Phratora atrovirens</i> (Cornelius, 1857)	18 VI	3	0,70	X- lawn
<i>Entomoscelis adonidis</i> (Pallas, 1771)	18 VI 28 V	1 6	0,23 1,41	X- lawn hillocks- N

Subfamily/species	collecting date	Nr. ind	Abund. %	Collecting places / ecosystems
VII. Galerucinae Latreille, 1802				
<i>Galerucella (Neogalerucella) lineola</i> (Fabricius, 1781)	4 VII	1	0,23	H- lawn
<i>Galeruca tanaceti</i> (Linnaeus, 1758)	23 VII	1	0,23	G-lawn
<i>Galeruca pomonae</i> (Scopoli, 1763)	8 IX	1	0,23	hillocks- S
<i>Phyllobrotica adusta</i> (Creutzer, 1779)	28 V	5	1,17	hillocks- N
VIII. Alticinae Kutschera, 1859				
<i>Phyllotreta armoraciae</i> (Koch, 1803)	4 VII	9	2,11	X- lawn
<i>Phyllotreta undulata</i> (Kutschera, 1860)	28 V 19 VIII 8 IX 8 IX	10 1 2 1	2,35 0,23 0,47 0,23	hillocks-S X- lawn G- lawn H- lawn
<i>Phyllotreta atra</i> (Fabricius, 1775)	8 IX	12	2,82	hillocks-S
<i>Aphthona lacertosa</i> (Rosenhauer, 1847)	18 VI 4 VII 28 V	2 1 3	0,47 0,23 0,70	G- lawn X-lawn hillocks- N
<i>Aphthona semicyanea</i> Allard, 1859	4 VII	1	0,23	X- lawn
<i>Aphthona nigriscutis</i> Foudras, 1861	19 VIII	3	0,7	X-lawn
<i>Aphthona cyparissiae</i> (Koch, 1803)	19 VIII	2	0,47	X-lawn
<i>Aphthona euphorbiae</i> (Schrank, 1781)	8 IX	1	0,23	G- lawn
<i>Aphthona caerulea</i> (Geoffroy, 1785)	8 IX	2	0,47	hillocks- N
<i>Aphthona atrovirens</i> (Forster, 1849)	8 IX	1	0,23	hillocks- S
<i>Longitarsus lycopi</i> (Foudras, 1860)	4 VII	2	0,47	X-lawn
<i>Longitarsus melanocephalus</i> (DeGeer, 1775)	23 VII 19 VIII 19 VIII	1 54 103	0,23 12,7 24,2	hillocks-S X-lawn M-lawn

Subfamily/species	collecting date	Nr. ind	Abund. %	Collecting places / ecosystems
<i>Longitarsus pellucidus</i> (Fuodras, 1860)	23 VII	1	0,23	G-lawn
<i>Longitarsus foudrasi</i> Weise, 1893	19 VIII	2	0,47	X-lawn
	19 VIII	1	0,23	M-lawn
<i>Longitarsus brunneus</i> (Duftschmid, 1825)	19 VIII	1	0,23	X-lawn
<i>Longitarsus nigerrimus</i> (Gyllenhal, 1827)	19 VIII	11	2,58	X- lawn
<i>Longitarsus (Testergus) anchusae</i> (Paykull, 1799)	19 VIII	8	1,88	X- lawn
<i>Longitarsus rubellus</i> (Foudras, 1860)	8 IX	5	1,17	G- lawn
<i>Longitarsus jacobaeae</i> (Waterhouse, 1858)	8 IX	6	1,41	G- lawn
	8 IX	1	0,23	hillocks- N
<i>Altica oleracea</i> (Linnaeus, 1758)	23 VII	1	0,23	H- lawn
	19 VIII	2	0,47	X- lawn
<i>Batophyla rubi</i> (Paykull, 1799)	4 VII	1	0,23	H- lawn
<i>Asiorestia ferruginea</i> (Scopoli, 1763)	18 VI	1	0,23	X- lawn
	19 VIII	2	0,47	H- lawn
<i>Asiorestia transversa</i> (Marsham, 1802)	18 VI	1	0,23	H- lawn
	23 VII	2	0,47	bushes
<i>Chaetocnema obesa</i> (Boieldieu, 1859)	4 VII	1	0,23	H- lawn
<i>Chaetocnema hortensis</i> (Geoffroy, 1785)	23 VII	11	2,58	H-lawn
<i>Chaetocnema (Tlanoma) heikertingeri</i> Ljubischev, 1963	23 VII	2	0,47	H-lawn
	8 IX	1	0,23	G- lawn
<i>Chaetocnema (Tlanoma) chlorophana</i> (Duftschmid, 1825)	19 VIII	1	0,23	H- lawn
	8 IX	9	2,11	H- lawn
	8 IX	3	0,70	G- lawn
<i>Chaetocnema (Tlanoma) conducta</i> (Motschulsky, 1837)	8 IX	2	0,47	H- lawn
<i>Chaetocnema confusa</i> (Boheman, 1851)	8 IX	1	0,23	G- lawn
	8 IX	1	0,23	H- lawn
<i>Chaetocnema arenacea</i> (Allard, 1860)	8 IX	1	0,23	hillocks-S
<i>Dibolia (Eudibolia) schillingi</i> (Letzner, 1847)	23 VII	1	0,23	M- lawn

Subfamily/species	collecting date	Nr. ind	Abund. %	Collecting places / ecosystems
<i>Psylliodes aerea</i> Foudras, 1860	23 VII	1	0,23	G- lawn
				IX. <i>Hispinae</i> Gyllenhal, 1813
<i>Hispella atra</i> (Linnaeus, 1767)	4 VII	1	0,23	H- lawn
				X. <i>Cassidinae</i> Gyllenhal, 1813
<i>Cassida pannonica</i> Suffrian, 1844	23 VII	1	0,23	H- lawn
	23 VII	1	0,23	M- lawn
<i>Cassida rubiginosa</i> O. F. Müller, 1776	23 VII	1	0,23	hillocks- N

Abbreviations: X= xerophyle lawn; M= mezophyle lawn; H= hygrophyle lawn; G= grazed lawn; S =South; N= North (cardinal points of the orientation of the slopes).

Results, discussion and conclusions

We collected 425 specimens that belong to 70 leaf-beetle species of 30 genera and 10 subfamilies. We present them in the Table 1, showing their abundance, date and place of capture (Table 1).

Alticinae subfamily has the highest representation, namely 32 species (292 specimens) followed by the subfamilies Cryptocephalinae with 13 species (69 specimens) and Chrysomelinae with 6 species (16 specimens). Fig. 1.

Dominant genera are *Cryptocephalus* (Cryptocephalinae) with 11 species, *Longitarsus*, *Chaetocnema* and *Aphthona* (Alticinae) with 9, 7 and 7 species respectively.

The most dominant species is *Longitarsus melanocephalus* (Alticinae) with 158 specimens, representing 37, 17% of all the specimens we captured. Next species with a higher presence are *Phylloreta armoraciae* (19 specimens) and *Cryptocephalus moraei* (16 specimens).

The high temperatures during the period of the collection- more than 30° C in June, July and August-, the aridity of summer 2000 and the presence of herbaceous plants on lawns and hills caused the abundance of Alticinae. The high number of Cryptocephalinae we explain by the fact that many of them are typical of Southern slopes covered by xerophilous vegetation. They were mostly taken from that kind of places.

Concerning the abundance of leaf-beetles according to the place of capture, we mention that 64 species were collected from lawns (24 in xerophilous, 19 in hygrophilous, 10 in mezophilous and 11 in grazed lawns) and 31 species from hillocks (21 from the Southern and 10 from the Northern slopes) (Fig. 2). We found 12 species, which are common for lawns and hillocks; 9 common for lawns and Southern slopes while 3 species for lawns and Northern slopes.

The co-efficient of the ecological similarity explains this result. The value of this coefficient is 0,11 for lawns and Southern slopes, respectively 0,04 in the case of lawns and Northern slopes. This means that lawns and Southern tilted slopes are more similar habitats than lawns and Northern slopes. This fact is also caused by the vegetation, mostly herbaceous both in lawns and Southern hillocks while on the Northern ones there are more bushes.

Our results are important not only for quantitative but also for qualitative aspects. Among the 70 leaf-beetle species we identified 20 rare or relative rare species. These are: *Crioceris quinquepunctata*, *Coptocephala chalybea*, *Coptocephala rubicunda*, *Pachybrachys fimbriolatus*,

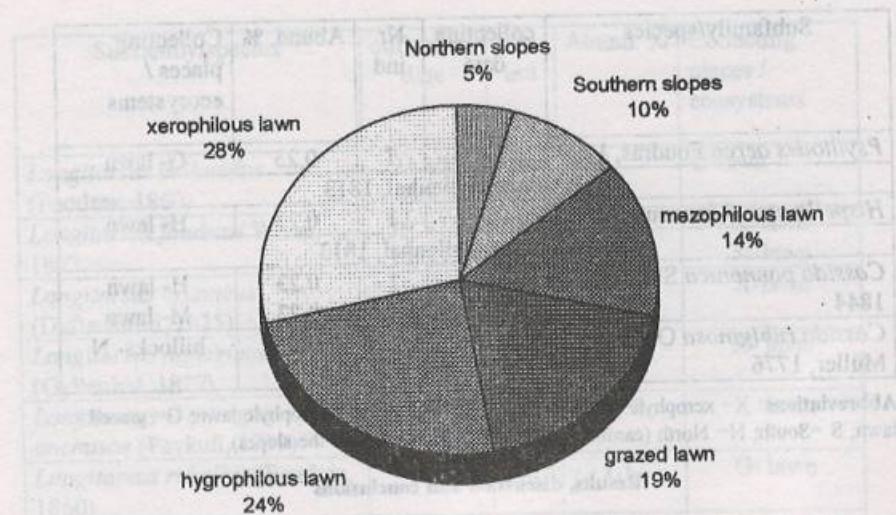


Fig.2: Diagram of the representation of leaf-beetle species according to the place of capture

Cryptocephalus vittatus, *Cryptocephalus (Burlinius) elongatus*, *Cryptocephalus (Burlinius) chrysopus*, *Prasocuris phellandrii*, *Phyllobrotica adusta*, *Phyllotreta armoraciae*, *Aphthona semicyanea*, *Aphthona coerulea*, *Aphthona atrovirens*, *Longitarsus nigerrimus*, *Longitarsus rubellus*, *Batophila rubi*, *Chaetocnema (Tlaloma) clorophana*, *Dibolia (Eudibolia) schillingi*, *Psylliodes aerea*, *Hispellula atra*. The presence of these species is comprehensible if we refer to the rare plant species of the reserve.

These 70 leaf-beetle species we identified, including the 20 rare ones, show a high biodiversity of this fauna in the reserve "Fânațele Clujului" so that this area must be protected also regarding its fauna.

Concerning buprestids, it was collected 34 specimens belonging to 5 species (Table 2).

Table 2

The Buprestoidea species collected in the Botanical Reserve "Fânațele Clujului"
Abbreviations: Coll. date - collecting date; nr. of spec. - number of specimens; zoogeogr. - zoogeography; Tur-Med - Turano-Mediterran; Sib-Eur - Sibero-European.

Taxa	coll. date	nr. of spec.	host plant	habitat preferences	zoogeogr.
<i>Capnodis tenebrionis</i> (Linne, 1761)	05.1995	1	<i>Amygdalus nana</i>	xerophilous bushes and forest edges	Tur-Med
<i>Coraebus elatus</i> ssp. n ?	28.05.2000	6	<i>Onobrychis viciifolia</i>	xerophilous meadows	endemic ?
	4.06.2000	23			
<i>Agrilus betuleti</i> Ratzeburg, 1837	28.05.2000	1	<i>Betula nana</i> , <i>B. pendula</i>	mezophilous forests and bushes	Sib-Eur
<i>Agrilus solieri</i> Gory & Laporte, 1837	2.07.2000	2	<i>Rosa sp.</i> , <i>Rubus sp.</i>	xerophilous bushes	Western Med

Some species are very interesting, like:

- *Capnodis tenebrionis* (LINNE, 1761), which was a pest species at first decades of this century in the last time, became very rare and it is mentioned in red lists of Austria (MÖDLING 1983).

- *Coraebus elatus* (FABRICIUS, 1787). 29 specimens were collected from a strange host plant for this species (*Onobrychis viciifolia* Scop.). All the specimens are some smaller and slender than the nominated *C. elatus* specimens collected in Romania and, especially in the Cluj area. It is difficult to suppose now if these specimens are belonging to other subspecies, because no significant characters are distinguished yet. *C. elatus* is mentioned as an endangered species in the red list of Germany (GEISER 1984).

- *Agrilus (s. str.) solieri* GORY & LAPORTE, 1837 is a very rare species. In Romania it is known only three records (RUICĂNESCU 1993, 1994, 1998).

- *Trachys fragariae* BRISOUT, 1784. This is a second site where this species was recorded.

All species prefers some xerophilous or mezophilous habitats, the sunlit is indispensable for its developing. If *Coraebus elatus* ssp. *diasflaviae* is a good new subspecies, it will be the second endemic buprestid species in Romania.

The rare species found in this reserve proved the great value of this area.

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